Our New International Society

This Bulletin is the first of a series of publications to be issued by the recently founded INTERNATIONAL SOCIETY FOR PROSTHETICS AND ORTHOTICS (ISPO). We promise to be a dynamic organization that will make it possible for all who are responsible in any way for the care of individuals needing prostheses and orthoses to do a better job.

The Society is growing, both in membership and in the support being received from private concerns, governments, and international organizations, including the United Nations.

This first issue of the Bulletin demonstrates in a small way the kind of information we will provide to our members to assist in fostering advancements in prosthetics and orthotics for the benefit of patients no matter where they reside. The Bulletin will be issued quarterly. In addition to news of the Society, technical matters will be presented at various levels. Problems of the developing countries, as well as of those areas with more developed prosthetics and orthotics technology, will be considered.

As its financial base becomes stronger, the Society will also sponsor conferences, seminars, and educational programs.

We believe that the Society is needed to help the professionals in prosthetics and orthotics work together to aid all disabled. Many people are working hard to make the Society a success. We should like to have your support, particularly your effort to make the Society's future a productive one.
News of the Society

THE SOCIETY’S FORMATION

The International Society for Prosthetics and Orthotics was formed on November 15, 1970, essentially from the constituency of the former International Committee on Prosthetics and Orthotics of the International Society for Rehabilitation of the Disabled. A copy of the constitution will be made available to all members in an early issue of the Bulletin. Membership drives have been conducted in the past, but not in a very orderly fashion. This issue of the Bulletin contains a description of the application process necessary for individuals to join the Society as professional members.

What is ISPO?

ISPO is organized to serve as an international coordinating and advisory body on prosthetics and orthotics and other technical matters related to the neuromusculoskeletal system. The Society is made up of several kinds of members: 1. Associate Members; 2. Members (including Fellows); 3. Sponsoring Members.

The Associate Member has no voting rights but will receive the publications of the Society.

The Member, the professional rank, has voting rights and privileges enabling him to participate in the government of the Society as well as to serve on its committees. He will also receive publications. Fellows will be those Members recognized by the ISPO Board as having contributed to a high degree to the fields of prosthetics and orthotics.

The Sponsoring Member will receive all the publications of the Society, but has no voting rights. Nevertheless, he will be given certain privileges at meetings of the ISPO’s National Member Societies as well as the ISPO World Congresses such as preference on exhibit space, advertising, and the like.

Most of the members will be physicians, surgeons, engineers, psychologists, prosthetists, orthotists, and therapists, serving as clinicians, researchers, and educators in the professional practice of prosthetics and orthotics. However, anyone interested in advancing the program of the Society will be welcomed as Associate Members. Manufacturing and supply firms and any individuals who wish to increase the Society’s financial capabilities can become Sponsoring Members. For example, in the United States so far four companies have joined as Sponsoring Members for 1972. These are the S. H. Camp Company of Jackson, Michigan; the A. J. Hosmer Company of Campbell, California; the Atco Surgical Company of Akron, Ohio; and Knit-Rite, Inc., of Kansas City, Missouri.

A directory, to include membership, the constitution and by-laws, and other information, will be issued early in 1972.

Nine-year-old Ulla Andersen, who was stricken with polio at six months of age, affixing the seal of the Society to the official founding document.
Governing ISPO

ISPO has an Interim Board of Directors serving until elections are possible under the constitution. The Board, consisting of persons from various parts of the world, has met several times to organize the administrative functions related to the operations of the Society, and particularly to the Secretariat now located in Copenhagen. The Board, also, has implemented the operations of Standing Committees to serve specified purposes in aiding international agencies and others who have programs under way in prosthetics and orthotics technology. Reports of several of these committees are included in this issue of the Bulletin.

The government of ISPO is dependent upon the formation of National Member Societies which will serve within national borders to organize members of ISPO to accomplish the purposes of the International Society. The National Member Societies will elect their own boards and these boards will select delegates to the International Society's governing committee. The National Board will also be responsible for the collection of annual fees and for the distribution of literature among the members within a country. So far, National Member Societies have been formed, although not yet incorporated, in Nigeria, in the United States, and in the United Kingdom. Plans are under way in twelve other countries to do the same.

The Interim Executive Board of the International Society had its last meeting in Rungsted, Denmark, in September 1971. At this time the Board decided to decentralize certain Secretariat functions, particularly to the chairman of Standing Committees. For example, the control of membership and the records associated with that administrative function will now be located in London where automatic data-processing capabilities are available at no cost to the Society. Publications and administrative matters associated with literature dissemination have been decentralized to Washington, D.C. Similarly, the administrative responsibilities associated with research, education, and evaluation were decentralized to the offices of the respective Standing Committee chairmen. This allows the Society to function with a minimum of overhead.

The Executive Board assigned only the control of finances to the existing Secretariat in Copenhagen where a bank account in the Society's name has been opened. The Board also approved a budget for fiscal year 1972 during its meetings. Other actions taken by the Board at the September 1971 meeting dealt with the procedures needed for other societies to affiliate with ISPO, the design of a membership card, and the development of badges, uniform patches, and certificates to be used where appropriate. Other matters discussed at this Board meeting are covered in the Committee reports given in another section of this Bulletin.

The Chairman of the ISPO Membership Committee has announced the procedures for application for election to membership, a relatively simple process. With this issue of the Bulletin is an application blank which can be used. Membership acquired now will be good for the calendar year 1972. Thereafter, each member must renew his membership by the payment of the required fee. Reminders will be distributed by the Membership Committee of ISPO in November for the following year.

Apply for 1972 by filling out the application enclosed. If you reside in the United States, the completed application and a $15.00 fee for Associate Membership, or $25.00 for Full Membership, should be sent to the Secretary, U.S. Committee, International Society for Prosthetics and Orthotics, 1440 N Street, N.W., Washington, D.C. 20005.

If you reside in the United Kingdom, the application with £5 for Associate Membership, or £8 for Full Membership, should be sent to the Secretary, U.K. National Member Society, International Society for Prosthetics and Orthotics, c/o Mr. John Hughes, BioEngineering Unit, University of Strathclyde, Montrose Street, Glasgow, C1, Scotland.

Applicants from Nigeria should apply to F.A.O. Owosina, M.Ch., FRCS, Adeyoyo State Hospital, Ibadan.

For all other persons, the membership application and fees should be sent to the Chairman, Membership Committee, ISPO, Biomechanical Research and Development Unit, Roehampton, London, SW15, 5PR, U.K. Fees for persons residing outside the United States and the United Kingdom are $10.00 for all Associate Members. Full Membership in Canada will be $20.00; in Australia and Western Europe, $15.00; and in the rest of the world, $10.00.

MEMBERSHIP COMMITTEE

In accordance with the decision made at the Executive Board Meeting at Rungsted in September, the membership records are being transferred to Roehampton for handling by computer under the direct control of the Chairman of the Membership Committee.

All records are not at hand but several hundred individuals from more than 40 countries have been accepted for membership in one category or another.

National Member Societies have been established in the United States, the United Kingdom, and Nigeria. Members or potential members interested in supporting their own national group in the countries concerned should contact the relevant Secretary/Treasurer:

Nigeria: F.A.O. Owosina, M.Ch., FRCS
         Nigeria National Member Society
         ISPO
         Adeyoyo State Hospital
         Ibadan

U.K.: John Hughes
      BioEngineering Unit
      University of Strathclyde
      Balmanno House, Rotterrow
      Glasgow, C1, Scotland

U.S.A.: Howard R. Thranhardt
        J. F. Hanger, Inc.
        947 Juniper Street, N.E.
        Atlanta, Georgia 30309

Membership in ISPO

This issue of the Bulletin of ISPO is being sent to all persons who were on the distribution list for the publication PROSTHETICS INTERNATIONAL. Thus, for this issue only, the present members of ISPO as well as people who are not yet members will be receiving a copy of the Bulletin. This will be the only time this happens; in the future, publications of ISPO will go to members only.
Several other countries are making significant progress toward forming their National Member Societies and those interested should correspond with the following:

**Australia**:
Dr. R. W. Klein  
Central Development Unit  
250 Sturt Street  
South Melbourne 3205  
Victoria

**Brazil**:
Professor E. J. Kanan  
Rua 24 de Octubra 8  
8º Andar, Porto Alegre  
Rio Grande do Sul

**Canada**:
Dr. C. A. McLaurin  
Ontario Crippled Children’s Centre  
350 Rumsey Road  
Toronto 17, Ontario

**Colombia**:
Fernando Serrano, M.D.  
Military Hospital  
Bogota

**Egypt**:
Dr. Hassan Hosni  
Agouza Rehabilitation Centre  
P.O. Box 152  
Cairo

**India**:
Dr. K. Janardhanam  
Artificial Limb Centre  
Government General Hospital  
Madras-3

**Israel**:
Dr. Ernst Spira  
Tel-Flashomer Hospital  
Rehabilitation Centre  
Ramat-Gan

**Lebanon**:
Amin K. Hajj  
American University Hospital  
Beirut

**Malaysia**:
Professor J. Francis Silva  
Dept. of Orthopaedic Surgery  
University of Malaya  
Kuala Lumpur

**Netherlands**:
Ir. F. H. Germans  
Institute of Medical Physics TNO  
Da Costakade 45  
Utrecht

**Poland**:
Mr. Wieslaw Miedzyblocki  
UJ. Dzierzynskiego 135  
Poznan

**Turkey**:
Dr. Ridvan Ozker  
Dept. of Physical Medicine  
University of Hacettepe Medical School  
Ankara

Any national of countries other than those named may apply to join any existing National Member Society pending the establishment of a National Group in his own country, and by this means secure representation in the International Committee of ISPO.

**EDUCATION COMMITTEE**

Four major activities have been undertaken by the Education Committee:

a. The organization, in cooperation with the International Division of the Social and Rehabilitation Service, Department of Health, Education, and Welfare, U.S.A., of a broadly representative conference of experts in prosthetics research, evaluation, and training to delineate the current status of these activities worldwide. It is anticipated that this conference will involve approximately 75 invited participants and be held in the Spring of 1972.

b. The organization of a meeting on lower-extremity orthotics to be conducted in Switzerland jointly with the APO (the Swiss Association for Prosthetics and Orthotics) sometime in 1972.

c. The sponsorship and organization of a prosthetic-orthotic symposium in Sydney, Australia, from August 20-24, 1972, just prior to the meeting of the International Society for Rehabilitation of the Disabled (see p. 8).

d. The organization, in conjunction with the World Veterans Federation, of an International Congress on Prosthetic Techniques and Rehabilitation to be held in Vienna during the last week of March 1973.

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**Technical Note**

**LINERS FOR THE PTB BELOW-KNEE SOCKET (AND ITS VARIANTS)**

The historic 1961 publication of the University of California Biomechanics Laboratory on the patellar-tendon-bearing below-knee prosthesis described a composite liner or insert as part of the socket design. The insert consisted of 1/8-in. thick, closed-cell synthetic sponge rubber (Kembo) and medium-weight horsehide. The fabrication procedure required first the forming of the sheet of horsehide over the modified plaster-of-Paris replica of the stump; then bonding of longitudinal strips of the foam rubber from 1 in. to 2 in. wide over the horsehide.

"Hard" Sockets?

But there have been problems with the sponge-rubber liners: the sponge rubber compresses taking on a permanent set, thereby changing socket fit, and the horsehide liner absorbs perspiration, deteriorating rapidly. It is not easy to clean and therefore not very hygienic.

In an effort to alleviate these problems some prosthetists found that it was possible to eliminate the liner. Often a carved or directly foamed-in-place soft foam insert in the distal part of the socket was used. Obviously, best success is obtained when the "hard" PTB socket is used on patients whose stumps had stabilized and on those where there were few skin, scar, or sensitive area-fitting problems.
Need for a Better Liner

Because most prosthetists prefer to use an insert, attempts have been made to find better materials for the purpose. A minor inaccuracy in cast modification, for example, does not seriously affect the comfort of the patient and control of the prosthesis when a liner is used, because the liner tends to eliminate high pressure points by providing smooth pressure gradients. Furthermore, slight modifications in fit can be made by removing the liner and inserting patches or removing material on the socket wall.

The “Cordo” Insert

Byers and Gardner of the U.S. Veterans Administration Prosthetics Center and Nitschke of Rochester, New York, have developed what is known as a “Cordo” socket liner. The “Cordo” liner is fabricated by impregnating successive layers of stockinet that are placed over the stump model with a mixture of Cordo-Bond, a thinner, and a plasticizer. The inner layers of the liner (those first placed on the replica) are impregnated with Cordo-Bond modified by the addition of a plasticizer to form a resilient core. The outer layers use the Cordo-Bond and a thinner and ladies’ nylon hose. If more compressibility is required in certain areas of the liner, Plastazote can be placed between layers of the liner. The prosthetist thus is able to obtain adjustment in the compression characteristics of the liner to some extent in certain stump areas.

The Cordo-Bond is a polynvinyl-chloride-acetate that has excellent bonding characteristics and can be air-cured. Flexibility is controlled by the proportion of plasticizer, usually Paraplex G50, mixed into the solution. The resin can be either sprayed or applied by brush.

Cordo-Bond P-315-B-2 and P-371 thinner are both products of the Ferro Corporation, 34 Smith Street, Norwalk, Connecticut 07852. Paraplex G50 is a product of Rohm & Haas Company, Philadelphia, Pennsylvania.

Gel Liners

Another system for providing a soft liner has been developed by the University of Michigan where a silicone gel is formed inside a liner over a replica of the stump. This type of liner is "softer" than any of the others described above but does not permit variations in compressibility over the surface; it's all one "softness." Although it can be used for stumps that are difficult to fit, its extra "softness" may inhibit control of the prosthesis in the swing phase. It is also heavier and bulkier than the other liners.

The OHC—PE LITE Liner

PE LITE is a cellular cross-lined expanded polyethylene which for more than 12 months has been used successfully in fabrication of soft inserts for PTB sockets at the Orthopaedic Hospital, Copenhagen.

It has proven to be easy to use in fabrication and it is washable. Problems related to perspiration have, at least in Denmark, been observed in only a very few cases.

PE LITE is available in sheets of different density and thickness. For the purpose described, a thickness of 5 mm and density A-10 are the most suitable. It is manufactured by MTP Kaseico Ltd., 3-1-36 Imaike-Sho, Anjo Aichi, Japan.

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Measure plaster mold and cut the material accordingly. Skive the long edges for approximately 3/4 in. Apply cement to both of the long edges. Note: cement must be applied to opposite surfaces of the sheet. Fold sheet into a cone. The glued joint should be smooth.

Place cone in oven at 100°C (212°F) for approximately 10 minutes.

Note: 140°C for approximately four minutes has been recommended as the proper temperature/time relationship; however, for molding the insert this temperature is too high and might damage the material. Furthermore a temperature of 100°C allows working with the material without gloves for skin protection.

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Pull the heated cone over the model to fit snugly. Apply a ring at the distal end and pull excess material through the ring while pushing ring firmly against the model. When the material has cooled, remove ring.
Cut away excess material and grind until transition between PE LITE and plaster mold is smooth and the edge paper-thin. Chalk the edge.

Pe LITE Disk
Molded over distal end to form pad.

Make reference mark.

Reflect the pad and apply cement to pad and distal area of the PE LITE which was covered by the pad. Note: avoid cement on the areas inside the imprinted chalk line.

Reflect pad to original shape and glue in place. Note: be sure the reference mark is in correct position. Skive the outside edge of the pad in order to make distal part of the insert smooth. If preferred, a second pad may be added (this is done routinely in Copenhagen). In this procedure the cement can be applied to the disk as well as to the surface of the first pad before the disk is heated in the oven. The second pad is then glued to the insert during the forming process. Skive the outside edge of the second pad to make a smooth transition.

Discussion

The liner developed by Byers, Gardner, and Nitschke and the one developed by the University of Michigan have a major role to play in providing a proper socket environment in the PTB and its variants, and perhaps in other levels of lower-extremity prostheses as well. The Kembo sponge-rubber liner has served its purpose and may, in the hands of most prosthetists, still be the liner of choice because this is the design with which they are most familiar. Nevertheless, material changes are needed. An excellent alternative has been offered by Erik Lyquist of the Orthopaedic Hospital in Copenhagen. The fabrication process is fundamentally the same, but no horshide is needed, and used in place of the sponge rubber is PE LITE, a material similar to but not quite the same as Plastazote.

Literature Cited

International News

In Japan the Committee on Prosthetic-Orthotic Education, Research and Development of the Japanese Association of Medical Rehabilitation has been initiated recently. Appointed members are:

Seishi Sawamura, M.D., Chairman
Vice Director of the Hyogo Rehabilitation Center
1070 Yoshida, Tamatsu-cho, Tarumi-ku, Kobe

Takashi Aoyama, M.D., Chief of the Research Section
Rosai-gishi Center (Prosthetic Center of the Workmen’s Welfare Board)
1-31 Komei-cho, Minato-ku, Nagoya

Jiro Kawamura, M.D., Chief
Section of Orthopaedic Surgery
Nishinomiya Municipal Central Hospital
8-20 Sometono-machi, Nishinomiya-city

Hideo Takechi, M.D., Lecturer
Department of Orthopaedic Surgery
Okayama University
164 Oka, Okayama-city

Yasuo Yamauchi, M.D., Associate Professor
Department of Orthopaedic Surgery
Juntendo University
3-1-3 Hongo, Bunkyo-ku, Tokyo

Shuichi Kakurai, M.D., Director
Tokyo Metropolitan Prosthetic and Orthotic Research Institute
Tokyo

Mr. Inokichi Iida, Director
National Prosthetic and Orthotic Research Institute
1 Toyama-cho, Shinjuku-ku, Tokyo

Mr. Iida is an engineer; the other members are also members of the Japanese Orthopaedic Association.

New Publications

In this space we hope to provide a critical review of recent publications that are felt to be of interest to the members of ISPO.

For this issue we can provide a critical review of only one publication, and are listing four others of note and their sources.


Dr. Dederich presents a rather extensive review of the history of amputations, prosthetics, and immediate postsurgical prosthetic fitting, and he reports on various techniques and systems developed from early times through to the present day.

The various types of stump problems are discussed along with the techniques of amputation surgery, including a detailed description of muscle-stabilization procedures. All major levels of lower-extremity amputations are presented and supplemented by detailed line drawings and illustrations. Myodesis and osteoplasty receive extensive discussion, and detailed coverage is given to the handling of skin, muscle, bone and peristeum, nerves, and blood vessels. The author does not limit his writing to personal experiences only, but includes a critical review of earlier works by others in the fields of amputation surgery, patient management, and prosthetics.

A section on modern patient management by immediate postsurgical prosthetic fitting techniques for above- and below-knee amputations is supplemented with a detailed review that analyzes results of the particular form of treatment in 118 amputees. The detailed historical review points out the various early endeavors in developing immediate postsurgical prosthetic fitting.

The author adds to the scientific and technical value of the book by the interjection of several humorous anecdotes and personal experiences, which makes for informative and interesting reading for individuals other than those interested for strictly professional reasons.

This book is indeed a very fine contribution, one which should be of major interest to those active in the medical-paramedical profession, specifically those dealing with today’s amputees—their needs, requirements, and rapid, effective rehabilitation.—Joseph H. Zettl, C.P., and Ernest M. Burgess, M.D.


Notice of Meetings

INTERNATIONAL SYMPOSIUM – Sydney, Australia

The ISPO Committee on Education through its chairman, Dr. Sidney Fishman of New York, and Dr. Robert Klein of Australia, has completed plans for a very interesting symposium on prosthetics and orthotics to be held in Sydney, Australia, during the week of August 20-24, 1972. Although organized by the ISPO, it has been planned in conjunction with the Australian Council for Rehabilitation of the Disabled and Rehabilitation International; it is scheduled for the week just prior to the Twelfth World Congress of Rehabilitation International to be held in the same city.

The main subject of the symposium will be lower-limb prosthetics and orthotics covering locomotion, surgery, devices and components, fit and alignment, prescription, evaluation, and psychological matters as well as many other associated topics.

Inquiries should be addressed immediately to either Dr. Robert Klein, Director, Central Development Unit, Department of Repatriation, 250 Sturt Street, South Melbourne, 3205, Australia, or Miss W. Ward, P.O. Box 21, Woden, A.C.T., Australia 2606.

ORTHOPAEDIC SURGERY AND TRAUMATOLOGY CONGRESS

The Second Mediterranean and Middle Eastern Orthopaedic Surgery and Traumatology Congress will be held in Cairo, Egypt, March 13-19, 1972. For information concerning the Congress write to: Prof. Ahmas El-Hamamsy, 15, Sharia Sherif, Cairo, Egypt—UAR, or to: The Secretariat, Second Mediterranean and Middle Eastern Orthopaedic Surgery and Traumatology Congress, P.B. Box 1101, Cairo, Egypt—UAR.