evidence of shock, the segmental distribution of the paralysis, and the nature of improvement, are in contrast to the well-known phenomena usually observed in cerebral disturbances (hemiplegias) due to arterial disorders. These sinus cases explain the heretofore not well recognized disturbances of the sinus found in civil life. In the treatment, experience taught that in most cases an attempted local surgical remedy was only to increase the existing thrombosis, and in many cases to make the condition irremediable, by producing further hemorrhage and a complete thrombosis of the sinus, its lacunæ and the cortical veins. Conservatism was the keynote in the surgical treatment of general cerebral injuries. Every case received a thorough neurological examination, and upon the findings procedure was based. Notwithstanding the septic condition of many wounds, general meningitis or encephalitis was strikingly rare. The tendency was to do as little as possible surgically at the site of the wound. If strangulation of brain substance was imminent and lumbar puncture did not relieve the pressure sufficiently, a contralateral decompression, rather than enlarging the opening at the site of the wound, was generally considered preferable. No general law, however, was laid down. Every case was treated as an individual one. To Doctor Buzzard, of the King George Hospital, Dr. Royer is indebted for permission to report the case.

CASE OF MULTIPLE SCLEROSIS WITH ABDOMINAL REFLEXES

By Hugh T. Patrick, M.D.

Dr. Patrick presented a man whom he had seen first in February, 1916, when he was forty years old. Eighteen years ago he began to have frequent micturition, with difficulty in completely emptying the bladder and a tendency to dribbling afterwards. This lasted for four or five years. Then he was all right for several years. Then the trouble recurred and has continued more or less ever since. He also has some difficulty in starting the flow of urine. Ten years ago vision began to fail, and from the beginning he noted that peripheral vision was better than central. This difficulty in vision gradually increased until now he can read only half-inch letters. Eight years ago he first noticed difficulty in walking, which began in the left leg and the left has continued worse than right. Five years ago he began to have clumsiness in the left hand, and at the same time the right leg became involved. Twenty years ago for a considerable time he had diminution of sexual desire and imperfect erections. This may have been functional. Nine years ago sexual power again began to fail, and the last four or five years it has been *nil*. About five years ago he began to have a little difficulty in speech, a little clumsiness and slowness. Five years ago, when in Dr. Mix's care, blood Wassermann was negative. A recent Wassermann was made on the spinal fluid, which was also negative, with only four cells and scarcely any globulin.

Now the examination shows spasticity, double ankle clonus, double Babinski, and increased arm reflexes. There is a very distinct ulnar jerk of peculiar type, flexion and pronation of the forearm, and flexion of the fingers. He also shows a peculiar though slight cyanosis of the left hand. There is slight jerky incoördination of the hands. Visual fields show a large central scotoma for either eye and there is double optic atrophy. Dr. Patrick could not confirm the diagnosis of multiple sclerosis made by Dr. Mix.

The only reason Dr. Patrick brought the man to the Society was to show a case of multiple sclerosis which seemed distinctly to be of eighteen or twenty years' duration—far advanced—and yet showing abdominal reflexes. To be exact, the last time he examined the man, two months ago, he showed abdominal reflexes. The right upper was normal; right lower absent or doubtful. Of course, the lower abdominal is absent in a good many people. The left upper was present but diminished, and the left lower absent. He

also had a cremaster reflex on one side, which should be lacking in a case of advanced multiple sclerosis. Examination at the meeting showed the abdominal reflexes to be absent, except a faint trace of the right upper.

Dr. Hamill asked if, when the upper reflexes were present, there was a Beevor.

Dr. Patrick said that there was a very slight one, which is still present. There were some very slight sensory signs in the legs, but aside from this particular feature there was nothing of very special interest in the case. It was just the ordinary long, fluctuating case of a multiple sclerosis.

Dr. Patrick supposed all the members had seen incipient cases, or those of localized type, with the abdominal reflexes retained, but it surely must be very unusual for a case with as much paraplegia as this man had and such an extensive process—extending from the optic nerve and involving all the extremities and the bladder—to retain the abdominal reflexes.

Dr. Charles L. Mix asked how much spinal fluid was used for the test.

Dr. Patrick replied that Dr. Harris made the test, and he always uses one c.c., only occasionally two c.c. The four lymphocytes are not at all unusual in multiple sclerosis.

It might be of interest to say that three years ago he heard Alzheimer say that there was always lymphocytosis in multiple sclerosis. That certainly is not the case, but he thinks it is fair to say that it is always present in acute exacerbations of the disease, and it is not unusual to get as many as four lymphocytes, as in the case presented.

Dr. Charles L. Mix said that one interesting thing in the case was the tremendous exacerbation of the symptoms on an attempt to treat the man with injections of strychnin. The man was first seen by Dr. C. H. Beard, who made a diagnosis of a primary optic atrophy without any known etiology. He afterwards came into Dr. Mix's hands, and he made a diagnosis of multiple sclerosis, and so explained the optic atrophy. Dr. Beard had put him on large doses of strychnin, which made him very distinctly worse, and the man attributed all of his trouble to that. Dr. Mix is of the opinion that strychnin in multiple sclerosis is distinctly a wrong thing to give. However, if any of those present had any suggestions to offer as to therapy, Dr. Mix would be glad to hear them.

Dr. Julius Grinker wished to say that he had under observation a case of the cerebellar type of multiple sclerosis for about twelve years in a boy who developed the disease with attacks of vertigo as perhaps the earliest manifestation of his trouble. He had also transient incontinence of urine, lasting a variable period of time, which disappeared and returned several years later. Toward the last he presented the most classical picture of multiple sclerosis, and there was no question then as to the diagnosis. The entire course of the disease covered sixteen years. The therapy in that case was occasionally sodium bromid in ten to fifteen grain doses, t. i. d. This was used at first experimentally but the patient would regularly return saying that he had felt much better after taking the medicine, that nothing he ever took before helped him as much. It was most effective when he became very nervous as the result of locomotion, which was both spastic and ataxic. The remedy was prescribed in occasional doses over a period of two or three weeks, with interruptions, and always gave him marked temporary relief.

Dr. Harold N. Moyer was reminded of a patient he had seen that morning with a caudal injury at the level of the first lumbar vertebra, accompanied by bladder symptoms. The surgeon reported to the speaker that the cremaster reflex was absent. Stroking the inside of the thigh, Dr. Moyer got a distinct cremaster reflex on both sides—much to the surprise of the surgeon. A second was devoid of response. It was then found that if the stroke were made on the inner side of the thigh it failed to bring the reflex, but if on the front, over the distribution of the crural nerve, a distinct jerk was ob-

tained. Testing further, it was found that pinching the inside of the thigh produced a sharp cremaster jerk. It is evident that in organic involvement of this reflex arc there probably is a response in varying degrees, which differs from time to time in the same patient. These symptoms of disappearance of certain apparently organic symptoms occur in quite a considerable proportion of the cases.

Dr. H. Douglas Singer asked Dr. Patrick if he had any actual figures on the cases in which the abdominal reflexes are present. He would not like to say definitely, but he was pretty sure he had seen them present in not a few cases, even in advanced disseminated sclerosis. Of course, he knew that they were most frequently absent. That has been one of the rather extraordinary features in connection with the difference in behavior of the superficial and deep reflexes. The superficial reflexes tend rather to be diminished whenever the knee jerks are increased, and vice versa, for which the speaker had no explanation to offer.

Dr. Sydney Kuh said his personal experience coincided with that of Dr. Singer. In fact, he thought he could go a little further and say that, so far as his experience was concerned, absence of the abdominal reflexes, at least in the earlier stages, has been the exception rather than the rule. While absence of the abdominal reflexes may be of diagnostic importance in a case of disseminated sclerosis, their presence would be of absolutely no value. This, of course, applied to cases of shorter duration than the one presented by Dr. Patrick.

Dr. Kuh did not recall ever having seen a case in which the disease had lasted so long as in the one presented.

Therapeutically, he would suggest that it might be worth while to try something like one of the old remedies. Of course, it would be very difficult to form any opinion as to their value in a disease in which spontaneous fluctuations are as common as in multiple sclerosis, but he was under the impression that silver nitrate was not entirely without value.

Dr. Ralph C. Hamill said it seemed to him, considering the outburst of symptoms that we see in multiple sclerosis that there is something to be considered, from the standpoint of etiology, as to a microbic origin. If of germ origin, there might be groups of bacteria thrown out into the circulatory system which, lighting in the central nervous system at intervals, would cause sudden accessions of symptoms, with gradual recessions whenever complete, but with a certain amount of scarring being left where the destruction had been most marked.

Dr. Hall had a patient a long time ago who came later into Dr. Hamill's service at the County Hospital. This girl had very large tonsils, which were full of pus. Dr. Hamill had them taken out, and the girl seemed a little better following operation. Whether that was the recession or not, he could not say.

Dr. Charles L. Mix said that no one had said anything about what to do for the patient presented. The speaker would not advocate Dr. Grinker's prescription. The patient did about as well on arsenic in one form or another as anything that had been given to him. He had been given cacodylate of soda quite a good deal, and did fairly well on that.

If, as Dr. Hamill said, the condition be based on a microbic etiology of some sort, it would be rational to use cacodylate of sodium, which is especially valuable in spirochetic infections. Possibly, if there were a microbic cause behind the condition, it would not be of the ordinary bacteriological flora.

This man had also been given some mercurial preparations. He was given a little bichloride at times, thinking it might have some beneficial effect, but it did not. The only thing that seemed to have any effect was either the arsenic or the cacodylate of soda.

On one occasion, the speaker did give him some strychnin, to find out whether his idea regarding it was correct, and he had the impression that it did increase the spasticity, making it harder for him to walk. Dr. Mix has adopted the plan of never giving strychnin in any case in which there is a Babinski reflex due to cord disturbance, aside from cerebral disturbance.

Dr. S. Krumholz wished Dr. Patrick would kindly speak at greater length on the question of retained abdominal reflexes in multiple sclerosis. The speaker has seen retained abdominal reflexes or transitory absence of them in a large number of early cases of multiple sclerosis.

The pathogenesis of multiple sclerosis is claimed by many investigators, especially Marburg, to be of an infectious origin. The transition and remission of the symptoms in the disease speak in favor of this assumption. Therefore, in the treatment of multiple sclerosis it would be well to search for and remove focal infections, and administer urotropin, since that drug is regarded by many to act as an antiseptic in the spinal fluid.

Dr. Patrick, in closing the discussion, said he had no statistics in regard to the presence of abdominal reflexes in multiple sclerosis. He was very sure that in incipient cases the abdominal reflexes are frequently present on one or both sides. He thought it very, very rare that they are present on either side in cases as advanced as the one presented—not only as to time, but the degree of the symptoms which the man has had for so long. He is in a period of quiescence at this time.

Dr. Patrick thought the absence or diminution of the abdominal reflexes of very great assistance in the diagnosis of many cases, not only of multiple sclerosis, but of cases in which there is a question whether or no there is an involvement of the pyramidal tract. Oftentimes when the ordinary symptoms of spasticity, increase of reflexes, and the like, are doubtful, a diminution of the abdominal reflexes or reflex, and cremaster as well, on the suspected side, is of very great value in determining whether there be some organic change in the pyramidal tract.

Dr. Patrick thought he would adopt Dr. Kuh's suggestion and give the patient nitrate of silver. The other things had been tried, and he had no confidence in them, including fibrolysin. He has not used any nitrate of silver for many years, but believes that sometimes it is of value.

The cerebellar type, spoken of by Dr. Grinker, has been described for many years.

Dr. H. C. Stevens asked if one was warranted in injecting serum into the spinal canal.

Dr. Patrick replied that one might be justified in trying almost anything. He could not figure out why it should be used, but if the patient agreed to it he would not object to its use, since the dermatologists are seeing such wonderful results from the injection of blood serum, for no particular cause that anybody can explain. He had seen a patient with generalized severe dermatitis who was very greatly improved by the injection, subcutaneously or into the deep tissues, of serum of the blood of his brother. Such cases are quite authentic. There is no question about the result. It is possible that something of that kind might affect multiple sclerosis.

Only that morning he had seen a case which he felt certain was one of multiple sclerosis in a man who had very spastic legs, double ankle clonus, increased deep reflexes, loss of the abdominal reflexes, a trace of a cremaster reflex on one side, and yet had normal plantar reflexes on both sides. He had no Oppenheim, Chaddock or Gordon. Only an occasional indication of the extension of the great toe could be obtained on one side. Uniformly, on the left side, there was practically no plantar reflex at all. On the other side, the worse leg of the two, there was almost uniformly a flexion.