

should never be forgotten that a stump is a locomotive organ, as well as a weight-carrying organ, and will have to swing and control an artificial limb often as heavy as 7 lb. It is also of advantage to get a substantial boss of soft tissue over the end of the bone. Even if atrophy takes place under muscle pull or from the pressure on an end-bearing stump, the residuum is something to the good. In my opinion an effort should always be made to get a stump that will stand the pressure of the body weight. Even if this may not be urgently required, as in a short thigh stump, it has certainly two advantages—it shares the body weight with the tuber ischii, and, from the sense of firmness and compactness it gives the man, he has a better control over his artificial limb.

The normal heel is the ideal stump. It is dome-shaped; it is covered with true skin, which thickens and hardens with use; it has a boss of fat, honey-combed with connective tissue, and it has a dome-shaped bone-end covered with periosteum. Every amputation should aim at giving a stump having these characters.

After all vessels have been tied, a purse-string suture is stitched round the free edges of the periosteum, and then tied in such a way as to cover the end of the bone completely.

If boat-shaped vulcanite buttons are not available, rubber tubing can be used and button-sutures prepared by the theatre sister. These consist of two silkworm-gut sutures knotted through a piece of rubber drainage tube 1 in. to 1½ in. in length and the size of a slate pencil, or through the vulcanite boat-shaped buttons.

If rubber tubing is used, the silkworm-gut threaded on a needle is passed through the substance of the tube near its cut end, and then along the lumen of the tube to about the centre of its length. The needle is then made to pierce the tube and emerge on its outside. The other silkworm-gut suture follows a similar route from the other end of the tube, and then the two ends are knotted with a reef knot on the outside of the tube at its centre.

This double silkworm-gut suture thus prepared is now inserted in the lower flap about 1 in. or 1½ in. from the skin edge, staple fashion, with the tube parallel to the line of incision, and the ends are then carried through the anterior flap about 2 in. or 2½ in. from the skin incision. The ends are then threaded through a piece of tubing (b) similar in length and size to its mate (a), but having an eye cut out of its middle by the scissors, through which the ends of the silkworm-gut are made to

emerge from the lumen of the tube after having been passed through either end.

The ends are then knotted after the flaps have been compressed well in apposition, and the skin edges are then sutured in the ordinary way, a small drainage tube being placed in one angle of the wound. The whole wound and the buttons are then sprayed with iodine, and the stump bound upon a Gooch splint.

These button-sutures keep the flaps in apposition and prevent sagging. They also prevent oozing of blood between the flaps and the formation of a miniature hæmatoma. They thus tend to prevent hæmorrhage by the pressure which the flap surfaces are made to exert against each other. But their great virtue is that they defy the results of suppuration. The skin underneath the buttons may, and sometimes does, ulcerate at the point of passage into the skin of the silkworm-gut, but in my experience the skin has rarely given way, or failed to support the pressure of the buttons in such a manner as to allow the flaps to part. The skin has thus no tension to bear, and the edges readily unite. Tension, and not pus, is the enemy of union.

CARDIAC CLINICS.

Referring to an article on the above subject by Dr. J. S. Ferguson (Archives of Pediatrics), the *Modern Hospital* says:—"Because death from heart disease is comparatively infrequent among children, the medical profession has been inclined to neglect the cardiac problems of childhood. While few children die from this cause, many carry the burden of cardiac disability on into maturity. The group of children with 'lame hearts' is relatively enormous. Dr. Ferguson cites an illustrative case of one child in whom was found a loud aortic diastolic murmur, hypertrophy, and beginning decompensation. The child's family, which lived four flights up, was induced to move to a lower floor and to follow some simple rules of hygiene and exercise, but efforts to secure for the child instruction in a schoolroom located on the lower floor of the school building were unavailing. Dr. Ferguson says:—

"We establish open-air classes for the anæmic and the tubercular, we send carriages for the crippled and automobiles for the poliomyelitic. When will we learn to admit the crippled heart to the same privileges as crippled legs?" He thinks that the cardiac clinic, with an effective social service, can do much for the prevention of heart disease in children.

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