REPORT ON THE COMMITTEE ON PROSTHETICS RESEARCH AND DEVELOPMENT

ACTIVITIES OF CONTINUING BODIES

CPRD Meeting

The 20th meeting of the Committee was held in Washington, D.C., on November 4–5, 1969, under the chairmanship of Dr. Colin A. McLaurin. The meeting was well attended by members and by representatives from the Veterans Administration, Social and Rehabilitation Service (Prosthetics-Orthotics and Sensory Aids Studies Sections), the Children's Bureau, Committee on Prosthetic-Orthotic Education, Committee on the Interplay of Engineering with Biology and Medicine, and American Orthotic and Prosthetic Association—American Board for Certification. Consideration was given to reports from each of the subcommittees and from the representatives of the sponsoring agencies. Plans were made for activities in the immediate future as well as long-range, including the scheduling of special events. A comprehensive report of the meeting was prepared and distributed.

Ad Hoc Committee on Fundamental Studies

An ad hoc committee had been appointed to study the structure and functions of the Subcommittee on Fundamental Studies and to make recommendations designed to enlarge the scope of its work and stimulate the output of useful fundamental data. The ad hoc committee recommended the formation of workshop panels to deal initially with six areas of fundamental research. These areas are:

1. Human locomotion
2. Lower-extremity kinematics
3. Control of externally powered devices
4. Tissue physiology
5. Upper-extremity kinematics
6. History of hardware design

Subcommittee on Sensory Aids

A meeting of the Subcommittee on Sensory Aids was held on October 24–25, 1969, in Washington, D.C. Prime consideration was given to types of devices for the blind—reading machines and mobility aids. Extension of the Subcommittee's activities to other areas and to evaluation is contemplated. The Mauch Visotoner, a reading device for the
blind, is now ready for evaluation and plans are being made for this project.

A second meeting of the Subcommittee was held on March 5, 1970, in Menlo Park, Calif. This meeting was associated with a tour by the Subcommittee of sensory aids projects, March 5–7. These were: Institute of Medical Sciences, San Francisco; Stanford University, Stanford Research Institute, and the VA Hospital in Menlo Park; and the Rand Corporation in Santa Monica, Calif.

Subcommittee on Design and Development

This Subcommittee continued an active program of workshop panels and special events. A new departure during the reporting period was the focusing of attention on specific areas of research, such as externally powered elbows, with a review of patients fitted with currently available devices.

Specific events conducted under the aegis of the Subcommittee on Design and Development were:

Panel on Lower-Extremity Orthotics

The Seventh Workshop Panel on Lower-Extremity Orthotics was held March 9–12, 1970, at Rancho Los Amigos Hospital in Downey, Calif. At this meeting, eight developers fitted a total of 18 new or experimental lower-extremity orthotic designs to patients recruited by Rancho Los Amigos Hospital. These fittings were then critiqued by a panel consisting of expert physicians and orthotists. As an outcome of this review a number of the brace designs demonstrated were recommended for field evaluation.

Panel on Lower-Extremity Prosthetics Fitting

Arising out of a symposium on below-knee prosthetics conducted by the panel in December 1968, the University Council on Orthotic-Prosthetic Education (UCOPE) conducted a followup seminar for the teaching institutions. As a result, advanced courses in below-knee prosthetics are being offered at the University of California at Los Angeles, Northwestern University, and New York University.

On December 14, 1969, a workshop devoted to the problems of fitting the above-knee amputee was held in Miami, Fla. The current practice and teaching in this area were critically reviewed and areas of needed improvement were identified. Research workers in the field were stimulated to develop improved methods of fitting and suspension of the above-knee prosthesis.

Workshop on Bracing of Children with Paraplegia Resulting from Spina Bifida and Workshop on Bracing of Children with Cerebral Palsy

These two workshops were held sequentially at the University of Virginia on October 2–4, 1969.
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The current state of treatment of these two entities and research needs, particularly in relation to bracing, were discussed. The evaluation of some novel bracing designs presented at the meeting was also considered.

Subcommittee on Evaluation

The evaluation project involving the use of synthetic balata to form below-knee sockets directly on the stump will be completed early in 1970.

An evaluation of three adult-sized electric elbows was initiated by a course of training conducted in October 1969. This project is now well under way.

Evaluation of a number of lower-extremity orthotic devices and techniques which have been emerging from design and development efforts is now under consideration.

Subcommittee on Child Prosthetics Problems

The Subcommittee is now giving consideration to the extension of its activities into the field of bracing for children. The Subcommittee authorized the purchase of a number of child-sized externally powered devices for evaluation purposes. These included the Rancho Los Amigos elbow in two sizes; the Ontario Crippled Children's Centre electric elbows; and the Myobock and Viennatone hands.

Cooperative Clinic Research Program

Twenty-nine clinics, specializing in the treatment of the child with limb deficiencies, are now participating in the program conducted by the Subcommittee on Child Prosthetics Problems. Approximately 30 additional centers with specialized child amputee programs have been identified. It is anticipated that many of these will join the cooperative program over the next few years. The Assistant Executive Director maintains a close contact both with clinics in the program and with those in the process of development.

Inter-Clinic Information Bulletin

The Assistant Executive Director continued to serve as editor of the publication Inter-Clinic Information Bulletin which is published in cooperation with New York University. Twenty-five hundred copies of this Bulletin are distributed monthly to physicians, prosthetists, and others interested in the care of the child amputee.

Monograph on Proximal Femoral Focal Deficiency

Five papers on proximal femoral focal deficiency presented in 1968 at the child amputee clinic chiefs' meeting were published in one report during the year and distributed to interested treatment centers and medical centers.

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Workshop on Total Hip-Replacement and Skeletal Attachment of External Prostheses

This workshop was held on November 6-7, 1969, in Washington, D.C. It was cosponsored by CPRD and the American Academy of Orthopaedic Surgeons. The workshop brought together research groups that are concerned with attachment of implants to the skeletal system, primarily for interchange of information.

Seminar on "The Dysvascular Amputee"

The Sixth Annual Postgraduate Seminar conducted by the School of Medicine of Miami University, in cooperation with the National Academy of Sciences, the Veterans Administration, and Jackson Memorial Hospital, was held in Miami, December 15-17, 1969. The program encompassed the surgical-prosthetic treatment, training, and special problems relating to the management of the dysvascular amputee. More than 300 surgeons, prosthetists, and therapists attended.

American Academy of Orthopaedic Surgeons

The Executive Director maintained liaison with the Committee on Prosthetics and Orthotics of the American Academy of Orthopaedic Surgeons. Several meetings were conducted as a result of which the committee developed a system for the biomechanical definition of musculoskeletal disability which could eventually be extremely useful in education, research, and everyday practice. It was recommended that a field evaluation of the system be conducted.

Artificial Limbs

The Spring 1969 issue of the program journal ARTIFICIAL LIMBS was distributed in December 1969. The Autumn 1969 issue was assembled and sent to the printer in November.


Human Limbs and Their Substitutes

A reprint edition of the publication Human Limbs and Their Substitutes has been prepared by the Hafner Press and is now available. The reprint issue is a reproduction of the original publication except for the addition of a foreword by the former Chairman of the Committee on Prosthetics Research and Development and a bibliography.
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prepared by the Executive Director. More than 800 copies of the reprint edition have been sold.

International Activities

A prosthetics and orthotics exhibit was displayed at theEleventh World Congress of the International Society for Rehabilitation of the Disabled in Dublin, Ireland, September 14–19, 1969. The exhibit was developed by the Committee on North American Prosthetics-Orthotics Exhibit of the ISRD of which the Executive Director is Chairman. The exhibit will be displayed at other seminars and conferences throughout the United States during the coming year.

SITE VISITS

The Executive Director was a member of the on-site visit teams who went to Moss Rehabilitation Hospital—Temple University in Philadelphia, Pa.; Baylor University and Texas Institute for Rehabilitation and Research in Houston, Tex.; Texas A. and M. University, and the U.S. Public Health Service Hospital in Carville, La.

The Assistant Executive Director made site visits to the child amputee clinic at the Children’s Hospital in Milwaukee, Wis. This clinic had applied to become a participant in the cooperative program sponsored by the Subcommittee on Child Prosthetics Problems and was subsequently accepted. Visits were also made to child amputee clinics at the Hospital for Special Surgery, and the Institute for Rehabilitation Medicine, New York City; Florida Crippled Children’s Commission in Tampa and Orlando, Fla.; Gillette State Hospital, St. Paul, Minn.; Children’s Orthopedic Hospital, Seattle, Wash.; Shriners Hospital for Crippled Children, San Francisco, Calif.; Children’s Hospital, and Craig Rehabilitation Hospital, Denver, Col.; Glen Haven Achievement Center, Fort Collins, Col.; and the Cypress School Orthopedic Unit, Ontario, Calif.

PROPOSALS REVIEWED ON BEHALF OF VA AND SRS

Three proposals for projects in prosthetics and orthotics research were reviewed by the Committee for the Veterans Administration. For the Social and Rehabilitation Service the Committee reviewed 25 proposals in the fields of prosthetics and orthotics, and five in sensory aids. One application for support of proposed research in prosthetics was reviewed on behalf of the International Division of SRS.

MISCELLANEOUS

The staff has responded to more than 700 requests for publications and information. Close liaison was maintained with the American Orthotic and Prosthetic Association by personal contact and by staff participation in various activities of the Association.
FUTURE PLANNING

General

The Committee on Prosthetics Research and Development proposes to continue its endeavors in the coordination and correlation of governmentally and privately sponsored research projects in the fields of prosthetics, orthotics, and sensory aids. Particular attention will be given in the forthcoming year to bringing about a more active and better organized program in the field of sensory aids and to expanding the research efforts being made in orthotics. CPRD proposes to continue its efforts to stimulate research and maintain a balanced program in these areas; to ensure that the sponsored prosthetics and orthotics education schools, the University Council on Orthotic-Prosthetic Education, and the American Orthotic and Prosthetic Association are promptly informed concerning new developments within the program; and to ensure widespread dissemination of information by continued publication of ARTIFICIAL LIMBS, the Inter-Clinic Information Bulletin, and appropriate special reports.

Workshop Panel on Upper-Extremity Prosthetics

Under the sponsorship of the Subcommittee on Design and Development, a workshop dealing with the control of externally powered prostheses for the upper extremity was held March 31, April 1–2, 1970, in Santa Monica, Calif. The workshop reviewed currently available methods of control of prosthetic components in relation to specific items.

Subcommittee on Child Prosthetics Problems

A meeting of the Subcommittee on Child Prosthetics Problems will be held at the Ontario Crippled Children's Centre in Toronto, Canada, June 9–11. Associated with this meeting will be an assembly of the chiefs of the clinics participating in the child amputee research program. This assembly will feature a symposium on "The Management of the Child with an Acquired Amputation." A review of brace designs for children will also be conducted.