

over the crest of the tibia would seem a strong argument against the operation in this class of cases, and a fracture by lateral pressure would require a great amount of manipulation of the bone and disturbance of the soft part. It has seemed to me that a cuneiform osteotomy was the better operation, and really to necessitate less injury to the muscles and tissues about the bone. Dr. E. H. Bradford, of Boston, however, uses the osteoclast for this description of curves, and thinks well of it. That the fracture is not as simple as when the instrument is applied laterally is shown by the comminution in Porter's<sup>1</sup> case. Sharp curvature near the joint should be corrected by a linear osteotomy. The danger of injury to the lower epiphysis of the tibia is great if one of the points of counter-pressure is directly on it.

The same remark applies to sharp curvatures just below the knee joint.

In regard to the age at which osteoclasis should be performed, I think it is a question to be decided by each operator for himself. Fracture of the long bones in children is a trivial affair. The pain after it is not great, and by the following day they are as merry as though nothing had been done. In some cases, while the bones are quite soft, the deformity can be corrected by simply bending the bones with the hands and then putting the limb up in a plaster-of-Paris splint. If restitution can not be accomplished by this means, it must be left to the surgeon to say whether an attempt shall be made to correct the curvature by splints or by an osteoclast. In children over four years of age I think, as a rule, ap-

<sup>1</sup> *Loc. cit.*

paratus is useless. In hospital practice I always fracture as soon as I am satisfied that the bones are moderately hard. I have never met with any return of the deformity after an osteoclasis, and in appropriate cases the correction is perfect.

In 1879<sup>1</sup> an apparatus was presented, at a meeting of the Société de Chirurgie de Paris, for the correction of genu valgum, devised by M. Collin. Its purpose was to produce a separation between the epiphysis and diaphysis at the lower end of the femur, thus substituting instrumental in the place of manual force in Delore's operation. It consisted of two semicircular collars or crutches, to be applied, one to the middle of the thigh and the other to the inferior third of the leg, from their posterior aspect, and separated by a frame movable at right angles to their long axis (*porte-à-faux*) by a lever, by which force is brought to bear upon the knee joint from within outward. This portion is provided with a well-padded plate placed on the inner side of the knee. These two semicircular collars are supported by two iron rods, sliding in a steel groove, in order to adapt them to different limbs. A movable part, worked with a long stem acting as a lever, draws the knee outward, while the two collars indicated above hold the limb firm. In order to prevent rotation of the leg, the patella is held by means of a concave pad, which is set between two uprights and moved by a screw, so as to be raised or lowered at will. The whole apparatus is mounted upon a thick piece of wood which is made very solid (Fig.

<sup>1</sup> "Du genu valgum et de son redressement par l'appareil Collin." Braye, "Thèse de Paris," No. 472, 1880.

45). The power is applied by means of the long lever, which draws the movable portion outward with great force. It has been demonstrated on the cadaver that in all cases the separation takes place invariably be-

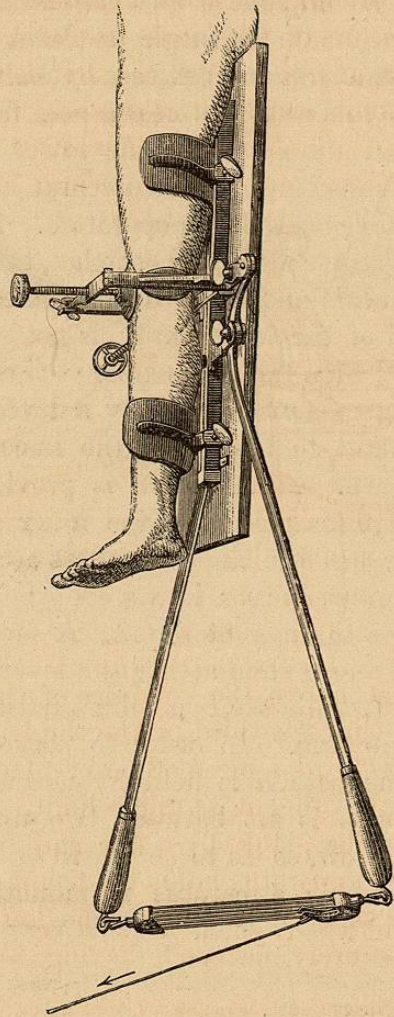


Fig. 45.

tween the epiphysis and diaphysis, without any injury to the ligaments or the joint. In five limbs on which the apparatus was used, in patients varying from six to fifteen years of age, the result was excellent.

In 1882, Robin,<sup>1</sup> of Lyons, exhibited a new osteoclast for fracture of the lower end of the femur. It consists (Fig. 46) of an iron case extending half-way around the thigh, on its anterior aspect, from a point a

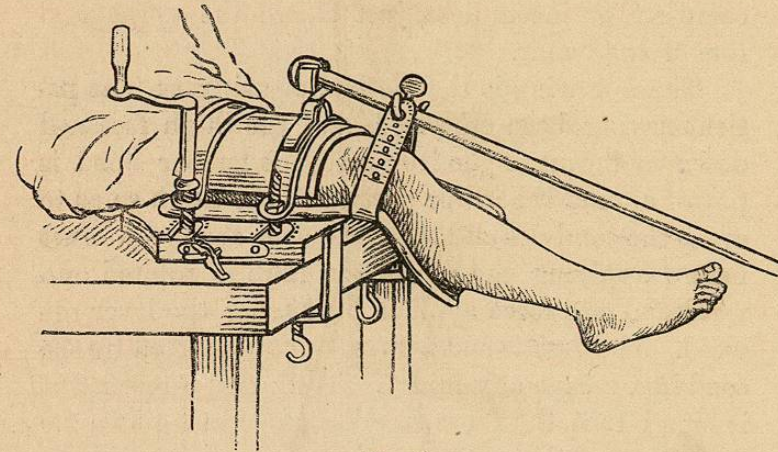


FIG. 46.

short distance above the condyles of the femur upward to the superior third of the thigh. Two steel collars bind this to a piece of heavy plank—the one at its lower, the other at its upper limit. Each collar is fastened to the plank by a nut and screw. This portion of the apparatus holds the femur secure. To the upper or superior portion of the lower collar an upright is securely fastened, having a slot at its

<sup>1</sup> "Lyon méd.," March 26 and April 2, 1882.

upper part at right angles to the collar and parallel to the long axis of the limb. Into this slot is fitted one end of a lever, which extends down over the leg. A strong leather strap, large enough to surround the thigh just above the condyles and pass around the lever, completes the apparatus. It is evident, when the osteoclast is adjusted, that the lever will act, when pulled upward, as one of the second order where the weight is between the fulcrum and power. The object is to cause a transverse fracture, either complete or incomplete, just above the epiphyseal line of the femur.

The following is the method of using it: The patient having been etherized, and the thigh fastened down by means of the iron case, the leather band is placed around the lower portion of the thigh so as to grasp the condyles and then pass over the lever. Just before applying the power the limb is rotated outward and the force applied by forcing the lever upward. The vessels and nerves, being protected by the condyles, escape any injury. With this osteoclast it is found that the fracture takes place just above the condyles, and that the correction of the deformity can be readily made. Robin is reported by Delarue<sup>1</sup> to have collected eighty-three cases operated with success. In many the operation was followed by effusion into the knee joint. The time required to obtain firm consolidation was from four to eight weeks. I have had no experience with either of these instruments. Their use has been so limited that but little is really known of their merits in this country. Dr.

<sup>1</sup> "Du redressement du genu valgum." "Thèse de Paris," 1884, No. 184, p. 49.

E. M. Moore, of Rochester, has used this instrument in a case of deformity at the knee joint.

This osteoclast, with slight modifications, has been used to rupture an ankylosed knee joint.

#### ILLUSTRATIVE CASES.

CASE I.—George Mc., six years of age, admitted into St. Mary's Hospital for children in May, 1882,

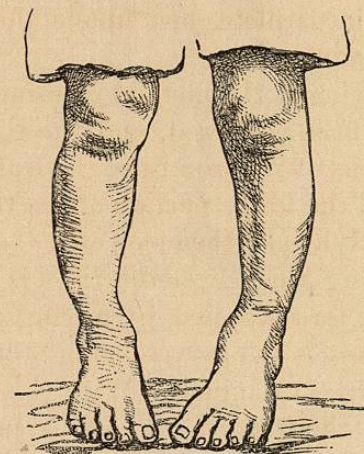


FIG. 47.

with lateral curvature of the bones of both legs of rachitic origin. He is a well-developed boy, and in excellent condition. Fig. 47 is from a photograph taken shortly after admission into the hospital.

May 15, 1882, osteoclast was performed upon both limbs, the pad of the instrument being placed on the outer aspect of the limb at the point of greatest curvature. After fracture the limbs were put up in plaster-of-Paris bandages in a straight position.

Patient did not complain of much pain after the influence of the ether had passed off, and at no time did his temperature rise above the normal.

June 14th, splint removed and union found to be

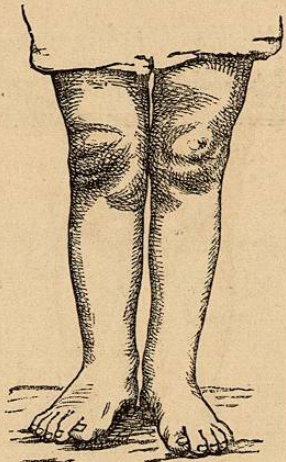


FIG. 48.

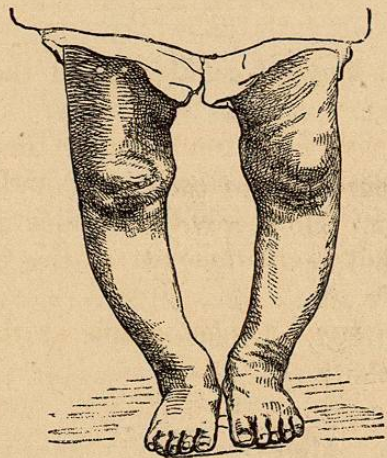


FIG. 49.

firm, and the limb in a good position. He was allowed to get up. Fig. 48 is from a photograph taken at the time of his discharge.

CASE II.—Ada R., three years of age, admitted into St. Mary's with rachitic curvature of both

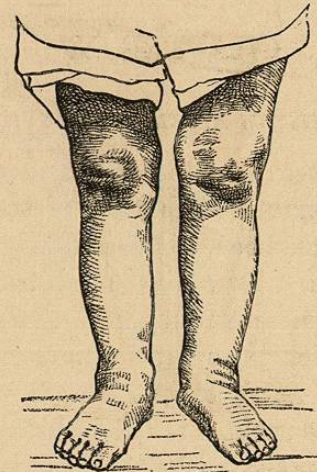


FIG. 50.

legs. She is in good condition, and the bones are quite hard.

Fig. 49 shows her condition at time of admission. Osteoclasis was performed on both limbs. They were put up in a plaster-of-Paris splint in a straight position. They were removed at the end of four weeks.

Fig. 50 is from a photograph at time of discharge.