

The Role of Prosthetic and Orthotic Rehabilitation in Sierra Leone

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Sierra Leone, West Africa

The Limb Fitting Service established about five years ago is a governmental institution in the Ministry of Health and the only limb and orthopaedic workshop in the country. It is located in the Murray Town Hospital (a Convalescent Hospital) which is about three and a half miles from the centre of Freetown, Capital of Sierra Leone. The centre was established by a Sierra Leonean limb fitter who is now in charge of the unit. The centre serves the entire population of about two and a half million, scattered over an area of about 28,000 square miles. Through the assistance of the Ministry of Social Welfare, Mission Hospitals and voluntary organizations like the Sierra Leone Red Cross Society, disabled people travel with less difficulty from the North, South and Eastern Provinces to reach the centre where their hopes for a physical restoration become a reality.

It would be worthwhile to mention that before the establishment of the Limb Fitting Centre, the Medical Department often made use of the Nigerian Limb Fitting Service. A Nigerian limb fitter occasionally came to Sierra Leone, collected all relevant information from amputees, and returned to Nigeria where the limbs were manufactured. He therefore started the very important service of prosthetic rehabilitation in Sierra Leone. But he was also confronted with a very important problem—the question of an equipped workshop where technical procedure could be carried out during fitting stages. Despite this difficulty he was able to rehabilitate a large number of amputees and his service was highly appreciated.

The Limb Fitting Centre though in its developing stages yet has demonstrated its ability to cope with the great task of providing an efficient substitute for lost limbs or for impaired function. Willow wood, universally accepted as the best for manufacturing wooden limbs, and metal, leather and plastic are being utilized satisfactorily in manufacturing artificial limbs and orthopaedic appliances. These materials, together with various mechanical components, are imported from the United Kingdom. The actual process of manufacturing prostheses and braces is carried out in the workshop by a few craftsmen handling the side-knife, pulling tool and operating various machines such as the mechanical band saw.

In an attempt to solve the complex problem of human disability we have therefore endeavored to produce all types of limbs for the various levels of amputations of both upper and lower extremities together with the different types of braces. (Because of climatic conditions metal limbs have not been included in our list of production.) The most common wooden

types in operation presently are the anatomical willow socket and the willow articulated peg leg. There is a basic fee charged for the anatomical type, while the willow peg is issued free by the Ministry of Health to those patients who cannot afford to meet the basic fee. The peg leg is mostly used by watchmen, farmers and some old people. We have relatively few arm amputees and artificial arms are more expensive and are of the conventional type.

The fundamental principles and techniques in limb fitting and bracing in Sierra Leone follow the same pattern as that practiced in Britain but it has been realized that it is unrealistic to try to progress and succeed by pursuing a standard pattern. Therefore, modification and innovation are always present in order to meet local conditions and the limitations and requirements of the individual patient. Preparation of an upper or lower extremity stump for successful fitting of a prosthesis usually follows about 16 weeks after amputation surgery.

During this interim period whilst in hospital, a post operative treatment is carried out, which includes psychological treatment, flexion and abduction exercises of such deformities as ankylosis of proximal joints, and compression bandaging of cases of oedema to facilitate shrinkage when a pylon it not being used. Subsequently the patient is discharged or transferred to a convalescent hospital on crutches. Bilateral amputees, however, are hospitalized till final fitting of prostheses.

Amputees are usually referred to the centre for examination and measurement about 12 weeks after amputation. At this initial stage of the rehabilitation programme more time is spent in winning the confidence of the patient, collecting basic data and analyzing his immediate problems. Other factors that are of particular significance to the limb fitter who is responsible for the design and the construction are the age and sex of the patient, his occupation and general mental and physical state, the condition of the stump and the degree of movement of the remaining joints.

SUMMARY

The centre caters to all ages and classes of people, whatever their physical handicap. There is nothing like mass production or mass treatment in this avenue of rehabilitation: each case is treated on its merit. Some of the patients are engaged in the various industries and commercial houses and others in the Civil Service. Most of these people have returned to their previous assignments whilst others have received vocational training with a view to replacing them in other employment for which their occupational capacities are best suited.

As the principle of rehabilitation implies the restoration of normal physical functions by physical means in order to achieve personal, social and economic independence, prostheses and various orthopaedic appliances have played an important roles in aiding the disabled in Sierra Leone. This available facility in the field of rehabilitation has played a very important role in the medical and health care services in Sierra Leone. In the future further development of this service will continue to improve the social and economic status of amputees and other disabled persons all over the country.

The Patella Tendon Bearing (P.T.B.) Socket

The erection of a new building at the beginning of the year has made space available for the installation of a small plastic laboratory. This has

resulted in the successful manufacture of the P.T.B. limb in Sierra Leone, an achievement which is one of the most rewarding projects the centre has embarked upon for the year.

The Tilting Table (T.T.) Limb

In April, the Tilting Table prosthesis was manufactured and successfully fitted at the Cheshire Home to a boy of 6 who had congenital disarticulation of the hip. This was the second of such prostheses successfully fitted in the centre.

The Mobile Limb Fitting Unit

The provision of a Mobile Limb Fitting van for the centre was another forward stride in its development. The mobile van, which was a gift made by the United States Mission in Sierra Leone, has already been proved useful by its frequent tours of the Provinces, extending rehabilitation services to all parts of the country.

UCLA TESTING "MOONWALKER" FOR CRIPPLED CHILDREN



The Child Amputee Prosthetics Project of the University of California at Los Angeles is currently evaluating an eight-leg walking chair designed to give more mobility to amputee and paraplegic children.

The original concept for the vehicle came from a "Moonwalker" proposed for initial exploration of the moon as part of the Centaur-Surveyor program. It was called to the attention of the UCLA medical personnel by the Technology Utilization Office of NASA. The Moonwalker is operated by a four-way lever which can be adjusted to operate by hand, foot, or in extreme cases, by the chin, using a collar harness.

The vehicle's legs operate as four independent sets of two, allowing it to step over obstacles, and curbs, and travel over rough terrain.

Translation and Abstract Service

Two additional translations of foreign orthopedic and prosthetic articles appear in this issue of the *Orthopedic and Prosthetic Appliance Journal*.

This translating and abstract service for members and other readers of the *Journal* was authorized by the Directors of the American Orthotics and Prosthetics Association in November, 1965. It provides for summaries of articles from medical periodicals as well as translations. The cooperation of members of the committee makes possible the continuation of this service.

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Hip Joint with Automatically Activated Stop for the Hip-Disarticulated Amputee*

**Research Laboratory Report from Orthopaedic University Clinic,
Muenster, Germany**

PROF. DR. OSCAR HEPP, *Director*

*Research by STEFAN BURGER, conducted with support of
Federal Ministry for Labor and Social Affairs*

Translated by SIEGFRIED W. PAUL, C.P.O.
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We reported on the rehabilitation of a polio patient in issue No. 6 of *Orthopaedic Technik*. The stop of the hip joint of this non-conventional design prosthesis stimulated our interest in developing this design to a point where it could be prefabricated.

A hip-disarticulation prosthesis with support of the socket by a movable bar was first fabricated by Mr. Schroder of Bad Pyrmont. His design features attachment of the bar within the knee joint, which is constructed by utilizing prefabricated knee units. The application of this design can be either more, or less difficult—depending upon the type of knee unit.

It was our intention to develop a hip joint which could be readily used

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