

so sure as the system is not fortified by management or tonics, by medicine other than quinine.

CASE OF TRAUMATIC TETANUS TREATED BY MEANS OF THE CALABAR BEAN.

By WALTER E. ANTHONY, M.D., of Providence, R. I.
GEORGE J. B., an engineer, 32 years old, was standing beside a steam fire engine, at 1 o'clock, A.M., Tuesday, September 19th, when the boiler exploded. He was thrown violently to the ground, the machine falling partially on him. I saw him twenty minutes after the accident, and found, upon examination, a compound comminuted fracture of the right arm at the upper third; a fracture of two ribs on the right side, and several cuts about the head and face.

He was removed to his home, and his wounds dressed. It was found that the fracture of the arm was in an oblique direction, involving the whole attachment of the pectoralis major, which, acting upon the upper fragment, tended to draw it in toward the body, thus rendering it very difficult to keep in position. The arm was put up in a tin splint, made to fit it, and extension applied by means of a weight attached at the elbow.

Until Saturday night, five days, he was unable to pass water, and was obliged to have a catheter introduced twice a day. His bowels were moved by means of injections. Saturday night, he passed his water without assistance, and continued to do so. His pulse, which, on the morning of the accident, was 104, had gradually sunk to 70, where it remained until Friday, the 30th, eleven days after the accident. Friday morning, he began to complain of stiffness of the jaw, which continued slightly until night. About 12 o'clock, it began to increase, so that by morning deglutition was almost impossible. Gave him calabar bean, fl. ext., $\mathcal{M}\mathcal{V}$, repeated once in two hours, which was increased, in the morning, to $\mathcal{M}\mathcal{X}$.

At 12 o'clock, as he was unable to swallow, I ordered injections of beef tea with brandy to be given, and repeated in four hours. Jaws were firmly set.

Gave hypodermic injection of morph. sulph. $\frac{1}{4}$ grain. 10, P.M.—Increased the dose of calabar bean to $\mathcal{M}\mathcal{XX}$; saw no effect at all from the use of it. Water passed involuntarily.

Sunday, Oct. 1st, 7, A.M.—Patient able to converse, could swallow with difficulty, gradually grew worse from 8 o'clock. At

10 o'clock, he had opisthotonos, and spasms of the diaphragm. He retained his senses until about 12 o'clock. He died at 2 o'clock, P.M. His jaws were firmly set, and the muscles of the abdomen were rigid.

Autopsy, eighteen hours after death.—I was allowed to make an examination of the arm only. I found considerable infiltration of blood. The fracture was oblique, extending from the outer portion of the head of the humerus downward. The upper fragment measured three and a half inches in length.

The bone was comminuted. No lesion of the nerves could be discovered.

During the progress of the disease, the calabar bean was used without any apparent effect.

The preparation used was the German fluid extract, procured from Theo. Metcalf & Co., Boston. The dose set down in the Pharmacopœia is five minims. This was increased to twenty, without any effect. The injections of sulphate of morphia relaxed the spasms for a short time, but they constantly returned with greater severity.

A CASE OF ECTOPIA CORDIS.

By Dr. NEUMANN SCHLESSINGER. Translated from the Proceedings of the Berlin Medical Society, by HENRY TUCK, M.D., Boston.

The anterior displacement of the heart, entirely outside of the walls of the thorax, without any complication or other deformity, is very rare. I have found only six cases of this sort on record. The first, observed by Martinez in Madrid in 1706; the second, by Büttner in Königsberg in 1745; the other four by Sandifort, Haan, Albers, Monod and Cruveilhier.

Ectopia cordis in connection with other deformities, such as extrusion from the body of some one or more of the abdominal organs, has been much oftener reported.

The rare case here reported is uncomplicated ectopia cordis.

The child to which this heart belonged, and which I showed this Society at its last meeting, was born March 3d, 1870, of a healthy mother 24 years of age. I saw the child ten minutes after its birth. The child was well developed, and, when first born, made three or four gasping inspirations, but when I saw it had ceased to breathe.

The heart lay entirely free upon the centre of the sternum, horizontally across the body, its base towards the left and its somewhat rounded apex towards the right. It had no pericardium. Upon the heart, not

far from its apex, was a short, reddish-white projection, eight millimetres (one third of an inch) in length. The heart was in active contraction. At first there were 64 contractions in a minute; after half an hour there were 18, and in an hour and a quarter they had entirely ceased. The systole always began with the contraction of the auricles; then the contraction of the ventricles followed, so that the end of the contraction of the auricles was synchronous with the beginning of the contraction of the ventricles. Before the ventricles were quite contracted the auricles relaxed, then the ventricles relaxed, and now both auricles and ventricles remained for a time dilating, always exactly repeating the same process. As regards the change in shape of the heart during contraction, there was also to be noticed, with the decrease of the diameter of the heart from side to side and increase of its length (as has been shown by vivisection in physiological experiments), a difference of length of the two ventricles; the left ventricle lengthened during the systole, while the right showed some shortening.

In answer to the question if there is any great value, physiologically, to cases of ectopia cordis, it must be freely admitted that the condition of the heart is not its normal one; but still the opportunity to observe the human heart directly while it is in action is not to be neglected. Martinez, Sandiford, Monod and Cruveilhier had this opportunity in their cases of ectopia cordis, but the latter only made any accurate report of his observations. Cruveilhier observed that the heart shortened its long diameter during contraction; while on the other hand Hering, in the case of a calf which lived with ectopia cordis ten days, reported it as lengthened. The cases seen by Harvey, Portal and Bamberger were those where, owing to abscess of the thorax, caries of the rib, or a wound, the heart could be seen or felt, but only partially. Other cases are recorded where, though the skin was entire, yet owing to fissure of the sternum, or some defect in the ribs, the heart's movements could be seen.

In the case seen by me, the difference in length during the systole of the right and left ventricles can be explained by the difference in the arrangement of the muscular fibres in the two ventricles. The circular and spiral fibres are much more numerous than the longitudinal fibres in both ventricles; but in both men and animals the right ventricle has a much larger propor-

tion of longitudinal fibres than the left. I think that this was the case in the heart of this child. This could not have been determined without injuring the heart so much as to spoil it as a preparation, and it had already been given to the Pathological Institute. If I am correct in this opinion, then it follows that during the systole, owing to the preponderance of longitudinal fibres, the right ventricle shortens, but the left, owing to the preponderance of circular fibres, lengthens. It is not impossible, owing to the different arrangement of the fibres found in different hearts, that the change of form during the systole is not always the same. Finally, it is evident that the object in view, the emptying of the ventricles, is accomplished in either case, whether by circular pressure or by pressure longitudinally from base to apex.

This also explains the fact that in healthy persons there is found much difference as regards the place where the heart's impulse is felt, much greater than can be accounted for by variations in muscular development and adipose tissue.

The *post mortem*, made by Prof. Virchow, showed a patent foramen ovale and a defect in the septum ventriculorum. It is not probable, however, that these had any material effect on the action of the heart.

There were, besides, two *venæ cavæ superiores*, which as it is worth remark have always been found in cases of ectopia cordis where a careful examination has been made.

As regards the development of this abnormal condition of the heart, it must be remembered that, at a certain point in its development, the heart lies free and is not enclosed by the thorax. Later, the thorax and abdominal walls grow up from both sides, approach nearer and nearer together, and finally enclose the heart.

It is impossible to say with certainty, of course, that in this case some mechanical movement of the heart, before this closure of the thorax, threw it out of place, but still it is possible that the reddish-white projection, already mentioned, near the apex of the heart, a remnant of a fibrous band, may have held the heart firmly at some embryonic period of its development and prevented its being enclosed by the thorax.

DR. J. J. GILTENAN, of Cincinnati, sailed from New York, Nov. 16th, for France, to join the Anglo-American Ambulance Company.