

microbes varied in size from 0.6μ to 1.0μ in length and from 0.3μ in thickness. In the fourth series of inoculation with these organisms the bacillus tuberculosis was obtained.

Of course, experiments like the above depend entirely for their value on the answers which can be given to the following questions: Are inoculations into the subcutaneous tissue of guinea-pigs absolutely reliable? Is it certain that the inoculation of material which is non-tuberculous will not only never itself give rise to tuberculosis in the animal experimented upon, but also that there is no possibility that if the operation is performed by a careful observer with ordinary antiseptic precautions tuberculosis will not arise in direct relation to the seat of inoculation when the material which is the object of the investigation and experiment is non-tuberculous? Another question of less importance than the above should also be capable of an affirmative answer to render such experiments of value to the physician. Will the inoculation of tuberculous material in the great majority of cases, allowing for the possible and unavoidable errors connected with all such experiments, give rise to tuberculosis in such a form in the animal experimented upon as to allow one to say that it results from inoculation and is not a spontaneous tuberculosis? The answer to these questions must be left to the pathologist. It is evident, however, that the balance of evidence at the present time is strongly in favour of the affirmative answer to each of the above questions. We know that the results were questioned by many observers, amongst whom may be obtained in the old and valuable experiments of Villemin mentioned Lebert and Wyss,² Simon and Sanderson, Wilson Fox, Cohnheim and Fraenkel, and Waldenburg. These observers produced lesions which they regarded as tuberculous from the inoculation of the most diverse and varied pathological products, and even by the simple introduction of setons. These facts, however, are now almost matters of ancient history, as several of those named subsequently abandoned their position and believed that tubercle could only be produced by a specific virus.³ Comparatively recent experiments⁴ have shown that there was probably some fallacy in the experiments of those who concluded that products other than true tuberculous ones could produce tuberculosis. Where special precautions were taken against the contamination with tuberculous material, in the inoculations with non-tuberculous material negative results were obtained, tuberculosis not being produced. It appears, therefore, that such experiments need to be very carefully performed. It must be remembered that guinea-pigs are very susceptible to tuberculosis, and that when performing an inoculation experiment one must be careful not only that the material with which one is making observations is not accidentally contaminated with any tuberculous matter, but also that all knives and apparatus are thoroughly clean, and that the inoculation wound does not, subsequently to the operation, become inoculated with tubercle from any source.

The view at present held of the value of inoculation experiments for the purposes of diagnosis cannot, I think, be more concisely given than by quoting the conclusions come to by Professor Delépine, and which were communicated to the sixty-first annual meeting of the British Medical Association.⁵

"1. The inoculation method is a method of diagnosis capable of giving results free from any ambiguity. 2 The negative results obtained by it are nearly as valuable as the positive results. 3. The positive results give more definite information than the discovery of the bacillus tuberculosis. 4. Results should easily be obtained within two or three weeks." The last conclusion is one of much importance to the physician. In the case above recorded we obtained very definite results in twenty-one days after the inoculation; the animal was at that interval killed, and it was evident that it was markedly affected with tuberculosis, and that such had resulted from the inoculation. I think also that very little difficulty is experienced in agreeing with the remark made by Dr. Sims Woodhead⁶ in the discussion following the above-mentioned communication when he said that he was afraid that

the question of inoculation for purposes of diagnosis had been too much ignored in this country. It is specially with the object of calling further attention to the possible value of the inoculation of animals in the diagnosis of suspected tuberculous lesions that the above case is here recorded.

A CASE OF FRACTURE OF THE BASE OF THE SKULL.

By S. OSBORN, F.R.C.S. Eng. &c.

I VENTURE to publish this case because I believe it to be one of great interest: firstly, from a physiological point of view, in the symptoms which resulted from implication of the eighth pair of nerves, the post-mortem examination showing an extensive fracture extending some four inches and a half in length from the left cerebral fossa downwards and outwards to the anterior and inner part of the posterior lacerated foramen; and secondly, from a surgical aspect, in that a man could walk to his home, a distance of fully a mile, almost unassisted, with such an injury, get over four sets of palings, and on his arrival wash the wound and state that there was no occasion to send for a medical man. After the receipt of his injuries he was lifted upon his feet, and walked about with the idea of his soon becoming better. These facts were elicited at the inquest.

A man aged forty-seven years, to whom I was called at 2 A.M. on Aug. 27th, received in a *mêlée* at about 11.30 P.M. the previous day the following injuries: a lacerated wound one inch long over the left eyebrow extending down to the frontal bone beneath; also a very severe lacerated and contused wound at the back of the head, a portion of the scalp about the size of a shilling being punched clean out and the parts around being much bruised and contused. At the bottom of this wound the skull was exposed, stripped of its periosteum, to the same extent as the superficial wound, and the skull was fractured in an oblique direction downwards and outwards on the left side towards the base of the skull. There was no bleeding from either ear, but some from the mouth, which continued until six in the morning. On my arrival I found him in a semi-comatose condition, in which state more or less he remained for three days. He had passed his motions involuntarily in his trousers.

Aug. 30th.—The patient was able to give a fairly reasonable account of what had taken place. Some slight subconjunctival hæmorrhage showed itself in the left eye, which disappeared completely in two or three days.

31st.—He was seen by one of his friends to-day, whom he recognised and conversed with.

Sept. 1st.—The patient was not so well to-day. He was troubled with much hiccough, which continued without intermission for three or four days. He complained of neuralgic pains extending round both sides of the lower jaw, and of some stiffness of the muscles at the back of the neck, more especially in the upper cervical region. When his head was moved to dress the wound at the back of his head he always complained of acute pain, more especially in this region. He had no difficulty in swallowing; there is no loss of voice. Teaspoonfuls of essence of beef were given him every half-hour, and he took beef tea besides.

3rd.—To-day the man was not so well; he was restless and somewhat excited. He hardly slept at all last night. There was some conjunctivitis of the right eye, supposed to have been due to his having thrown the contents of his bed urinal over himself.

4th.—The patient's sister arrived to-day. He recognised her and was pleased to see her.

5th.—His bowels had not been opened since his accident. Purgatives and enema were given, and after some trouble they were opened by a copious evacuation in the bed, of which he was unconscious. The conjunctivitis of the right eye has disappeared. He rambles at times and counts figures. He got out of bed while delirious and sat in a chair.

6th.—He was comatose and unconscious even when roused, being feverish and bathed in perspiration. The temperature was 102.4°F . He passed his urine involuntarily in the bed. He was in such a critical condition that I informed the police by letter; a magistrate's clerk came the same night, but I considered it useless his attending at the man's bedside.

7th.—He was better to-day, but was still feverish and fancying he saw things on the wall.

² Virchow's Archiv, Band xl., 1867.

³ See Cohnheim, Vorlesungen, Allgemeine Pathologie, 1877, Band i., p. 609, and Die Tuberculose vom Standpunkt der Infektionslehre, Leipzig, 1880, pp. 12-13. Wilson Fox, Treatise on Diseases of the Lungs and Pleura, p. 502.

⁴ Dawson Williams, THE LANCET, Dec. 8th, 1883, and Brit. Med. Jour., Dec. 8th, 1883, and Transactions of the Pathological Society, London, vol. xxxv., 1884; Watson Cheyne, the Practitioner, 1883. See also Deutsche Medicinische Wochenschrift, 1882, Band viii., p. 206.

⁵ On the Value of Experimental Tuberculosis in Diagnosis, by Sheridan Delépine, M.B., Brit. Med. Jour., Sept. 23rd, 1893.

⁶ Brit. Med. Jour., 1893.

9th.—All fever had left him and he was quite conscious. In the afternoon he was able to give a perfectly clear account of all that had occurred at the time of his accident to the sergeant of police who came to take his statement. During the last two days he had complained of some pain at the lower part of his spine, extending round the pelvis, and pain in moving the lower extremities. There was no loss of motion or sensation in his lower limbs; but he was unable to make his right hand act in unison with his left—namely, to bring a pencil in the right hand in contact with a book held in the left,—which was probably due to distorted vision. The pain in his legs, he said, would be better if I would allow him to have an ice-bath. When unwatched he took one of the icebags from his head and threw its contents over himself, and he said it had quite relieved the pain. A magistrate, with other persons, attended late at night, but he was then sleeping, and I did not consider it advisable to allow him to be interviewed and thereby become excited.

10th.—The patient was seen to-day by Mr. Holderness on behalf of an insurance company, and to him he was perfectly clear in his statements. There was some tendency to bed sore on the buttocks.

12th.—I noticed that a little dried blood was present in the left ear. To all appearance the man was going on well. He was somewhat childish in his talk at times, leading me to fear that even if he recovered from the immediate effects of his injuries he would have softening of the brain and deficient intellect. His bowels not having been opened since Sept. 5th, I gave him a drop of croton oil in a teaspoonful of castor oil. He objected strongly to the taste and asked for something to take the taste out of his mouth. The bowels were freely opened without his knowledge in the bed, but yet he was sensible enough to object to such an unpleasant occurrence. During the day he asked me to allow him some beer, of which he said he had “some good bottled beer downstairs,” to which I gave consent, but substituted lemonade. He said, after drinking it, “It was very good beer,” and asked for more, sucking the lemonade to its utmost drop from the feeder.

14th.—On the whole he was in much the same condition, except that he had some slight cough and difficulty in breathing. In the evening a magistrate attended with the supposed assailant to take his depositions. Probably as the result of distorted vision or deficient vision in the left eye, the patient looked towards me, as I was on his left side, so as to bring his right eye in a line with the accused, who was standing at the foot of the bed, just as a man blind in one eye invariably does. This looking in my direction gave the impression that he identified me as his assailant when he made the remark, “That is the man who struck me.” After this it was not thought advisable to proceed with the depositions, although the patient repeated what he had formerly said, and added, “the man who went out last was the one who struck me,” the accused person actually being the one to leave the room last.

15th.—The patient died at 1.45 P.M., passing away quietly in his sleep, an icebag to the top of the shaved head and another to the nape of the neck having been kept on throughout the whole period of treatment.

17th.—A post-mortem examination, ordered by the coroner, was made at 11.45 A.M. to-day. Decomposition was greatly advanced. On removing the cranium a large amount of blood was found beneath the dura mater, almost entirely on the right side. An extensive fracture, four and a half inches long, was found on the left side of the occipital bone, extending from the left cerebral fossa downwards and outwards to the anterior and inner part of the posterior lacerated foramen. A large amount of old blood-clot was found above the right orbit in the anterior fossa, and the brain (that part known as the right anterior lobe), lying above this clot, was softened and disintegrated. The remainder of the brain was healthy. The heart and lungs were healthy, the latter being somewhat dark and congested. There was a superficial abrasion of apparently recent date over the left patella. There was an ommental hernia on the left side.

Remarks.—The hiccough, lasting for three days, the partial loss of taste, the severe pain at the back of the neck, and the constipation all point to the glosso-pharyngeal, the pneumogastric and the spinal accessory nerves as being each more or less implicated. It is worthy of notice that the pulse continued to be good throughout, and that there was no loss of voice or difficulty in swallowing. The old blood-clot adherent to the right anterior fossa and the bruising and subsequent softening

of the right anterior lobe of the brain were the results, I believe, of *contre-coup*, it being on exactly the opposite side of the skull to the injury, and the actual cause of death was the gradual pouring out of blood between the brain and dura mater. The bleeding which occurred during the first hours after the accident was in such small quantity that it could not have come from the left jugular vein, but was probably due to the injury on the right side of the brain, the blood finding its way down into the throat through one of the foramina on that side, and which stopped owing to the formation of a clot; subsequently the blood, still being poured out, collected where it was found at the necropsy—namely, between the dura mater and the right half of the brain. In my opinion the wound over the left eyebrow was occasioned by a blow from the fist, which stunned the patient and brought him to the ground, and that when lying there he was kicked with great violence, the upward kick carrying away the punched out portion of the scalp.

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A SPREADING VARIETY OF NERVE DULNESS.

By W. HENRY KESTEVEN, M.R.C.S. ENG.

AMONG the most common causes of mental disorder perhaps the most frequent is that of worry, which, as I have elsewhere shown, is simply another form of overwork. Overwork and overstrain of any organ are pernicious in their effects upon that organ. Many and various are the ways by which the nervous system can be overstrained or worried. The result of such is deterioration, qualitative if not quantitative in character. More especially in the present days of fast or rapid living is this the case. Consequently there is more nervous disorder, more mental morbidity, than in days past, when life's stream flowed along with greater placidity. Nowadays, in order to hold his or her own an individual must more or less strain the powers, both of mind and body. Whether in the generations to come there will be increased capacities and powers, whether the race will be able to meet this increased strain, or whether the strain will exceed the powers, remains to be seen. It is a battle—a battle which is not unlike the strife between the guns and armour of modern warfare. To attempt to prognosticate which will win is futile, for time only can show. If one can judge from time past natural selection and the other powers of the evolutionary process will be competent to accomplish the work; but in the process what destruction must take place and how many must fall victims. Has it not always been so? In order to produce the present existing types of life who can say how many types have disappeared—

“From scarp'd cliff and quarried stone,
She cries, ‘A thousand types are gone.’”

And by the same law multitudes yet must

“Be blown about the desert dust,
Or sealed within the iron hills.”

One of the earliest phases of nervous deterioration thus produced is seen in what is best called “nervous dulness.” Under the above-mentioned influence this affection may be congenital or it may develop during the lifetime. It may be shown by a condition little short of idiocy, or if it be limited to separate parts of the nervous system it may result in deafness, blindness, or any other form of nerve incompetence; or it may be that the entire nervous system suffers in this way, and it is this condition especially which comes under the notice of those to whose lot it falls to deal with cases of incipient nervous disorder. This hebetude of the mind is characterised primarily by its most evident symptom—namely, loss of memory. This is the outward and visible sign, but it is only a sign. The real fault lies in an intrinsic dulling of the faculty of forming perceptions from the impressions derived through the senses. It is in all points parallel to what is seen in old age, the period at which a man has found that there is very little worth noticing in life, and therefore passing events come and go without being recorded on the mental tablets, while things of the past, when life was life to him, still remain vividly impressed. In reality there is no loss of memory—there is loss of the power of attention. When, instead of occurring physiologically as a concomitant of advanced life,