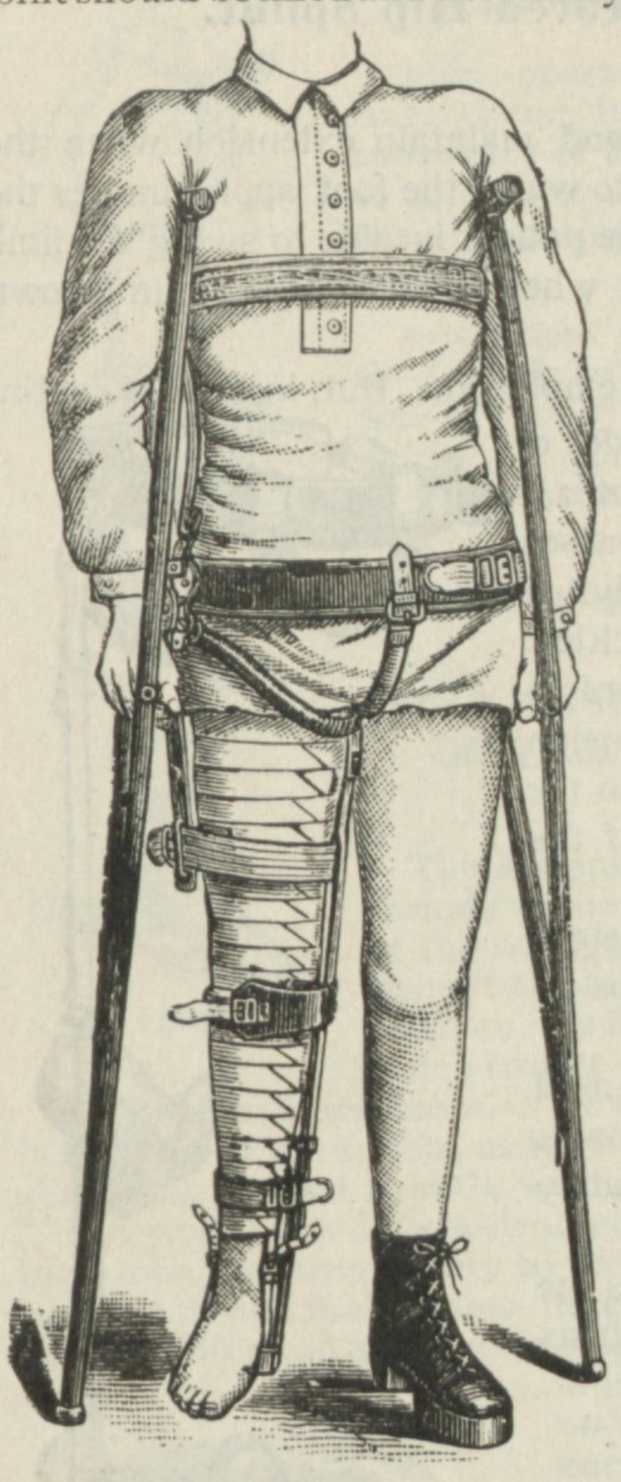
ORTHOPÆDIC APPARATUS.

2410a* PHELPS' HIP CRUTCH AND FIXATION SPLINT.

[Extracts from an article by Dr. A. M. Phelps, of New York, in *Medical Record* of May 4th, 1889.]

I fully agree with Sayre, Taylor, Barwell, Marsh, and others, that spasm of the muscle should be overcome by extension. I also fully agree with Thomas, of Liverpool, that every joint should be fixed and absolutely immobilized until all inflammatory action has subsided and a cure effected. But I do not believe that immobilization of the joint can be accomplished without extension; neither do I agree with the first-named gentleman that extension immobilizes a joint sufficient to get the best results possible, but that a combination of the principles of fixation and extension should be the law. Hence the long traction splint which admits of motion does not immobilize, and the patient produces injury of the joint every time he steps upon it, as is evidenced, in the vast majority of cases, by the almost constant increase of the deformity after the splint is adjusted. Neither does a Thomas splint produce extension; hence there must be abnormal intra-articular pressure when spasm or contraction of muscles is present which must produce congestion of the head of the bone. And, then, if extension is to be applied it should be in the direction opposite to the line of traction made by the muscles. In other words, to apply extension to a hip-joint we should not only make traction in the line of deformity, but also in a line at right angles to that deformity. In other words, to relieve perfectly intra-articular pressure extension must be made in a line corresponding to the axis of the neck, and not with the axis of the shaft, for the following reasons: The adductors and abductors pass from the femur diagonally across the body to the pelvis. These, with other muscles, are the ones affected by spasm. When they contract the head of the bone is drawn firmly into the acetabulum, the force operating on a line corresponding to the axis of the neck. The flexors act on a line corresponding to the axis of the shaft. No apparatus has heretofore been devised which will so perfectly fix a hip-joint as double extension in bed—the body and well leg fixed to a long splint—first recommended, I believe, by Dr. Sayre. The slipping of the bandages proved to be a nuisance. This led me to substitute the plaster of paris, which meets every requirement. The splint should extend to the axilla. The diseased limb should be held in the deformed position during its application, that the body and healthy limb may be in a normal position.



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My observarions lead me to believe that the most serious element of destruction in hip-joint disease is the trauma and pressure produced by the spasm of the muscle; that tubercular will recover as surely as non-tubercular joints, if the spasm of the muscle is overcome; that fixation of the joint without extension is an impossibility; that the successful treatment of the joint must depend upon its absolute immobilization, which can only be produced by proper exteneion and fixation; that the constitutional treatment of hip-joint disease amounts to but little, independent of mechanical treatment; that the mechanical treatment is everything; that extension in a line with the axis of the shaft and deformity alone in hip-joint disease is entirely wrong; that extension should be made in a line corresponding to the axis of the neck—in other words, two lines of extension—otherwise the idea of extension is not perfectly carried out; that anchylosis of the joint is not produced by its immobilization, but by the severity of the inflammation; that the long traction hip splints in general use neither properly extend, neither do they immobilize the joint; that the intra-articular pressure results in the destruction of the joint or anchylosis in the majority of cases; that the results of hip-joint disease should be as good as those of knee-joint disease, and will be, provided perfect immobilization can be carried out; that the surgical law in regard to abscesses should not be violated in the treatment of abcesses of the hip-joint; that nearly all cases should be treated for a time in bed; that when the limbs are parallel and the active symptoms have subsided the hip-crutch can be given adults with crutches, and children the portable bed, and, finally, after convalescence, the hip-crutch, either with or without the high shoe and crutches.

This hip-splint has been devised for the purpose of perfectly immobilizing the hip-joint by preventing all normal motions and applying extension in the line of the neck of the femur. It should only be applied after all deformity has been overcome, either by prolonged extension in bed or operative procedures. The patient is not allowed to walk upon the hip-crutch until the active stage of the disease has passed.

The splint combines all of the qualities of the Thomas splint as regards fixation, together with all that is good in the long traction splints of Sayre, Taylor, and others; and, in addition to it, has the abduction bar for making lateral extension, and a firm perineal ring instead of the strap as used in the ordinary long traction splint, which is found more comfortable to the patient to wear.