The Military Orthopedic Reconstruction Hospital

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In England, under the direction of Sir Robert Jones, and in Canada, through the Hospitals Commission, organized effort is being made to reclaim the crippled soldier. In Germany, a similar movement was initiated by Professor Biesalski, secretary of the Organization for the Care of Cripples and of the Orthopedists' Association. In France, a layman, the mayor of Lyons, Monsieur Herriot, laid the foundation by establishing a school for crippled soldiers. In each of the belligerent countries, the necessity for intelligent care of those crippled by the war has been appreciated, and means, more or less adequate, have been found to meet it.

I wish to emphasize the importance of what is called the orthopedic reconstruction hospital. Of the soldiers unfit for further military service—the blind, those suffering from internal diseases, the psychopathic and the crippled—the first three groups can be cared for by an extension of the existing hospitals and institutions. For the crippled soldier, however, no institution exists that can properly care for his particular need, since he not merely requires medical treatment, but must frequently be equipped with an artificial leg or a brace, instructed in its use, and shown how to earn his livelihood despite the physical disadvantage under which he labors.

The injuries which tend to cripple may be divided into six classes:

1. Amputations, of which we can unfortunately expect a large number since, despite modern conservatism in surgery, the high explosives used in the present

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war, all too frequently produce a type of wound that necessitates sacrifice of the limb.

2. Bone injuries, malunited and ununited fractures, and cases of chronic osteomyelitis due to sequestrums or foreign bodies embedded in the bone.

3. Joint lesions. These may be contractures, due to long continued immobilization or to injury in the neighborhood of the joint, bony ankyloses, due to extensive obstruction of the joint, or painful joints due to inequality of the articular surfaces, foreign bodies or to disease.

4. Nerve injuries, either complete division of the nerve, or embedding in scar tissue.

5. Division of the tendons.

6. Static deformities of all types.

Characteristic of these six groups is the lengthy postoperative treatment required in almost all instances. For instance, to discharge a patient with a musculospiral paralysis from a hospital immediately after the operative wound has healed is to leave the task half finished. The patient must be given effective after-treatment—massage, electricity, and the proper splint —if the operation is to result in a return of function. Or take the case of a patient whose flexor tendons in the palm have been divided by a bullet. The operation is almost certain to be a failure if adequate postoperative exercises are not carried out under the eyes of a competent physician. Even those who have suffered amputation are not ready for an artificial limb immediately after the wound has healed, but the stump must be hardened and must reach a constant form before the proper prosthesis can be applied. Learning to use the artificial limb also requires time, since, particularly in the case of an artificial hand, its use is a fine art. To give a patient an artificial hand, with instructions to go ahead and use it, is like presenting a man with a violin and telling him to go ahead and play it.

Thus from the very nature of the injuries, the orthopedic reconstruction hospital has to include departments which in times of peace are not thought of in connection with medical institutions. The operating room and the ward must be supplemented by the workshop, the agricultural school and the business college. The vocational department serves numerous

important purposes. In the first place, it affords the most rational and effective means of exercising joints and muscles, stiffened and weakened by long continued disuse. The Zander exercises, which have hitherto been in vogue, are exceedingly irksome for the patient and uninteresting to the physician. To the soldier, naturally depressed by a long drawn out recovery from a severe wound, the therapy should not only be directed toward physical recuperation, but should also give a psychic stimulus. Few things appeal to a man more than manual work in the carpenter shop or in the smithy, and the interest in the product of his labor will frequently enable him to perform movements that would otherwise be impossible. Thus, for instance, I recall in particular the case of a 6-foot petty officer whose right shoulder had been stiffened by an extensive periarticular gunshot wound. After the wound had healed, he was exceedingly depressed because he maintained he could no longer continue at his trade. After three weeks in the carpenter shop, under careful medical supervision, beginning with light work, such as varnishing and gradually progressing to the heavier —hammering, sawing, etc.—he had regained at least 75 per cent. of the normal movement of the shoulder and, still better, his psychic condition had become normal. He was now convinced that he could remain a carpenter.

In other instances the workshops are particularly important in training those who have undergone amputation. The first reaction of a man who has lost a limb is the sensation of hopeless crippledom. He is usually convinced that he will have to retire and live on his pension or at best eke out a living by a porter's or janitor's job. My experience, however, has been that practically every such patient can continue in his own vocation or in one allied to it. Amputation of the hand does not prevent a man from continuing to be a carpenter, smith, brace-maker, bookbinder or farmer, since with practice the lower arm stump acquires sufficient dexterity to replace the amputated hand. In the crippled children's hospital, with which I was associated, we had a 16-year-old apprentice who, despite amputation of the right hand, had become an expert brace-maker. This lad acted as instructor to soldiers with a similar type of amputation, and within two months taught them to work with a skill and

enthusiasm equal to his own. When the amputation has occurred above the elbow, the problem is much more difficult. Here recourse must be had to an artificial limb. Many men can, with the aid of a suitable prosthesis, such, for instance, as the Siemens-Schukert arm, continue at the previous occupation. If the amputation has occurred near the shoulder, or if the arm has been disarticulated, it is, however, extremely difficult to handle the usual tools of carpenter, smith or cobbler. Then the patient must be trained in an allied branch. The carpenter, for instance, may become a foreman or he can learn to be a piano polisher, since in this trade practically all the work is done with a sweeping motion of one arm. Those who have suffered amputation of a leg require comparatively short training before they realize their fitness to continue in their old occupation. For them a few ingenious devices, such as the cobbler's bench with mechanical device to hold the shoe in place with a strap, are of great advantage. To all patients who have been equipped with artificial limb or with brace, the workshop affords ample opportunity to test the efficiency of the apparatus.

To the hospital the workshops are a distinct economy and a convenience. No need for plumbers, glaziers, bookbinders, printers or carpenters, when all this work can be done in the shops conducted by the hospital itself. Particularly advantageous is the brace-maker's shop. Even in times of peace the number of expert brace-makers hardly suffices for the need of the orthopedist. In times of war, when the number of maimed multiplies with tremendous rapidity and when the number of brace-makers diminishes because of conscription, it is practically impossible to supply the needs of crippled soldiers unless adequate provision is made for training men in this complicated handicraft. With two or three skilled men in charge of the shop, the soldiers with a mechanical turn can be taught one branch of the craft, and those with experience in leather work—saddlers and cobblers—can be taught another, so that in time skilled workers can be supplied.

As a necessary adjunct to the vocational department is the employment bureau. It is manifestly unfair to discharge a crippled man who has risked his life in the service of his country without helping him to secure a position of maximum advantage to himself and to the

community in whose service he has been crippled. Here is opportunity for the hospital to cooperate with the state employment agencies.

It is distinctly advantageous to include the vocational department in the hospital instead of establishing separate institutions for it. Time is gained, the method is more economical and, above all, vocational work can be begun at the psychologic moment. The treatment of gunshot wounds of the extremities involves in almost all cases a lengthy after-treatment. During this time, while the patient is under medical supervision, vocational work should be begun. The physician, to whom the patient naturally looks as guide because he, far more than any other, has the patient's confidence, helps overcome the inertia which the crippled are almost certain to feel. Having workshop and hospital ward in the same institution helps build up an *esprit de corps* which it is difficult to secure in any other way. Of course, a necessary condition to the success of such a hospital is the character of the medical director. He must not only be a well trained orthopedic surgeon, but he must have a social conscience and be interested in the individual needs of each one of his patients.

The vocational work should include not only shops but also courses in farming and dairying, business courses, culture courses, training for civil service examination, etc. For every man, no matter what his previous calling has been, the hospital should offer some means of instruction that will enable him, despite the physical disadvantage he has suffered, to leave the hospital a more productive member of the community than at the time of his enlistment.

It would be unwise and unjust to leave work of such importance to local control or to private initiative. The national government itself in its war program must include not only the equipment of its armies and its hospitals for treating wounds in the acute stage, but also the adequate medical, vocational and social care of the crippled soldier. Under the direction of Major E. G. Brackett, this work has already been begun. The movement deserves the hearty support both of the medical profession and of the entire community.

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