

put upon the arch from the outside, the firmer and stronger it became. It remained in place and made a firm support, bridging over the defect of the skull. It was easily made and easily inserted, and could be bent into any shape desired. It had none of the faults of plates which rested on the outside of the skull and were apt to shift their position, or of plates put inside of the bone, which rested directly upon the dura or the brain.

ACUTE TOXIC CHOREA

By B. Sachs, M.D.

In this paper, the writer called attention to a grave form of chorea which he had had occasion to study of late years, more particularly in his service at Mt. Sinai Hospital, namely, toxic or infectious chorea. So long ago as 1872 Pianese claimed to have isolated a diplococcus and a diplo-bacillus from the cervical cord and the cerebellum of a patient who had died of St. Vitus' dance, and by inoculating cultures of these microorganisms into animals, he claimed to have produced chorea in them. The findings and experiments of Pianese had not been substantiated by later observers. In 1894 Dana wrote a paper on the "Microbic Origin of Chorea," and reported a fatal case in a man 34 years old. In that case diplococci were found in the proliferating tissue between the meninges and the brain. Other authors had found staphylococci and streptococci in the blood of the heart of choreic patients: Heubner was the only one who succeeded in developing streptococci and staphylococci from the blood of a choreic patient taken during life, and by inoculation produced a streptococcic septicemia in mice. The very best work of this description was done by Cramer and Toebben, who succeeded in proving the presence of Gram positive cocci in the blood taken from one of their patients during life, and these bacteria were unmistakably streptococci.

We were only now beginning to have positive evidence of the existence of an infectious form of chorea, but the ground upon which this doctrine rested was still meagre. The most important step to be taken in every case of chorea, at least from a diagnostic point of view, was to make repeated blood examinations so as to prove the presence or absence of bacteria in the blood of the patient during the earlier stages of the disease.

The pathological and bacteriological studies suggested the infectious or toxic origin of certain forms of chorea; the clinical symptoms pointed with much greater force to the existence of a special infectious type of choreic disturbance. The clinical features of such a condition might be briefly summarized as follows: The disease might occur at any period of life, although most of those hitherto observed have been youthful persons. One of Cramer and Toebben's patients was only seven years of age, the other thirteen. Dr. Sachs said that in the cases he had seen, the patients were fifteen, eighteen and twenty-two years old, respectively. After a somewhat indefinite prodromal period of restlessness and slight twitchings, universal choreic movements of an extravagant type set in, which constituted the most prominent symptom of the disease. The jactations were so severe that the patients had to be restrained or carefully watched in padded beds. Erosions appeared all over the body,

and particularly on the parts most apt to be rubbed or bruised by contact with the bed-clothes and the bed-posts. The erosions were found chiefly on the buttocks, the elbows and the ankles. Speech was difficult at an early stage of the disease, and later became impossible. This was due in part to the extreme choreic movements of the lips and tongue, and of the muscles engaged in the mechanism of speech, as well as to the accompanying mental change which might vary from mild stupor and apathy to a condition of active delirium. The movements were lessened during sleep, but sleep was fitful and as a rule could be induced only by large doses of hypnotics and sedatives. After a period varying from one to two weeks the patient passed from the state of continued restlessness into stupor and coma. After a further period of a few weeks or possibly a week, death supervened, although the speaker said he did not claim that a fatal termination was inevitable. High fever was observed from the beginning to the end of the disease. A universal erythema, bearing all the marks of a toxic eruption, occurred in the earlier stage.

Dr. Sachs then reported in detail two cases of acute toxic chorea that had come under his observation, with post-mortem and pathological findings. Reviewing his experience with these and other cases in an impartial spirit, he said the conclusion was inevitable that the grave form of chorea he had described was due to a general toxemia caused by the invasion of staphylococci or streptococci, or of some other organisms not yet determined. The search for a single specific organism as the cause of chorea seemed to him fruitless, and, in view of what had already been discovered, entirely illogical. Some forms of chorea were evidently the expression of an acute general toxemia. There might be a number of different microbic agents giving rise to this condition, but it seemed reasonable to suppose that certain bacteria had a special predilection for the motor neurones, while other exerted their baneful influence over the sensory elements of the central and peripheral nervous system.

Dr. Charles L. Dana asked Dr. Sachs how he differentiated between this form of chorea and that known as chorea insaniens. He generally observed several of the latter type of cases in the hospital each year, and while they were usually looked upon as of infectious origin, that fact had not been demonstrated as perfectly as in the cases reported by Dr. Sachs.

Dr. M. Allen Starr said that within the past two years, in the Presbyterian Hospital, he had seen two cases of ulcerative endocarditis in which, among other symptoms, there were marked choreic movements of the face and extremities. The endocarditis was shown to be of definite bacterial origin, and the cases were a good illustration of the fact that any acute bacterial infection may in certain individuals produce choreic movements. That view might be taken in connection with the cases reported by Dr. Sachs. In both there was a general streptococcus infection of which the chorea was apparently the chief manifestation. It was questionable, therefore, whether we were really dealing with a new toxic disease or merely a manifestation or prominent symptom observed in certain infections.

Dr. Nathan E. Brill asked Dr. Sachs why he used the term "toxic chorea" in reference to the disease. As yet it has not been demonstrated that a toxemia is the cause of chorea. Nor yet could it be proven that in the class of cases presented by Dr. Sachs the toxins rather than the

mechanical effects of the bacteria in the cerebral capillaries were the causative factors.

It would seem to be more in harmony with the fact that in one of Dr. Sachs' cases there was a distinct staphylococcemia to call this class of cases "chorea associated with septicemia" or "bacteriemic chorea" rather than toxic chorea. Pathologists have called the invasion of the circulatory system by bacteria septicemia. The tendency is now to more definitely limit the term and call such a condition "bacteriemia." If this condition be associated with chorea, either etiologically or not, we have the condition which Dr. Sachs wishes to emphasize. But in this respect this form of chorea would differ but little, perhaps mainly in its clinical picture, from the chorea associated with what is called "Acute Articular Rheumatism." It is now generally conceded that acute rheumatism is a generic term covering many conditions associated with acute inflammatory joint changes; that the most of these are regarded as the result of an acute infectious process, some with known, as the tonsils, others with unknown portals of entrance. It is also a fact that endocarditis and chorea are accompaniments of this class of diseases, and likewise that in some forms a bacteriemia has been established. In some cases a diplococcus *tenius* and in others a streptococcus *tenius* have been recovered from the blood. The fact that in acute articular rheumatism, in which chorea and endocarditis may play a part, no bacteria have been isolated from the blood ought not to be considered to prove that no bacteria are present in the circulatory medium, but rather, reasoning by analogy, that thus far the cultural means at our command have been inadequate or insufficient to recover the offending organism. In the light of this view Dr. Sachs' cases might differ but little pathologically from the class of chorea associated with acute rheumatism—the clinical form, perhaps, being modified by the varying type and virulence of the invading organism.

We may say, however, that Dr. Sachs has established a fact—namely, that certain cases of chorea are associated with distinct bacteriemia. Dr. Brill does not understand that Dr. Sachs desires to establish a new form of chorea.

Dr. Sachs said he had not the slightest intention of trying to establish a new disease. His only idea was to place on record these very unusual cases, which he recognized as a special form of chorea associated with an intense general infection of which the chorea was the most prominent symptom. In some of these cases the infective agent was the staphylococcus, in others the streptococcus, or some other agent, and one object in keeping them apart was that in a therapeutic way it would help us to recognize them as very serious infections.

In reply to Dr. Dana's question as to the connection between this form of chorea and chorea *insaniens*, Dr. Sachs said that in recent years he had dropped the term chorea *insaniens*, and he did not consider it a very useful one from either a clinical or pathological standpoint. The term was applied usually to the more chronic forms of chorea, associated with mental deterioration, rather than to cases of acute origin associated with high fever.

Dr. Dana said he had seen cases of chorea *insaniens* which corresponded very closely to those reported by Dr. Sachs. A few of them had recovered. He could recall no good description of this type of chorea in literature.

Dr. Smith Ely Jelliffe said that some of Dr. Sachs' cases were typical cases of chorea insaniens, and that moreover there was an exceedingly rich and full literature from the appearance of Krafft-Ebing's studies on chorea insaniens in 1894 to the present time. The relations of choreic disturbance to post-microbic infections, in many instances, were established.

Dr. Sachs, in reply to Dr. Brill, said that in calling these cases toxic chorea he had not been guided entirely by his own view of the etiological factors concerned in their production. The symptoms were supposed to be due to a toxin, but whether always and distinctly bacteriemic or not he could not definitely decide.

At the annual meeting of the society in January the following officers were elected for the ensuing year: *President*, Dr. B. Sachs; *First Vice-President*, Dr. J. Ramsay Hunt; *Second Vice-President*, Dr. Smith Ely Jelliffe; *Corresponding Secretary*, Dr. Max Mailhouse; *Recording Secretary*, Dr. E. G. Zabriskie.

PHILADELPHIA NEUROLOGICAL SOCIETY

January 27, 1908

The President, DR. ALFRED GORDON in the Chair.

Dr. Weiss presented a patient from Dr. Spiller's service at the Philadelphia General Hospital with lateral movement of the foot in ankle clonus.

FRAENKEL TREATMENT OF TABES

By M. D. Bloomfield, M.D.

This paper brought out the points that the treatment should only be carried out by a physician who has had a good hospital training, who is thoroughly familiar with the disease and the status præsens of his case. The treatment can only be carried out successfully by one who has had a practical training from an experienced man, as the details of the treatment can only be acquired by practical assistantship. Dr. Bloomfield spoke of the loss of the sense of muscular fatigue in tabetics, a symptom not mentioned in text-books, and of the accidents (cardio-vascular hypotonias, spontaneous fractures, etc.) which could only be prevented or treated by a medical man; he also showed a man who was extremely ataxic when he first came under treatment last May, but who could now perform almost any movement.

Dr. T. A. Williams stated that the loss of sense of muscular fatigue in tabes is described by the French writers, of whom perhaps the most conspicuous one to record this fact is Dejerine. In regard to the mechanical treatment in connection with the education, Dr. Williams said that Faure of La Malon, an institution in the north of France, has worked a great deal recently at it and has written two papers on the subject, one of which was read before the French Congress of Neurologists in 1906, and the other was read at the Congress at Amsterdam last year, and a third paper was read at the Congress of Geneva last August, in which he advocates the supplementing of the education movements by mechanical supports in