

asunder of many small blood-vessels, and a tendency to effusion from the same, it would certainly seem reasonable that rest would favor the limitation of evil, and would afford an opportunity for union of the sundered structures, while the moderate pressure of bandages would favor the resorption of extravasated fluids, but massage and all early movement would favor further extravasation.

It is well known that the amount of callus thrown out at the place of fracture of a bone depends very much upon the careful reduction, co-aptation and retention of the fragments in place. When union fails, success may often be attained by rubbing together, or in other way irritating the ends of the fragments, or by allowing the part to be used in locomotion, as by this means the inflammatory action is stimulated and union is secured. If the ends of the fragments of the broken bone be kept in apposition and perfectly immobilized, the amount of callus thrown out is very small, inflammatory action is not so severe as when motion is permitted. By parity of reasoning, it must be inferred that the state most favorable for recovery without unnecessary inflammation and its consequences, in cases of injured or diseased joints, is one of perfect rest until all signs of inflammation have subsided.

The many means employed to secure immobilization give evidence of the difficulties which lie in the way of its attainment. In Britain and on the continent it is the general practice to keep the patient recumbent, and frequently he is kept months, or even years, in bed, while extension or retentive splints are applied to the diseased limb. In America, speaking somewhat generally, the object placed before the surgeon in chronic joint disease is to secure rest for the joint, while at the same time the patient is allowed to move about and reap the advantages of exercise, air and sunlight. It is not, therefore, a matter of surprise that much ingenuity has been shown here in devising forms of apparatus, because great difficulties have presented themselves in allowing free movement to the patient, while at the same time immobilization for the joint is secured.

Priority in the invention and use of the "perineal and side splint with counter exten-

sion" for the treatment of hip disease, is conceded to Dr. Davis of New York. As this splint is designed to be a perineal crutch, thus removing the weight of the body from the joint, while yet it allows free motion of the articulation, it fulfils one indication for securing rest, while in the movement permitted it signally fails in fulfilling a more important one. Sayre and Taylor followed on the same lines with modifications, but did not immobilize the joint. The inventions of Bauer, Andrews, Washburn, Barwell have all depended upon the principle of securing rest by supporting the body and extending the limb, thus relieving the joint of pressure, but as more or less movement of the joint was permitted, and in some instances sought to be maintained, rest was by no means secured for the diseased structures. There is no

doubt, however, that extension goes further toward securing rest than is at first apparent, for it acts not only to save the joint from bearing the superincumbent body-weight, but by the very act of extension a certain amount of fixation is secured. Two improvements may be noted, first, the firm attachment of the stem to the pelvic band, permitting no motion whatever at their junction; second, the extension upward of the body attachments, thus lengthening the upper arm of the lever. Any mechanical contrivance for immobilizing the hip joint may be

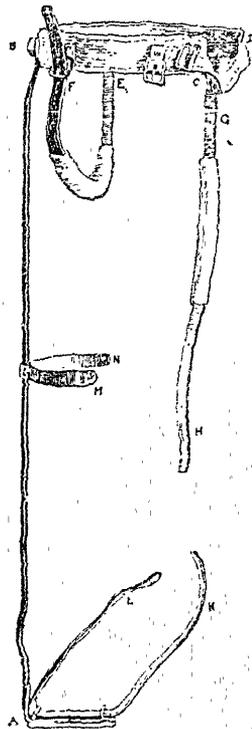


Fig. 1.

described as a lever of the first order, having its fulcrum at the joint. Though the leg and thigh may be firmly secured to the one arm of the lever, yet if the arm to which the body is secured be much shorter, great mechanical advantage is given to the limb attached to the