enucleation were made. The cyst wall was stitched to the abdominal wound, and a large drainage-tube was inserted. The subsequent history was marked by rapid diminution in the amount of fluid discharged. Three weeks after the operation a specimen was sent to Dr. Whitney which possessed all the characteristics of pancreatic fluid.

In the surgical treatment of pancreatic cysts the important question to be decided is between drainage and radical removal of the sac. In two previous cases reported by the writer, drainage in the manner described above proved effectual. In one² the discharge grew gradually less, and the wound became perfectly healed in a few months. A second³ healed perfectly; but a year or two later the cyst reappeared, and proved fatal. A second laparotomy was performed⁴ for symptoms of acute intestinal obstruction due to pressure upon the duodenum by the re-filled sac. At the autopsy a large opening was found between the cyst and the stomach. The cause of death was acute obstruction. A third case, referred to me by Dr. F. C. Shattuck,⁵ though of doubtful pancreatic origin, was cured by complete extirpation of the cyst. The patient, a child of thirteen months, referred to Dr. Shattuck by Dr. Bowers of Clinton, had had a tumor in the abdomen since birth at seven months. The tumor rapidly increased in size, and embarrassed both circulation and respiration. The whole abdomen was filled by a fluctuating tumor, apparently arising from the left, supposed to be a hydronephrosis. The tumor was dissected from its attachments back of the peritoneum in the pancreatic space. There were numerous large vessels supplying it, and it was crossed by the splenic vein. The tail of the pancreas was spread out over the anterior wall of the tumor. Seven pounds of fluid were removed. Drs. Fitz and Whitney reported the tumor to be of retroperitoneal origin, and congenital. More detailed examination showed true pancreatic tissue in the cyst wall. My own observations convinced me that the pancreas was involved only by pressure from behind. The child made a good recovery, and has grown up into a very robust boy.

In this case enucleation was rapid and easy. By avoiding the splenic vein and by tying the pedicle *en masse*, no hemorrhage ensued.

In the fourth case, reported above, attempts were made to remove entirely the cyst wall. The difficulties met with early in the attempt led to its abandonment, and the usual practice among those who have operated for this condition was followed.

Recently a case has been reported⁶ in which the whole cyst was successfully enucleated. That such a method is preferable, if safe, is doubtless true. Yet if the cyst is a dilatation of the canal of Wirsung, it is evident from the excessive discharges during the first few days after drainage that the digestive processes will lose permanently a large amount of pancreatic fluid by the method of total extirpation. Numerous observations show that complete healing takes place

after drainage in most cases, and that the danger from this method of treatment is slight. It seems, therefore, well to follow this method generally. If the cyst can be easily separated from its attachments and thoroughly extirpated without excessive hemorrhage, it seems best to attempt such a procedure, in view of the possible re-accumulation of fluid, with its remote dangers, as in the second case cited. The attempt at enucleation should be abandoned, however, as soon as it is evident that the cyst is so thoroughly incorporated with the surrounding pancreatic tissues that it can be separated only by cutting.

In the case reported above the diminution of discharge has been rapid, and the general improvement has been marked. Nine weeks after operation I found the cavity of the cyst obliterated, nothing remaining but a sinus through which a probe could be passed nearly to the bodies of the lumbar vertebrae.

FRACTURE OF THE HUMERUS FROM AN UNUSUAL CAUSE.¹

BY G. H. MONKS, M.D.

A WELL-BUILT and apparently healthy man, aged twenty-seven, entered the Boston City Hospital August 8, 1894, having sustained a transverse fracture of the right humerus, just below the insertion of the deltoid. The patient had first been seen by Dr. John Gillespie of Roxbury, who recommended him for admission to the hospital.

The following is the history of the injury. The patient, C. C., and a friend of his were testing their strength of arm by that well-known method of grasping right hands, palm to palm, over a table, and while the elbows rest upon the table each tries to push his opponent's hand down. I do not know of any English name for this sport, but Hamilton says that the French call it "tourner poignet," or the game of turning wrists. The illustration shows the position taken by the contestants in this sport. The elbows should, however, perhaps be a little nearer together than is shown in the photograph, so that the forearms may be more nearly parallel.

C. C. and his opponent were both exerting considerable force, and for a time neither seemed to gain any advantage, until, finally, C. C. began to push his adversary's hand down. At this moment the adversary

¹ This paper will appear in the Boston City Hospital Medical and Surgical Reports, Sixth Series.

² Boston Medical and Surgical Journal, January, 1892, p. 86.

³ Ibid., January, 1891, p. 111.

⁴ Ibid., May, 1892, p. 441.

⁵ Published in the Transactions of the American Surgical Association for 1882, p. 211.

⁶ Sharkey and Clutton: St. Thomas Hospital Reports, xxi, p. 271, 1893.

made a sudden effort to regain his position, using all his force, when with a snap, so loud that it could be heard all over the room, C. C.'s humerus broke, and his arm fell helpless upon the table.

As to the subsequent history of the case there is nothing noteworthy. The arm was immobilized in the usual fashion in coaptation splints, shoulder-cap, etc., and in the course of six weeks the fragments were firmly united without deformity, and soon after this the arm appeared to be as strong and useful as before the accident.

Several cases of fracture of the humerus during the carrying out of the above form of sport have been recorded, but so few are they as to justify the publication of each new case. Hamilton states that he has seen one case of the kind, and refers to six or seven others which he has found recorded. Stimson ("Treatise on Fractures") mentions the fact that Gurlt gives eleven cases of the sort. It is probable that some of Gurlt's cases are included among those mentioned by Hamilton.

The mechanism of a fracture of the humerus from the above cause is interesting. Apparently the break is occasioned mainly by a twist, or torsion of the shaft of the bone. While the muscles of the upper end of the bone are attempting to rotate the bone inward, the adversary's force (transmitted through the bones of the forearm to the lower end of the humerus) tends to rotate it outwards. The upper end of the bone is therefore forcibly rotated inwards and the lower end is rotated outwards. It is thus evident that when these two opposing forces are great enough, and the other parts do not give way, the bone must break by extreme torsion somewhere between the two extremities. This must be especially true when the fracture occurs while the forearm is flexed at a right angle on the upper arm. When, however, the shoulder is brought much nearer to the hand, as is often the case during the greatest efforts, and a fracture occurs, another element probably comes somewhat into play, and the bone breaks by a combination of torsion and outward bending. Torsion still remains, however, the principal mechanical factor in causing the break.

While the etiology of this fracture is undoubtedly muscular action, it seems to be a rather unusual form of it, and the break might be described as one due to torsion of the shaft of the humerus, caused by prolonged muscular action against resistance suddenly and unexpectedly increased.

In closing, I wish to say that careful investigation was made respecting the existence of syphilis in this case, with negative result. There was also no evidence of the presence of fragilitas ossium.

Medical Progress.

RECENT PROGRESS IN PATHOLOGY.

BY W. T. COUNCILMAN, M.D.

(Concluded from No. 11, p. 258.)

WOODHEAD in a lecture on the present state of our knowledge of the etiology of carcinoma, gives a critical review of the most prominent articles on the subject. He comes to the conclusion that in many of the rapidly growing carcinomas, coccidia may be present in great numbers. In others growing more slowly they are less numerous. There is no proof that these organ-

isms are the actual cause of the disease, and it is possible that infection with the parasites is favored by weakening of the life energy of some of the epithelial cells, so that they cannot oppose the entry of the parasite into them.

Ruffer, in a number of publications, gives a study of the cell inclusions in carcinoma. In his investigations he usually used Biondi stain. Ruffer and Plimmer investigated principally the carcinoma of the breast, in which the parasites were found to be more frequent than in the same tumors originating elsewhere. They think that the parasites of other species of carcinoma present a striking similarity to those of the breast, and that they may be varieties of the same species. The more rapid the growth of the carcinoma the more abundant were the parasites. The bodies described by Ruffer as parasites have much similarity with the descriptions of other authors, particularly with Foa. They regard the structures as described by Darier and Wickham as altered epithelial cells, leucocytes, etc. Pfeiffer has also studied the parasites of carcinoma. He thinks that many cells, which have up to the present been regarded as tissue cells, should be considered as parasites. Where there was a growth of carcinoma into striated muscle, he thinks that the cells found within the muscular fibre were neither due to proliferation of the muscle cells nor were cancer cells which had entered into the muscle, but should be regarded as parasites. He assumes that the parasites at a certain stage can take on forms which are very similar to the tissue cells and which he regards as forms of zoospores. In the warm stage slow ameboid movements can be recognized in them. In sections he found nuclear figures in these supposed parasites of the same character as those found in the carcinoma cells. He thinks that the supposed small-cell infiltration of the stroma surrounding the carcinoma alveoli is due to the wandering of new zoospores in the tissue. Adamkiewicz has the same view. He thinks as Pfeiffer, that the carcinoma cell is not a cell of epithelial origin, but a parasite. He implanted small masses of carcinoma in the brain of rabbits, and found that the animal soon died, from which he concludes that the carcinoma has a specially poisonous character which is due to a toxine produced by a parasite. As is well known, he made various attempts to heal carcinomas with a material derived from them, which he called *cancroidin*. The animals experimented on died of meningitis and encephalitis.

Geissler and Kopstein repeated the experiments of Adamkiewicz in a careful aseptic manner, and found that pieces of tumor could be implanted in the brain without producing any results. Korotneff describes structures in the carcinoma as parasites, which are entirely different from the structures described by other authors. He distinguishes two stages of development, in one of which the parasite appears as an actively moving ameba, and in the other this has divided into secondary spores.

Numerous authors have taken a different ground as to the nature of these bodies. Malassez, who was one of the first to believe in the presence of the sporozoa in carcinoma, in a later publication takes a very reserved position. Delépine, although he thinks there is much similarity between certain forms of the supposed carcinoma parasites, and the young coccidia in the liver of rabbits, finds on the other side such great differences between them that there can be no thought