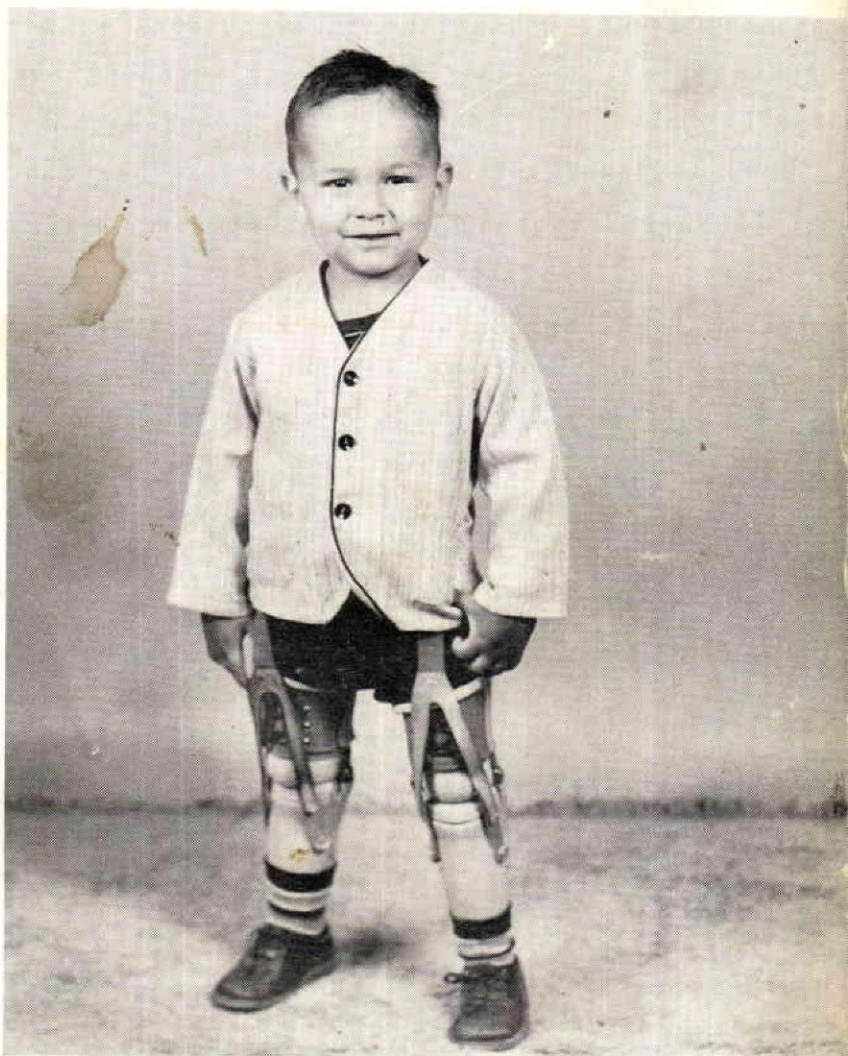


JUNE, 1958

ORTHOPEDIC & PROSTHETIC APPLIANCE

*The Journal of the
Limb and Brace Profession*

JOURNAL



David is ready!—This fine youngster, a congenital bilateral case, lives in Charlotte, N. C. (See note inside cover).

publishers: Orthopedic Appliance & Limb Mfrs. Assn. and American Board for Certification

DATES TO REMEMBER

1958 *What • When • Where*

JULY

- 19-25 American Association for Rehabilitation Therapy, Inc.; Association for Physical and Mental Rehabilitation, Inc.; Association of Medical Rehabilitation Directors and Coordinators, Inc. *Atlantic City, N. J. Hotel Ambassador*

AUGUST

- 24-29 AMERICAN CONGRESS OF PHYSICAL MEDICINE AND REHABILITATION—MEETING *Hotel Bellevue-Stratford, Philadelphia, Pa.*

OCTOBER

- 6-10 American College of Surgeons—Clinical Congress *Conrad Hilton Hotel Chicago, Illinois*
- 13-15 National Rehabilitation Association—1958 National Conference (OALMA Program presentation October 14) *Asheville, N. C.*
- 17-18 CERTIFICATION EXAMINATION FOR ORTHOTISTS AND PROSTHETISTS *St. Louis, Mo. and Los Angeles, Cal.*
- 24-25 CERTIFICATION EXAMINATION FOR ORTHOTISTS AND PROSTHETISTS *Miami Beach, Fla.*
- 26-30 OALMA NATIONAL ASSEMBLY *Eden Roc Hotel, Miami Beach, Fla.*

THE COVER

David Unzueta, the boy on our cover, was born without feet. His case was brought to the attention of Crippled Children's Division, the State Board of Health of North Carolina. The Division found that he had tried to walk on his stump and had partially done so. Through the work of the Division, necessary revisions in his left stump were performed by Dr. Ira A. Rapp, surgeon of Charlotte, North Carolina, who prescribed the prostheses. These were made for him by the *W. T. Hinnant Artificial Limb Co. of Charlotte*. John Hinnant writes the *Journal* that this four-year-old boy has made excellent progress and is being fitted and uses his limbs very successfully. He received training in the use of his prosthesis at the Charlotte Rehabilitation Hospital.

The Charlotte Rehabilitation Hospital treats both in- and out-patients, children and adults. In addition to the amputee clinic team, other outstanding features include a therapeutic pool, pre-vocational testing areas and a sound-proof room for the testing of hearing loss and hearing aid evaluations. The hospital accommodates 64 in-patients and averages 125 active out-patients. The staff includes 72 professional and semi-professional personnel.

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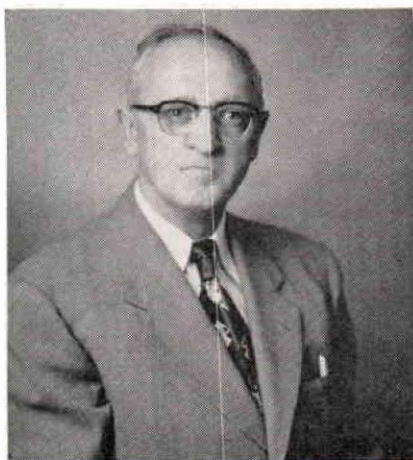
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OALMA REPORT

by

President

JOHN A. McCANN

OALMA joins with New York University in joint sponsorship this August of an Orthotic Seminar. This seminar will meet in New York City, to review the current practices and knowledge in the field of lower extremity bracing.

This will be a practical conference made up of some of the leading orthotists in this country. The men who attend will be familiar with the actual making of braces, as well as the broad and theoretical aspects of fitting orthopedic appliances.

Out of their knowledge and discussion we hope to come up with a summary which will be of value both to the practicing orthotist of today and the new generation of men who will be studying this field.

Every member of OALMA is invited to nominate one or more individuals who in his judgement would contribute to the success of this seminar. From these nominations will be drawn a group small enough, to talk together around one table.

The thinking of these men will undoubtedly greatly influence the development of the orthotist profession, not only in this country, but throughout the world. We hope in the September issue of this Journal to tell you more about this project. Meanwhile I urge that you give careful thought to the choice of the men you're going to nominate for this seminar.

A handwritten signature in cursive script, reading "John A. McCann".

Plan Now to Attend—

The National Assembly of the Limb and Brace Profession October 26 to 30, 1958. Eden Roc Hotel, Miami Beach, Florida. Post Assembly Scientific Session at Havana, October 31 and November 1.

Orthopedic and Prosthetic

Appliance Journal

(Title registered U. S. Patent Office)

VOLUME 12

JUNE, 1958

NO. 2

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included in Certification fees
and Association dues.)*

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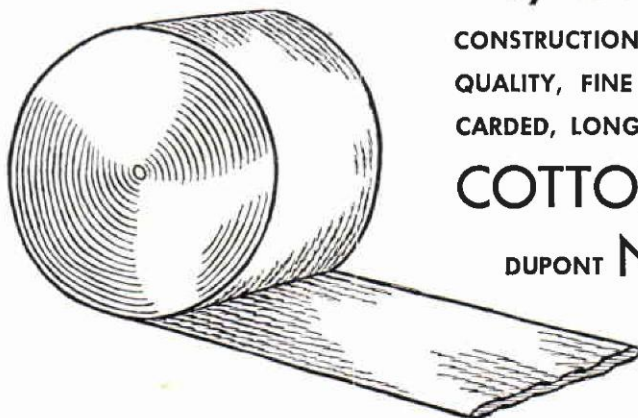
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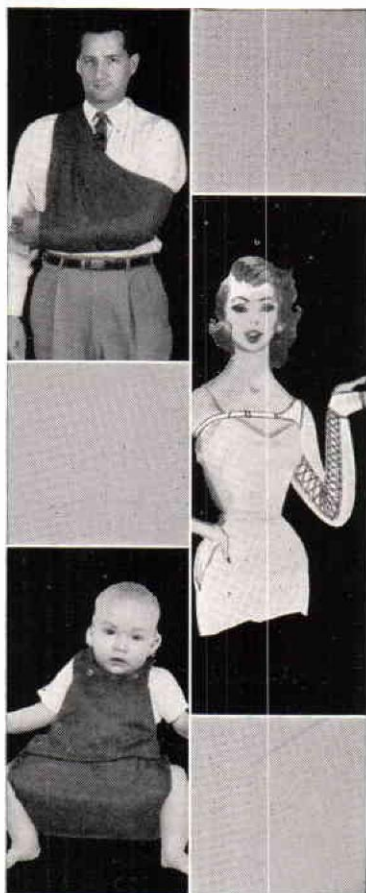
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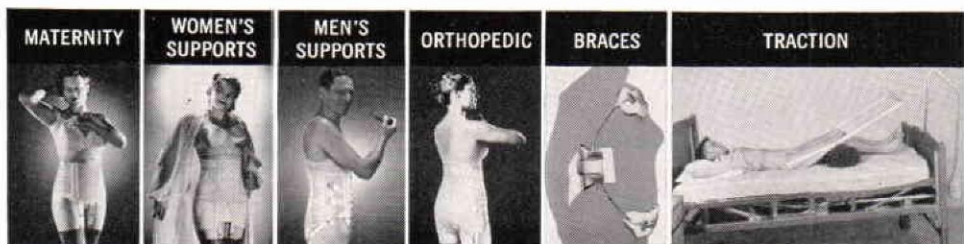
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This needed surgical appliance has exhibited excellent results in cases following radical mastectomy, and its use is becoming standard procedure when a lymphedematous condition develops. The medical profession and patients alike quickly see the sleeve's easy application and adjustable lacing features. Supplied with two interchangeable, detachable mittens for laundering without interruption of application. Made for left or right arm in two sizes. Lymphedema legging of similar design also available.

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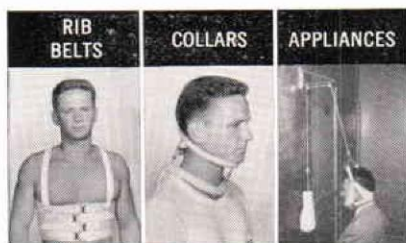
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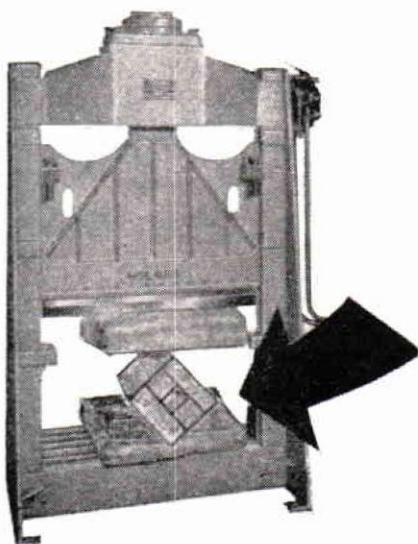
Physicians and surgeons recognize the Camp truss as a superior control for reduced inguinal, scrotal or bilateral hernia, and their patients learn they can take greater latitude of movement in dependable support and comfort while wearing this swiveled truss. Camp's patented pivot assemblies allow each part of the truss to act independently, providing body-conforming fit without cutting and allowing the truss to move with the body. Snap fasteners for easy application; designed for use with a variety of Camp pads for single or double hernias.

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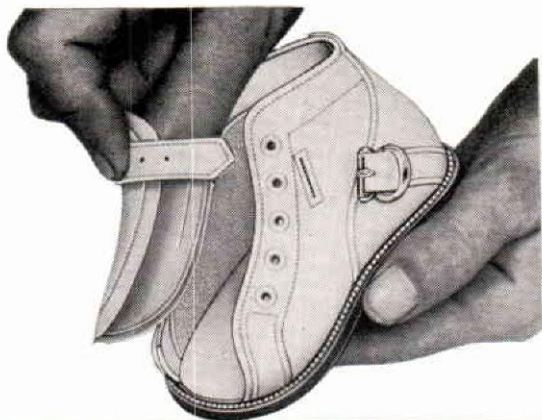
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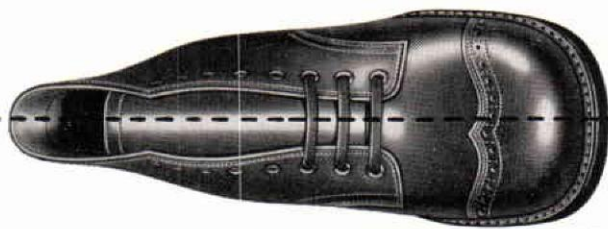
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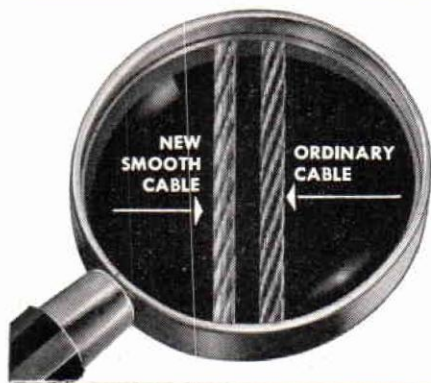


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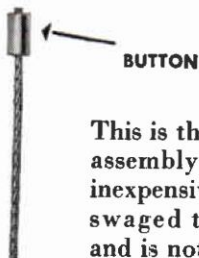
ACCO cables are completely processed to a smooth finish; thus, they retain the strength of steel but operate as smoothly as a silk thread.



LOOP TERMINAL ASSEMBLY

This T loop terminal is swaged to the button-and-cable assembly. The small, inexpensive button fitting is not re-usable.

BUTTON TERMINAL ASSEMBLY



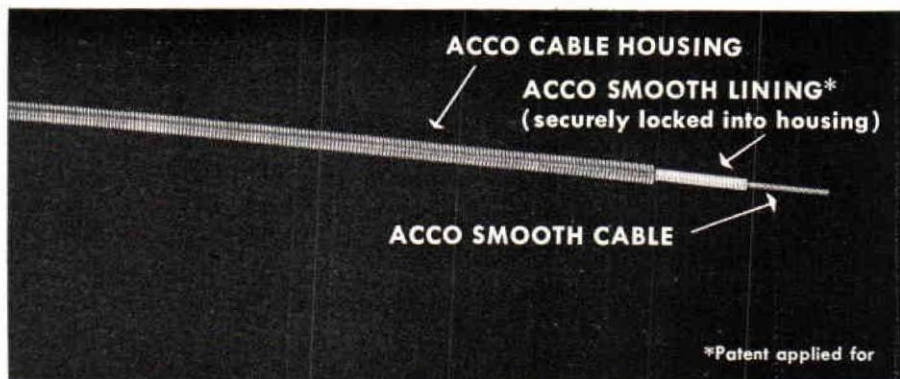
This is the basic cable assembly. The small, inexpensive button is swaged to the cable and is not re-usable.



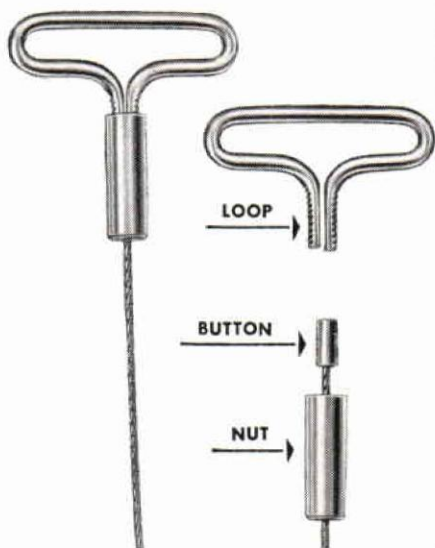
HALF-BALL FITTING ASSEMBLY

This fitting consists of a half-ball with a shank for easy swaging. Illustration shows this assembly threaded through ACCO smooth lined conduit. The small half-ball, like the button, is swaged and is not reclaimable.

No Grunts! No Squeals! No Jerks! conduit and ACCO smooth cable

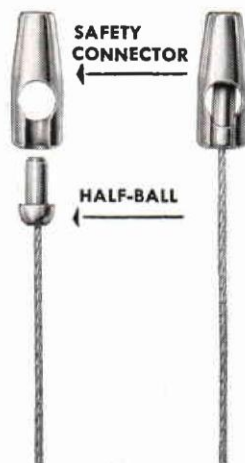


STRAP HANGER ASSEMBLY

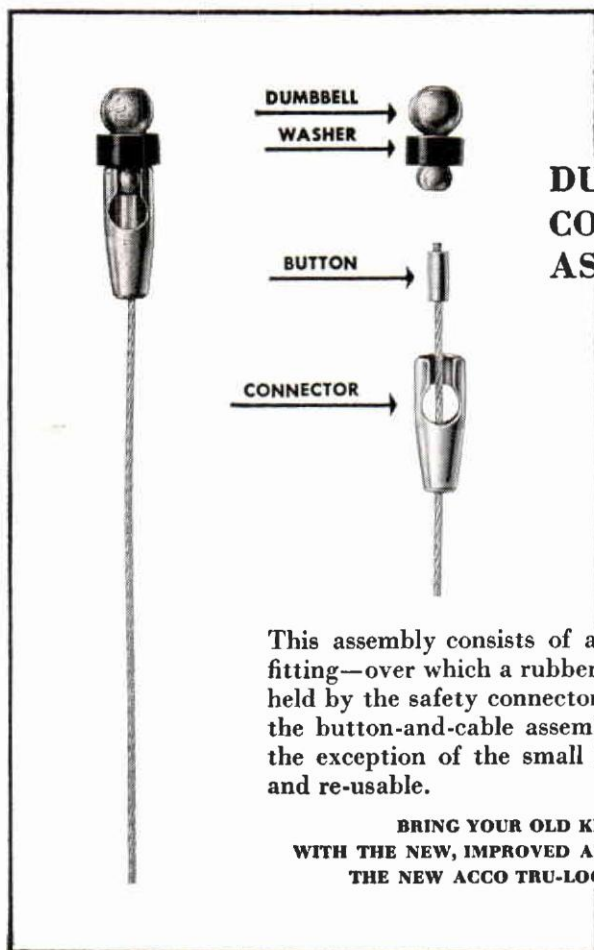


This assembly consists of a loop which screws into a threaded nut which holds the basic button assembly. Both loop and nut are easily reclaimable with no need to melt out solder.

TUNNEL PIN SAFETY CONNECTOR ASSEMBLY



This assembly consists of a safety connector which holds the half-ball assembly. It is designed to handle loads limited to protect the user from damage at the surgical attachment. The connection will pull out with a 30-pound pull —no danger of torn muscles.



DUMBBELL and CONNECTOR ASSEMBLY

This assembly consists of a dumbbell—double-ball fitting—over which a rubber washer is fitted. This is held by the safety connector which is threaded over the button-and-cable assembly. These fittings, with the exception of the small button, are reclaimable and re-usable.

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NATIONAL ASSEMBLY TO HEAR NOTED AUTHORITIES

Scientific Session at Havana to Follow Assembly

"I'm going to the Miami Beach Assembly this October and taking the family with me". That comment is heard all over the United States these days. And the report comes to Washington headquarters of OALMA from field representatives of our suppliers who, more than any other group, know what's going on and what's going to happen.

To whet the appetite of those already decided and to encourage the "fence-sitters". Program Chairman Ralph Storrs has announced the following special features of the 1958 Assembly:

Noted authorities will conduct technical and scientific sessions with emphasis on the needs of the prosthetist and orthotist in the daily practice of his profession. A question and answer session will be a feature of every program.

In the field of orthopedic appliances, the Assembly visitor will have an opportunity to hear such specialists as:

1. Doctors Tom Outland and Daniel Gross, and Orthotist Alfons Glau-bitz from the Pennsylvania Hospital for Crippled Children who will review operative procedures for the paralytic foot and its post-operative bracing.

2. Dr. Miles Anderson of U.C.L.A. and George Robinson of Robin-Aids Company who will discuss "Functional Bracing for the Paralytic" with special emphasis on non-polio cases.

3. Russ Johnson of Truform and Charles Yesalis of S. H. Camp and Company, are developing a session on "Surgical Appliances, A Demonstration and Discussion of Their Value to the Artificial Limb and Brace Establishmen". Experienced orthotists and representatives of other suppliers in this field make up the panel.

Of special interest to the prosthetist will be the opportunity to hear such men as:

Anthony Staros, Director of the VA Prosthetics Research Center, who conducts a three-hour seminar on "Reinforcing Materials for Wooden Prostheses" (Plastics, fibreglass, etc.).

2. Charles W. Radcliffe who describes the "Functional Classification of Knee Joints" (including material on hydraulic units). Mr. Radcliffe is Associate Professor of Engineering Design, University of California in Berkeley.

3. Dr. Allan Russek, Fred Eschen and William Tosberg of New York City, who will discuss "The Comprehensive Management of the Older Amputee".

Two sessions will strike home to every Assembly goer:

1. *A special Seminar in Accounting Practices and Law.* This six-hour seminar will be given by Mr. Martin Sosin, a lawyer and certified public accountant of Los Angeles. Mr. Sosin has made an outstanding name for himself in this area in California and is to teach a course in this subject as a

CERTIFICATION BOARD PLANS EXAMINATIONS PUBLISHES NAMES OF APPLICANTS



Certification Board in session: Left to right, seated: Lee Nattress, Jr. of U.C.L.A., Board members Edward W. Snygg, Dr. Vernon L. Nickel; Dr. Roy M. Hoover, the President; Vice President McCarthy Hanger, Jr.; Treasurer M. P. Cestaro and Board member Charles A. Hennessy. Standing: Lester Smith, Assistant Director and Glenn E. Jackson, Executive Director.

Each spring the Certification Board goes over plans for the annual Certification Examinations and conducts other business—to consider other aspects involved in the growth and extension of this movement to raise the standards of service given America's four million orthopedically handicapped. This year's meeting was held in the Statler Hotel, Washington, D. C., May 17, with Dr. Roy M. Hoover, President of the Board, in the chair. Others present included: Board members Dr. Vernon Nickel, Edward W. Snygg, Charles A. Hennessy, Vice President McCarthy Hanger Jr. and Secretary-Treasurer M. P. Cestaro. The Executive Staff of the Board, Glenn E. Jackson, Executive Director and Lester A. Smith, Assistant Director. Mr. LeRoy Nattress of the Prosthetic Education Program, University of California at Los Angeles, was present by invitation.

Illness prevented the attendance of two directors, Col. A. W. Spittler and W. Frank Harmon. Chester Haddan, Past President of the Board and Consultant on its activities, was in Washington for the meeting when a sudden illness required his hospitalization (he has since recovered and returned to his home in Denver).

Executive Director Glenn Jackson reported on the current Certification activities and plans for the 1958 examinations. (See the names of the applicants in the supplement to this report).

Candidates whose applications are approved may have a choice of three cities in which to take their 1958 Certification Examinations:

1. At Los Angeles, California, Saturday and Sunday, October 18 and 19.
2. At St. Louis, Missouri, Saturday and Sunday, October 18 and 19.
3. At Miami Beach, Florida, Friday and Saturday, October 24 and 25.

A step-by-step analysis of the examination procedure and grading process now in use was given to the Board by Mr. Nattress.

Mr. Nattress, who holds the Degree, Master of Arts, has been active for some time in Prosthetics Education in the Los Angeles area. As of April 1, 1958, he received a university appointment as Junior Research Psychologist in the School of Medicine, Dept. of Surgery. This is an academic research appointment equivalent to the rank of instructor—it involves teaching responsibilities in addition to Mr. Nattress' testing and evaluating and coordinating activities.

For the 1958 examinations, the Board approved these plans:

Applicants will be required to review their training with two members of the Advisory Council. This is a new requirement in order that the Board may be sure that applicants have the well-rounded practical experience provided for in the application form.

Applicants who are permitted to take the examination will be required to bring with them a specified appliance which they have made. For prosthetists this will include an AK prosthesis or a BK prosthesis, an upper extremity prosthesis and the test socket, a record of the necessary measurements and whatever prescription form was provided by the physician. Orthotists must bring with them for the interview at examination time either a long leg brace or a spinal brace, in addition to the physician's prescription and measurements.

Edward W. Snygg, Chairman of the Examinations Committee, will be in over-all charge of all three examinations. The Los Angeles examinations will be under the immediate supervision of Board member Charles Hennessy and Past member M. J. Benjamin. The St. Louis examinations will be under the supervision of McCarthy Hanger, Jr., Vice President of the Board and Past Board member Dr. Edward C. Holscher. Mr. Snygg will supervise directly the Miami Beach examination October 24 and 25.

Training Courses

The development of training and apprentice courses has led to request by the Board for an evaluation. Accordingly, it was agreed to evaluate all prosthetic and orthotic educational and training courses in order to determine what credit should be allowed if any, toward the four year experience requirement which is now a requirement of the Certification Examination. Two requests have been received to provide credit for the courses now running at the Institute for the Crippled and Disabled in New York City, at Rancho Los Amigos in Hondo, California. In the discussion of the Board, it was revealed that some sentiment is growing to increase the present four-year experience requirement to five or six years. This is based on the belief that the growing complexities of prosthetic and orthopedic appliance fitting may cause the present four-year period to be insufficient. However, decision on this point was reserved for the present.

Canadians and Certification

The Executive Director reported on the current developments in Canada relating to the possible development of an independent Certification system there. He indicated that the Washington Office had attempted to be helpful, but had pointed out the expenses involved in setting up a separate system of Certification in Canada for a relatively small group. There was general agreement that this approach was sound, and that the Washington Office should continue to help wherever necessary and, at the same time, should continue to process any applications for Certification which were received from Canadians.

EXHIBITS ON CERTIFICATION

Assistant Director Les Smith reported on the information and exhibit activities of the Board and of OALMA. Exhibit Displays on the Value of Certification are being prepared for these three conventions:

1. National Rehabilitation Association—National Conference, Asheville, N. C.; October 13-15 (OALMA program afternoon of October 14).
2. Clinical and Scientific Conference Sponsored by the Association of Medical Rehabilitation Directors, Association for Rehabilitation Therapy and Association for Physical and Mental Rehabilitation—Atlantic City, July 19-25, 1958.
3. National Society for Crippled Children and Adults—Dallas, Texas, Nov. 16-20, 1958.

Mr. Smith reported that the Board had been represented in the Educational and Scientific Sections of the American Medical Association Clinical Meeting at Philadelphia, December 3-6, and at the meeting of the Academy of Orthopaedic Surgeons in New York City January 30 to February 5. Applications for exhibit space are pending with several medical organizations.

Applicants for the 1958 Examinations

The American Board for Certification has directed that the names of applicants for Certification shall be published in the *Orthopedic and Prosthetic Appliance Journal*, at least thirty days prior to the date of the examinations. Listed below are names of persons who have made application and whose credentials are currently under investigation. Comments as to their qualifications should be sent to the American Board for Certification, 411 Associations Bldg., Washington 6, D. C., on or before September 1, 1958.

Applicants for the Orthotist Examination.

James M. Anderson
Shiloh, Ga.

Henry J. Avink, Jr.
Grand Rapids, Mich.

Dona Beaucaire, Sr.
Lafayette, La.

Donevan C. Beachler
Modesto, California

Kirk Carson
Iowa City, Iowa

Orvel M. Bird
Fresno, Calif.

Dan B. Blair
Savannah, Ga.

Joe L. Bowman
Oklahoma City, Okla.

Clarence A. Burrows
Charlotte, N. C.

Gerald T. Butt
Ville LaSalle, Quebec, Canada

Nicholas R. Caruso
Milford, Mass.

William Chadwick
South Lincoln, Mass.

George Lee Chapman
Shiloh, Ga.

George H. Christian
Gonzales, Texas

Delbert W. Clark
Portland, Oregon

Ralph W. Clark
Great Falls, Montana

Clifford D. Clinton
Detroit, Mich.

APPLICANTS FOR ORTHOTIST (Con't.)

(Mr.) Camille Corriveau
Montreal, P.Q., Canada

Richard F. Costello
Portland, Oregon

Charles L. Dale
Mansfield, Ohio

Morris A. Dodge
Seattle, Wash.

Melvin E. Deaton
Roanoke, Va.

Manuel De. La Torre
Pittsburgh, Pa.

Willis Robert Dettmer
Orlando, Fla.

Phillip B. Dodson
Shreveport, La.

Arthur Finnieston
Coral Gables, Fla.

Ellis W. Florence
Warm Springs, Ga.

James E. Friddle
Greenville, S. C.

Loathar P. Grade
Milwaukee 19, Wisc.

Frank J. A. Greco
Spokane, Wash.

Leo C. Greehan, Jr.
Yonkers, N. Y.

Charles R. Greene, Jr.
Erie, Pa.

Michael Gregor
Berwyn, Ill.

Robert E. Hall
East Detroit, Mich.

Robert W. Hinchberger
Lomita, California

Richard N. Hyman
Cayce, So. Carolina

Pete A. Iannazzo
Norwalk, Conn.

James F. Ingerham
Black Springs, Nev.

William H. Kicherer
Chicago, Ill.

Charles Kirk, Jr.
Detroit, Mich.

Raymond R. Krone
Maitland, Fla.

John B. Latimer
Tuscaloosa, Ala.

Richard R. LaTorre
Van Nuys, Calif.

Walter Karl Leonhardt
Artesia, Calif.

Jacob J. Lutter
Sunnyside, Long Island, N. Y.

Peter F. Manghera
San Pedro, California

Jack D. Meredith
Spokane, Wash.

Fred C. Moore
Warm Springs, Ga.

Eugene Moss
Gonzales, Texas

James P. Murphy
North Uxbridge, Mass.

Edward Neilson, Jr.
Portland, Oregon

Daniel G. Oglesby
Trussville, Ala.

Herman B. Ordning
Columbus, Ohio

Phil S. Page
Springfield, Mo.

Kyle H. Parsley
Albuquerque, New Mex.

Lester S. Patterson
Battle Ground, Wash.

William Earl Pearce
Miami, Fla.

J. A. Pentland
Vancouver, B. C., Canada

APPLICANTS FOR ORTHOTIST (Con't.)

Ervin Augustus Phillips
Fresno, Calif.

John W. Potter
Temple, Texas

Percy H. Ray
Durham, N. C.

Richard F. Reynolds
Woodbury, Ga.

Norman A. Rickard
Jacksonville, Fla.

Armand L. Roy
Winooski, Vt.

Rudy F. Setzer
Scotia, New York

Osborne Shepherd
Philadelphia, Pa.

Willard E. Sims
Lansing, Mich.

Joseph Slawner
Montreal, Quebec, Canada

Howard Smith
Escalon, Calif.

James E. Sparks
Vancouver, Wash.

Alfred Stanke
Forest Park, Ill.

Walter H. Stauffer
Edmonton, Alberta, Canada

Jacob Sternberg
Brooklyn, N. Y.

Floy Sidney Stevens
Warm Springs, Ga.

Kurt Thron
Schenectady, N. Y.

John A. Urebek
Temple, Texas

George S. Vukov
St. Clair Shores, Mich.

Harry B. Weaver
Beaverton, Oregon

Rayford H. Wehunt
Charlotte, N. C.

William V. Weidenburner
New Hyde Park, L. I., N. Y.

Wallace Herman Whitney
Louisburg, Kansas

Charles Edwin Wright, Jr.
Norfolk, Va.

James A. Wright
Waterford, Mich.

Wilford L. Young
Rockpoint, Texas

Applicants for the Prosthetic Examination.

Wilfred J. Anair
New Britain, Conn.

H. Stuart Barker, Jr.
Norwell, Mass.

Gerhard Beil
Newark, N. J.

William Michael Brady
Overland Park, Kansas

Cecil O. Brand
San Bernardino, California

Miro Catipovic
Buffalo, N. Y.

Roddy Chupurdia
Los Angeles, Calif.

Walter Dell
Pittsburgh, Pa.

Herman Lee Ellis
Oklahoma City, Okla.

Jack B. Faatz
Kingsport, Tenn.

George Federov
Philadelphia, Pa.

Robert O. Gooch
Durham, N. C.

Fulton Gray
Huntsville, Ala.

John L. Hammond
Columbia 22, S. C.

Joseph A. Heldreth
Wyatt, West Virginia

Eugene Michael Herc
Hamtramck, Mich.

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APPLICANTS FOR PROSTHETIST (Con't.)

Alexander M. Hughes
Rochester, N. Y.

Lloyd C. Jones
Baton Rouge, La.

Paul Franz Kermer
Harrisburg, Pa.

Sanford Kessler
Springfield, N. J.

Ivan Long
Denver, Colo.

William C. McCall
St. Petersburg, Fla.

Peter A. Ockenfels
Columbus, Ohio

Erna Ray Ousley
Lake Charles, La.

Wilhelm Pachner
Oak Park, Ill.

Claude Reece
Seattle, Wash.

Lester J. Sabolich
Oklahoma City, Okla.

Albert Scheck
Lombard, Ill.

William A. Sobbe
Chicago, Ill.

Walter H. Stauffer
Edmonton, Alberta, Canada

Garland Vanover
Indianapolis, Ind.

Albert Wasilieff
Vancouver 12, B.C. Canada

Peter Winkler
Maplewood, N. J.

George B. Zinniel
Seattle, Wash.

BOOKS RECEIVED

The following books have been added to the Headquarters Library of OALMA. Reviews of most of them will appear in the September issue of the Journal. These may be ordered through any local bookstore:

"A Primer of Cerebral Palsy"—by Joseph D. Russ, M.D. and Hyman R. Soboloff, M.D.—Charles C. Thomas, Publisher, Springfield, Illinois—77 pages, \$4.00.

"The Year Book of Orthopedics and Traumatic Surgery, (1957-1958 Year Book Series)—Edited by Edward L. Compere, M.D.—The Year Book Publishers, Inc., Chicago, Ill., 463 pages—\$7.50.

"Fractures and Other Injuries"—Edited by Edwin F. Cave, M.D.—Published by The Year Book Publishers, Inc., Chicago, Ill., 1958, 863 pages, \$28.00.

"Orthopedic Diseases; Physiology—Pathology—Radiology"—by Ernest Aegerter, M.D. and John A. Kirkpatrick, Jr., M.D.—W. B. Saunders Company, Philadelphia, 1958, 602 pages, \$12.50.

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NEW YORK UNIVERSITY AND OALMA SPONSOR BRACE SEMINAR PICKED ORTHOTISTS TO PLAN ORTHETIC CURRICULUM

"The prosthetist has available textbooks and university courses—why isn't there similar service available for the bracer?"

This question is often asked these days. Now New York University and the Orthopedic Appliance and Limb Manufacturers Association plan to do something about it.

This "something" will be an Orthotic Seminar to be held this August under the auspices of Prosthetics Education of New York University and OALMA. Dr. Sidney Fishman, Director of Prosthetics Education, New York University, and OALMA Executive Director Glenn Jackson, will serve as Administrative Heads of the Conference. Each member of OALMA is being asked to nominate one or more persons from which will be drawn the personnel of the seminar.

These men will be members of OALMA who are familiar with the actual making of braces, as well as the broad aspects of fitting appliances. They will contribute their time and energy for an entire week on this project and will be reimbursed for their out-of-pocket expenses.

The selected orthotists will meet for approximately a week for the purpose of agreeing on the subject matter and for defining the status of the knowledge of bracing as prerequisite for an orthetic course or courses, when they are established. They are also to determine if possible problems which should be the subject of research.

Each person selected will be assigned a topic and asked to present this. This will be a presentation of his point of view on one aspect of lower extremity bracing problems. Then the group as a whole will discuss each man's report and see if they cannot arrive at a common ground.

The session will open with a medical and biomechanical review of lower motor and skeletal disorders and their effect on function. Then the following specific topics will be discussed with reference to each type of disfunction:

Orthetic Components

1) Criteria for selection of: a) shoe attachments, b) devices to limit motion, c) ankle joints, d) knee joints and locks.

Principles of Fitting

1) Measurements, 2) Width of bands and cuffs, 3) Contour of bands and uprights, 4) Contour of the ischial support.

Principles of Alignment

1) Mechanical joints relative to anatomical axes of motion. 2) Position of uprights relative to anatomical landmarks. 3) Position of bands, straps, and lacers. 4) Transfer of alignment from tracing to brace.

Materials and Fabrication Procedures

1) Custom made or prefabricated parts. 2) Criteria for choice of metals. 3) Criteria for choice of leather. 4) Use of Plastics.

The meeting, which is scheduled for the New York University-Bellevue Medical Center, will be the first step in a long-awaited and much needed program. The September issue of this *Journal* will carry a report on the seminar's deliberations.



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References

1. Thomas, H. O.: Contributions to Surgery and Medicine, London, H. K. Lewis, Part 2: Principles of Treatment of Diseased Joints, 1883; Part 3: Fractures, Dislocations, Diseases, and Deformities of Bones of Trunk and Upper Extremities, 1887; Part 4: Collegian of 1666 and Collegians of 1885: What Is "Recognized Treatment"? 1885; Part 7: Fractures, Dislocations, Deformities, and Diseases of Lower Extremities, 1890.

2. Orthopaedic Appliances Atlas, Ann Arbor, Mich., J. W. Edwards, 1952, vol. 1.

WELCOME TO NEW MEMBERS



Walter T. Benedict, President of the Medical Center Brace Shop.

OALMA announces the election to membership of the Medical Center Brace Shop, Walter T. Benedict, Manager, Corpus Christi, Texas.

Walter T. Benedict, Manager of OALMA's newest member firm comes from a family with a long interest in orthopedic appliances. (His brother, Eugene Benedict, has operated facilities in Columbia and Springfield, Missouri for many years). Walter T. Benedict has had an adventurous and interesting career in several fields. He was born near Columbia, Missouri, and at the age of 11, moved with his family to Mississippi. Returning to Missouri, he graduated from the State University there with a bachelor's degree in 1929. Since then he has been in business for himself, taking time out, however, to work for the Petty Geophysical Company in Columbia and Venezuela. He also served two years in the War Department as an instructor during World War II.

Walter is married to the former Miss Beulah Graham, whom he met as a fellow student in the University. She is now teaching in the Corpus Christi Public Schools. The Corpus Christi Brace Shop was opened in 1956. It is located at 2510 Headley St. (Telephone: TU 2-2120)

**THE INSTITUTE FOR
THE CRIPPLED AND DISABLED
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For Further Information:

Write To:

CHARLES R. GOLDSTINE, C.P.O.

**Director, Prosthetic and Orthopedic Laboratories,
Institute for the Crippled and Disabled,**

400 FIRST AVENUE, NEW YORK 10, N. Y.

A New German Method of Aligning Above-Knee Prostheses

By A. P. GRUMAN, C.P.

Winkley Artificial Limb Company, Minneapolis

German mechanics have always had a well-deserved reputation for painstaking, precision work. This is the result of apprentice training in special schools, where the prospective worker must meet established standards of competence, before he is accepted for employment by the industry into which he wishes to enter.

In the field of prosthetics, this reputation for precision workmanship holds true. The Bundsinnungsverband für das Orthopädie-, Chirurgie-, Mechaniker-, und Bandagisten-Handwerk is an organization similar in scope to our OALMA, which supervises the training schools, in something of the same relationship our national organization has to the Certification program.

German work in prosthetics first caught the attention of Americans when the Commission on Amputations and Prostheses, sent to Europe in 1946 by the National Research Council, found that German prosthetists had developed a means of securing an above-knee prosthesis to the body by use of suction. The suction socket program in the United States, following the

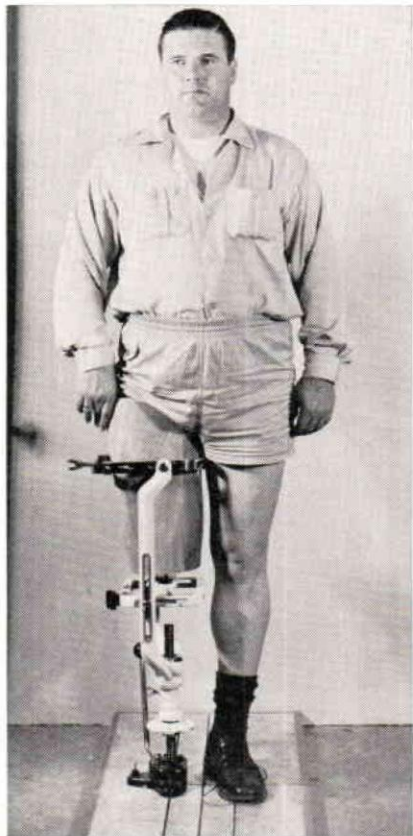


Fig. 1. Amputee in Balancing Apparatus.

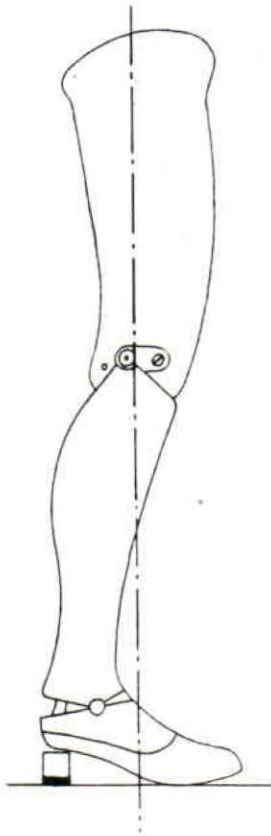


Fig. 2.

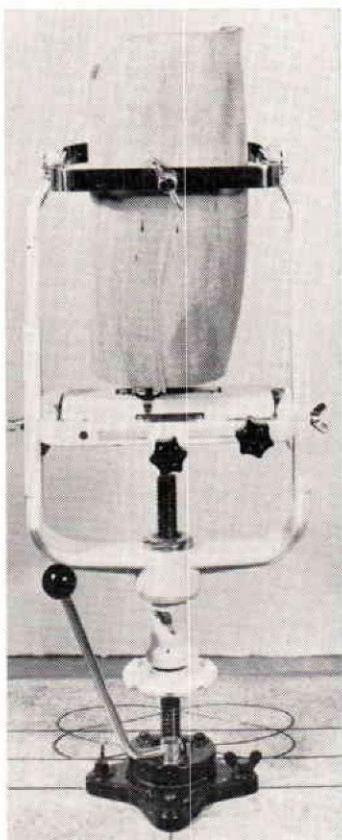


Fig. 3. Balancing Apparatus showing Controls.

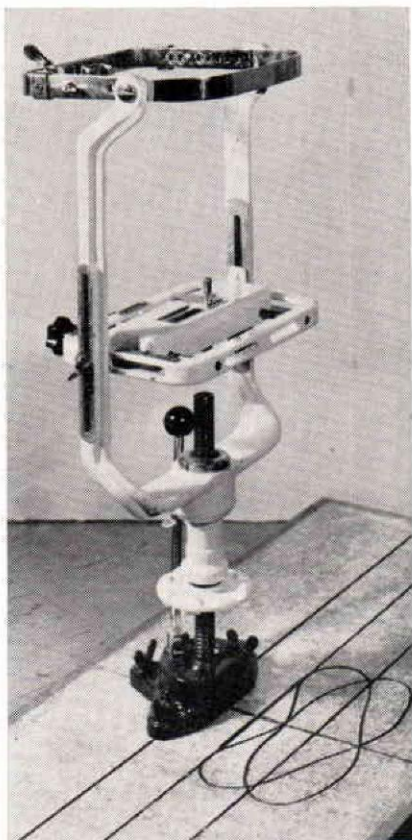


Fig. 4. Base-board Markings of Balancing Apparatus.

report of the Commission, sparked and popularized the prosthetics research program of the past decade, which has done so much for those of us in prosthetics.

Colonel Leonard E. Peterson's report on the Commission's European trip commented on German experiments with mechanical alignment of above-knee prostheses. He mentioned one German firm which had a "fitting or aligning machine", another a "fitting machine which can be adjusted for height, and then adjusted for abduction." Still another German firm had a "walking machine, used to adjust, align, and locate the components of above-knee prostheses."

Since 1946, our Research Program in the United States has been working on mechanical means of aligning above-knee prostheses, and our schools in Los Angeles and New York have taught the "adjustable leg" method, a marked improvement over older methods of aligning "by the book". During this period, the Germans have advanced their aligning methods, also. One firm, The Otto Bock Orthopaedische Industrie, of Duderstadt, has developed a three-unit apparatus which balances the amputee over a fixed point, to determine the maximal degree of effort-free alignment.

Balancing over a fixed point gives equal value to *both medial-lateral and antero-posterior alignment*. Otto Bock prosthetists say the use of a pros-

thetic foot, as in the "adjustable leg" method of aligning, tends to nullify any effort to determine the optimum antero-posterior alignment. Their method permits the center of gravity to fall, as it should in relaxed standing position, well ahead of the ankle joint.

The relation of antero-posterior alignment to effortless balance is cited in the conclusions of Kottke and Kubicek* that "under normal conditions of relaxed standing the hip is fully extended and the center of gravity of the body mass above the level of the hip is posterior to the center of the hip joint. This provides a torque, forcing the hip into complete extension, and preventing collapse of the hip. The center of gravity of the head, trunk, and arms during normal standing falls posterior to the hips and anterior to the knee, causing locking of both joints without muscular contracture."

With the Otto Bock balancing apparatus the prosthetist can determine the point at which the amputee's superincumbent weight (head, trunk, and arms) is supported in the socket, so that it may be properly aligned above the support point on the floor. If anterior tilt of the pelvis is such as to produce flexion contracture of the hip on the amputated side, which physical therapy has not succeeded in correcting, the balancing apparatus can compensate for this flexion contracture to a considerable degree by an anterior tilt of the socket.

There are three separate units in the German aligning equipment. Each one has its special function. The three units are:

1. Balancing apparatus (portable)
2. Transfer jig (portable)
3. Precision belt-sander (motorized)

Balancing Apparatus

The heart of the aligning equipment is the balancing apparatus shown in Figs. 1 to 9. When the socket is in the frame, and the amputee stands in it, the effect is that of standing on a pylon, with the distal end firmly fixed to the floor but movable in all directions. By careful application of the center-of-gravity principle mentioned previously, the amputee can be given a relaxed standing position without muscular effort, such as the normal person attains when the center of gravity falls as it should.

The unit is set on a free-working ball-and-socket fixture attached to a floor board measuring about 2 feet by 4, permitting a full stride forward and back. As shown in Fig. 3, the inner frame on which the socket rests can be raised or lowered to any desired position, depending on the length of the socket being tested. At the side of this socket support are two adjusting knobs, one for moving the lower end of the socket forward or back, the other moving it from side to side. Calibrated scales give a reading of each position, permitting the prosthetist to reset the mechanism, repeat the balancing process, and see if a new position shows the same reading.

The entire outer frame is held on a threaded center post, so that any desired elevation may be set. Adjustments in height are readily made at any stage of the balancing process, and a set-screw holds the setting until a change in elevation is desired.

The locking lever in the base plate allows the unit to be locked in any position.

Fig. 4 shows the markings on the base board. Lines are drawn thru the ball-and-socket center point at right angles, representing the medial-lateral center line, and the antero-posterior line. The latter line is approximately three

*Relationship of the Tilt of the Pelvis to Stable Posture—Frederic J. Kottke, M.D., Director of Rehabilitation, University of Minnesota Hospitals, and William G. Kubicek, Ph.D.

inches from a parallel line representing the sagittal plane, and at an equal distance on the opposite side is the line used to locate the heel of the foot in the dynamic phase of the process. Foot patterns show the heel against the sagittal plane line, which is where the foot should be in the static phase. The two foot markings show how the apparatus is used for both right and left fittings.

Before making use of the balancing apparatus, the socket is of course fitted in the usual manner. The balancing apparatus makes it possible thereafter to check the fitting at every phase of the procedure.

When the socket has been fitted, and a tentative elevation established, the socket is placed in the frame of the balancing apparatus, and clamped firmly into place. A steel plate attached to the bottom of the socket makes contact with a stud on the inner frame on which the socket rests. This stud is visible in Fig. 4.

The apparatus is set at the predetermined elevation, and the amputee steps into the socket, the apparatus being unlocked to permit this to be done easily. The amputee's foot is placed in the pattern on the base board, and he will have his shoe on during this procedure.

The prosthetist then locks the apparatus in a position where the amputee is comfortable, and explains the workings of the apparatus. He illustrates the extremes of abduction-adduction, and flexion-extension, then brings the apparatus into a neutral position. The locking lever is now released, and the balancing procedure has begun.

Fig. 5 shows the socket in place, ready for the amputee to step into.



Fig. 5. Socket in straight position.



Fig. 5A. Socket in extreme flexed position.

Fig. 5A shows the socket in an extreme flexed position.

At first, the positioning of the socket is tested in the static phase. (Fig. 6) All adjustments in the medial-lateral direction are tried, and then in the antero-posterior direction. The procedure is a repeating one, that is, the amputee is asked to tell which adjustment seems most comfortable, and requires the least muscular effort in a relaxed position, a reading of the two scales is made, then all adjustments are changed, and the prosthetist tests all positions again.

After a second trial, the readings are noted again, and if they do not correspond closely to the readings on the first trial, the various positionings between the two readings are tried out. It may be necessary to go thru this repeated testing a number of times for best results, but the changes in position are very easily made, so the process is not necessarily a long one.

When both amputee and prosthetist feel that the optimum alignment has been reached in the static phase, the amputee is asked to take a normal step, forward, then back, and the dynamic phase of the balancing procedure follows. (Fig. 7) The amputee may be provided with a pair of canes, or the balancing apparatus may be placed between parallel bars, to aid him in determining the most comfortable position. Greater pressure on one of the canes or parallel bars indicates the correction to be made.

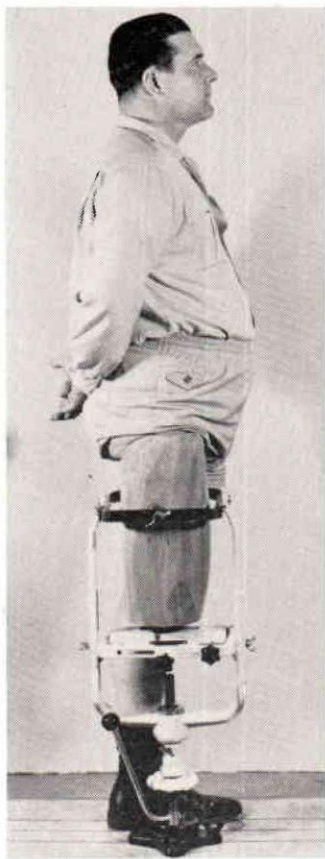


Fig. 6, Amputee in Normal Relaxed Standing Position.

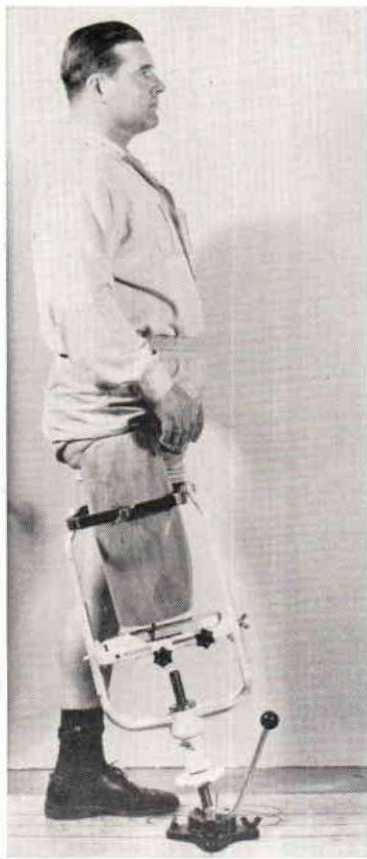


Fig. 7, Dynamic Phase at Beginning of Stride.

In the dynamic phase of the procedure, it is important for the amputee's foot to be placed so that the heel is centered along the line drawn on the base board for that purpose. Any tendency on the part of the amputee to deviate in one direction or the other indicates need of adjustment of the abduction-adduction knob, of course.

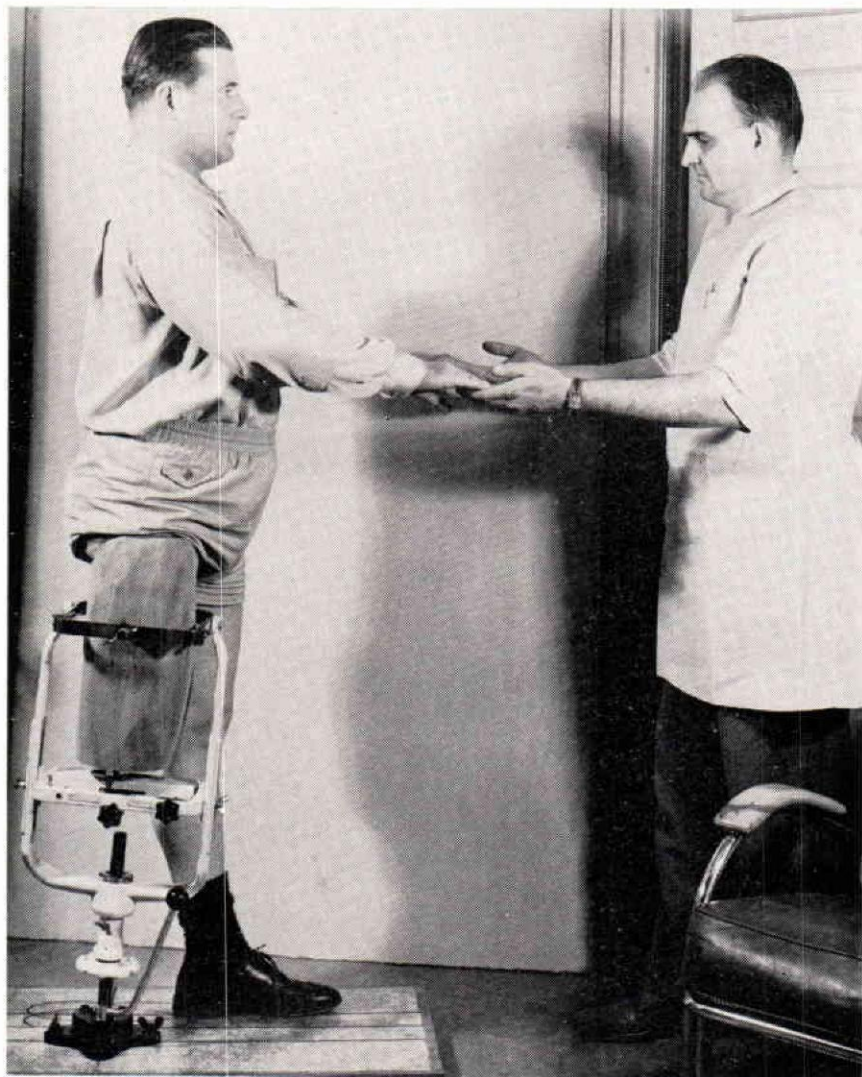


Fig. 8. Finger-Tip Test.

The prosthetist can help the amputee during the dynamic phase of the balancing procedure by standing in front of him, with hands extended, palms up. The amputee places his finger tips on the prosthetist's hands; as he takes his steps, it will be apparent to the prosthetist, by the pressure on one hand or the other, whether the socket should be abducted or adducted, and this is also helpful in determining the most comfortable position of flexion-extension. Fig. 8 illustrates this being done.

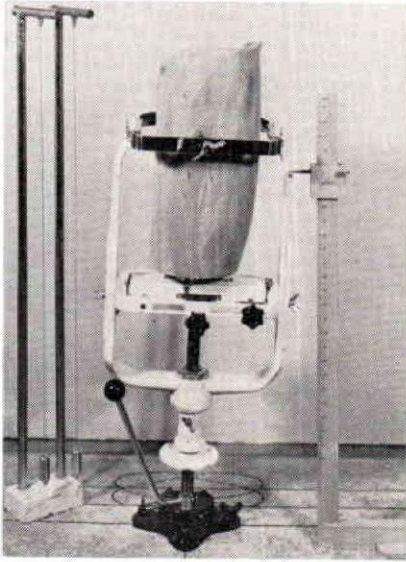


Fig. 9. Plumb Lines and Elevation Marker.

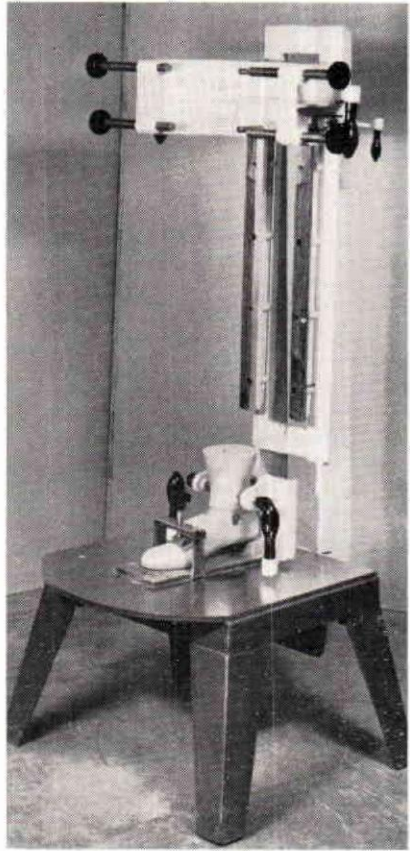


Fig. 10. Transfer Jig with Foot in Place.
Socket Bracket on Sliding Posts.

As in all phases of providing an amputee with a prosthesis, complete co-operation between amputee and prosthetist is essential.

Scale readings in both the static phase and the dynamic phase of the procedure must be reconciled, of course, and this makes it necessary to shift from static phase to dynamic phase, and back again. Once again, it should be emphasized that the entire balancing procedure, static phase, dynamic phase, elevation adjustments, and changes for flexion or extension of the socket, abduction or adduction, are readily made in one continuous trial, with the amputee standing in the socket thruout. The apparatus may be locked at any time, to give the amputee a moment of rest, if he becomes tired.

The locking device has one other important service to render. During the static phase, when a comfortable alignment has been found, the prosthetist may lock the apparatus in place for a few moments, and then, without warning to the amputee, release the lock, noting with care in which direction the amputee tends to fall. This will readily show whether a still better point of balance can be found.

For new amputees that are older and/or unsteady when standing, the procedure may have to be somewhat more restricted. In such cases, the balancing may be done in the static phase, with only rudimentary steps being taken, if any.

By alternately locking the unit in place, and releasing it, and by the finger-test described above (Fig. 8), it is possible to give this new amputee a very satisfactory degree of balance, so that he may maintain a relaxed standing position without muscular effort.

Marking the Socket for Transfer

When the best possible alignment has been agreed upon, the amputee steps out of the apparatus, and the prosthetist proceeds with the marking of the socket, for transfer to the transfer jig. The apparatus is locked for this marking process.

Marking is done with a plumb line on three sides of the socket, posterior, medial and lateral, directly above the lines marked on the base-board through the ball-and-socket center point. The front and back struts of the balancing apparatus are offset to facilitate this marking, as shown in Figs. 1 and 4.

Fig. 9 shows the accessories used in the marking. The frame holding two plumb lines should be placed so that the plumb lines are directly in line with the base-board markings thru the center point. The edge of the base block of the frame is in this line, but in Fig. 9, to make the illustration more clear, this base block was set at an angle, showing the plumb lines clearly. With the plumb lines to guide him, the prosthetist places a mark at top and bottom of the socket on three sides.

The two plumb lines make it possible for the prosthetist to be very accurate, which of course is essential in this part of the procedure. When the socket is removed from the apparatus, the marks are joined by penciled lines, which are then used in setting the socket in the transfer jig.

The other accessory is a vertical elevation-marking device, with which the prosthetist marks an arbitrary elevation point, e.g., 27 inches, which then becomes the guide for establishing the elevation in the transfer jig.

With carefully marked vertical lines on three sides of the socket, and an arbitrary elevation mark, the socket is now ready for assembly, via the transfer jig, with the other components of the prosthesis.

Transfer Jig

The transfer jig is essentially two vertical grooved posts, along which removable brackets, or frames, holding the socket and the knee-shin assembly, may be raised or lowered. Hand grips permit these brackets to be readily removed from the posts on which they slide. Fig. 10 shows the transfer jig, with the frame for the socket in position, and the foot already set in the base-plate bracket. Fig. 11 shows the three prosthetic components with their respective brackets. The prosthetist is in the process of removing the socket bracket from the jig.

The foot-ankle assembly is first put in place. On the base plate are markings which correspond to the medial-lateral and antero-posterior lines through the balance point on the balancing apparatus. The toe-out of the foot is set at the usual five-seven degrees and the foot is then set ahead or behind the center line (Fig. 2), depending on the type of the foot being used. A foot with a soft ankle action (SACH foot, for example) will be placed back of center, while a foot with little ankle action will be placed ahead of this center line. Adjustable clamps in back, and on both sides, secure the foot-ankle in the desired position.

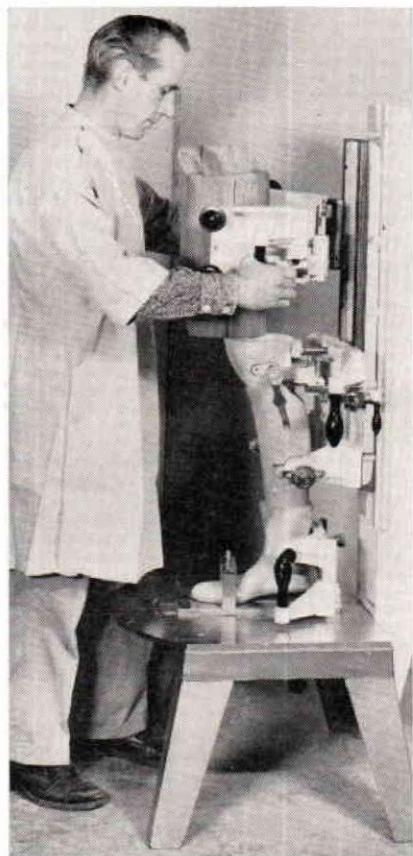


Fig. 11. Prosthetist Removing Socket Bracket from Transfer Jig.

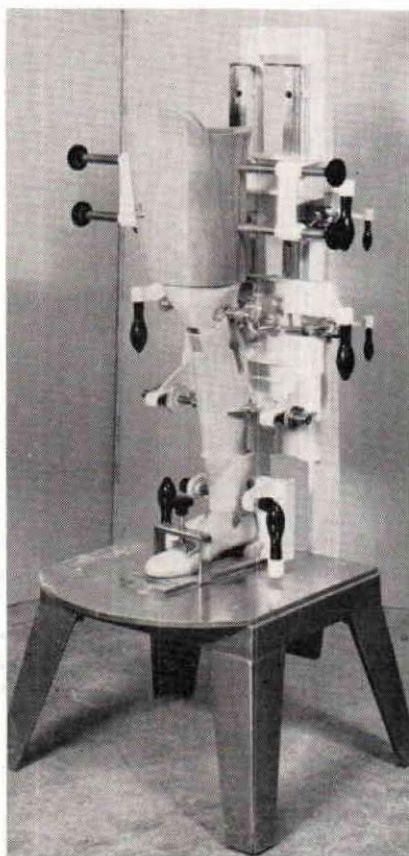


Fig. 12. Three Components in Transfer Jig, Ready for Cutting Down.

The socket is then placed in position. The bracket holding the socket has two vertically aligned pinpointed clamps on either side, which are now set along the vertical lines previously drawn on the sides of the socket. These clamps, and therefore the lines established in the balancing procedure, are now directly above the center line on the base plate.

Two similarly pin-pointed clamps are set along the vertical line marked on the posterior of the socket. These clamps, in turn, are directly above the antero-posterior line on the base plate.

With the socket and foot-ankle set in the transfer jig in proper alignment, the bracket holding the socket can be raised to permit the placing of the knee-shin component in the center bracket of the transfer jig. This component is aligned medial-laterally to provide the best cosmetic appearance, as the over-all alignment of the prosthesis has been established by the positioning of the socket and the foot-ankle components. The antero-posterior position of the knee axis is determined by the type of prosthetic knee used,—conventional or friction stabilized. (Fig. 12)

By means of the arbitrarily marked elevation on the socket, it is a simple matter to determine at what levels the three component parts must be sawed,

and each section is removed in turn, the bracket in each case fitting into a flat-bed wood form which provides accuracy in cutting at the band-saw. A precise horizontal cut is made at the bottom of the socket, the top of the foot-ankle section, and top and bottom of the knee-shin component. (Fig. 13)

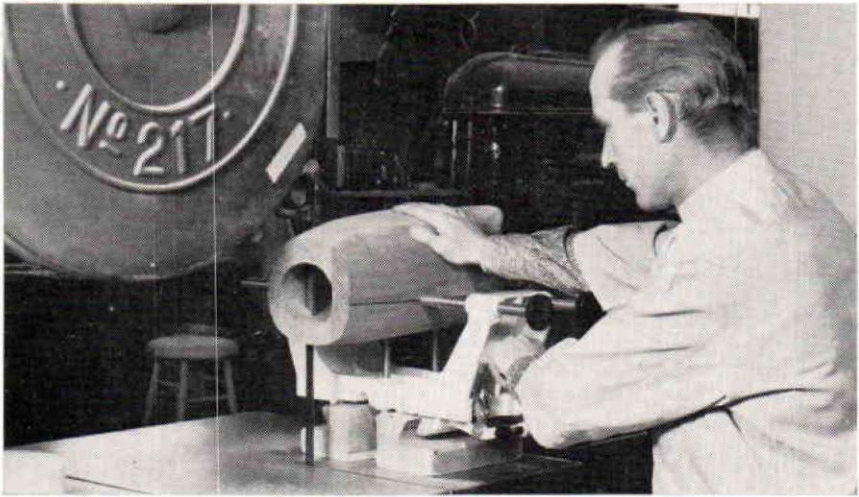


Fig. 13. At Band Saw, with socket held in line with bracket and special wooden frame.

Precision Belt-Sander

As each component is sawed at the proper level, it is taken to the belt-sander for surfacing, in preparation for bonding. The German precision belt-sander is shown in Fig. 14. On this unit, the transfer jig brackets slide

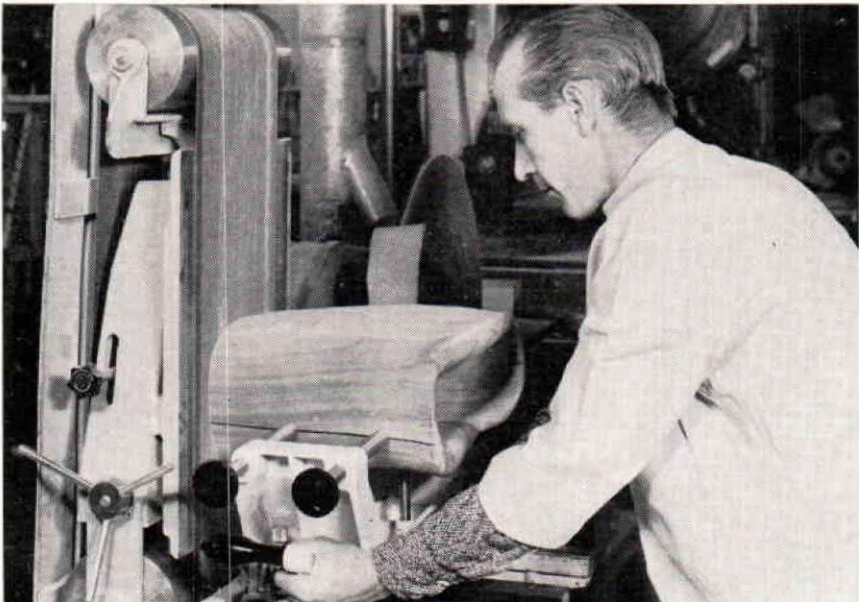


Fig. 14. At Sanding Unit.

along fitted grooves, so that the sanding process can be kept to a rigidly held horizontal level. The vertical sanding belt is backed up by a metal plate, to permit the prosthetist to press the surface to be smoothed against this plate.

This combination of rigidly held component, with accurately aligned sanding surface, preserves the alignment of the sawed surfaces, and at the same time provides an absolutely level surface, an end result that is extremely difficult to accomplish by ordinary means.

Final Assembly

When the four cut surfaces of the three components have been smoothed in the sander, they are again assembled in the transfer jig. If the prosthesis is to be tried out "in the rough" as is usually the case, then the parts of the prosthesis are spot-glued, and gravity plus a slight pressure maintained for perhaps two minutes, gives a well-bonded result and the prosthesis is ready for trial. The aligning procedure is not a complicated one, and once the prosthetist has been thru the various stages, the process becomes quite automatic.

Conclusion

For more than a decade now, prosthetists have sought mechanical means of aligning above-knee prostheses, in the interest of greater accuracy. Various methods have been used, with marked success, as compared to the older method of aligning by eye, or "by the book". Otto Bock Orthopädische Industrie, of Duderstadt, Germany, has been through much the same experimental process, and has recently brought to the United States aligning equipment which makes use of a new principle of alignment.

Otto Bock prosthetists cite several advantages of the balancing-over-a-fixed point method, in addition to the more accurate aligning accomplished in the antero-posterior phase:

1. The balancing apparatus permits checking the fit of the socket at every part of the stride.
2. Adjustments-in-place are possible, resulting in faster, more accurate aligning.
3. The fear of falling, or collapse of the knee, especially important to the new amputee, is removed.
4. The transfer jig provides a fast, accurate method of cutting to length, and final assembly.
5. The precision belt-sander provides accuracy in sanding components to be bonded, without the distortion that develops with ordinary sanding equipment.

Mechanical alignment of above-knee prostheses is here to stay, apparently. Undoubtedly, there will be improvements in the processes now being used to accomplish the accuracy of alignment so greatly desired. The Otto Bock method described has advantages over others which have been introduced in the past decade, and several American prosthetic facilities are using this equipment with excellent results.



A. P. Gruman is a native of Minneapolis, and received a B.A. degree from Carleton College, with a major in economics. Following overseas service in World War I, he was employed by the Winkley Artificial Limb Co. in September, 1919. His training in prosthetics and business management was under Lowell E. Jepson, founder of the Winkley Co. He has served the O.A.L.M.A. in various capacities, and was president in 1948-49. Currently he is president of the Winkley Company, and his son, Robert C. Gruman, is executive vice president.

THREE NAMED TO OVR ADVISORY COUNCIL

The Secretary of Health, Education and Welfare, has announced three appointments to the National Advisory Council on Vocational Rehabilitation.

The Council reviews applications for Federal funds from sponsors of research and demonstration projects in rehabilitation. It recommends approval of those which show promise of making valuable contribution to rehabilitation of disabled persons. Miss Mary E. Switzer, Director of the Office of Vocational Rehabilitation, is Chairman of the Council.

The three new members are: Miss Louise Baker of Lincoln, Nebraska; Weston Howland of Milton, Massachusetts; and Dr. Frank H. Krusen of Rochester, Minnesota.

Chester C. Haddan, Past President of OALMA, is one of the other nine members of the Advisory Council.

Miss Baker is a former director of Public Relations for the National Society for Crippled Children and Adults. She is the author of several novels, one of which is based on her experiences as an amputee.

Mr. Howland is an Industrial Consultant in Boston who has long been active in rehabilitation and other health fields.

Dr. Krusen is Professor of Physical Medicine and Rehabilitation at the Mayo Foundation. He is Chairman of the Committee on Rehabilitation, American Medical Association, and Consultant on Restorative Medicine to the Chronic Disease Program of the U. S. Public Health Service. He served on the Baruch Committee on Physical Medicine immediately following World War II.



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STUDENTS OF FUNCTIONAL BRACING—The four students shown above with Instructor Jack Conry at the right are enrolled in the Functional Brace training program at Rancho Los Amigos, Downey, California. Left to right: John Peck, Jack Banoczi, George Irons, Jack Anderson and instructor Conry. The four students have all either finished junior college, or will do so this year. The program under which they are enrolled was described in the December 1957 issue of this Journal (pages 116-117).

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Back to Life

By MILTON COHEN

Executive Director, Federation of the Handicapped

"I got this far, honey. I'll get home yet," Roy Campanella said to his wife after his car overturned, injuring his spinal cord. The great Dodger still has a long way to go; he is paralyzed in all four limbs. But whether he will walk again, with or without braces and crutches is a matter in which not only his doctors and appliance makers but also Campanella himself will play major roles. For, as a capable prosthetist or orthopedist knows, how far any amputee can be helped depends in large measure on two things: whether he has the indomitable spirit which will carry him through the months—or years—of rehabilitation, and whether he has the grit to adjust to a permanent disability.

Only ten years ago patients such as thirty-six-year-old Campanella had no hope of recovery. Today they can be saved by wonder drugs from infections, and they can be brought back to productive lives through rehabilitation. At our twenty-three year old organization, the Federation of the Handicapped, we have seen rehabilitation grow through its initial, halting phases to a new concept in medicine. What happened to Michael Hagler, legless since childhood, crawling around on his stumps, reduced to begging to keep himself alive, is typical of the near-miracles which we see every day.

When Mike came to us he was middle-aged, hopeless, forlorn, because no one had ever helped him realize he could do something about his condition. Son of a poor tenant farmer in the South, he had been run over by a speeding automobile—and left, mutilated. When a friend brought him to us, literally a new life began. We had Mike fitted with two artificial legs. When he learned to use them, we taught him a trade. For the first time in his life, at forty-eight, Mike Hagler became a wage-earner. When he retired at sixty-eight he had worked twenty years as head of our own multi-graphing and mimeographing department. Because to Mike every work-day was a direct gift from God, he was one the most cheerful, most efficient, and most inspiring of our nearly two hundred employees, most of whom are as disabled as he *was*. For you cannot call a man disabled who literally stands on his own two feet, does a full day's work, and supports himself and his family, all the time. Like Michael, he is re-born, a valuable member of society who gives as much as he gets.

The story of Michael Hagler illustrates the fact that rehabilitation is open to anybody who can get the right kind of help, provided he has *patience, strength of character, and willingness to face facts*. These are the important elements in an experience which must be traumatic, whatever the prognosis.

What can *you* do to aid in this often long-drawn out process of adjustment?

In the first place, for a man or woman who has lost an arm or leg—or both—after reaching adulthood the shock, obviously, is much greater than that of a person who has suffered a deformity since birth, or an amputation in childhood, or has had years to get used to having appliances adjusted.



A typical scene at Camp Pa-Qua-Tuck, especially built for the handicapped. Members of the Federation of the Handicapped spend a happy two-week period on the shores of a calm lake. Neither braces nor wheelchairs are an impediment to enjoyment of the water.
(The photographer, Herman Reich)

Role of Prosthetist Is Invaluable

The amputee who comes to you after he has been in the hands of a surgeon will have been told that if he expects to make headway in leading a normal life the best thing he can do for himself is not to "wear" his prosthesis in the clothes-closet at home. The role of the prosthetist in helping any amputee cannot be overstressed at this point in recovery. He must have as much interest in his client's success as the client himself. He must be willing to make constant adjustments, if necessary, so that the brace or any other appliance will at last feel comfortable; he must be willing to give many work hours to show a man or woman how to manipulate a hook, or to convince him that his lost hand or missing leg is not irreplaceable, or what he has to use in place of either one is not a disgrace, or something to be ashamed of.

Often the amputee will be more talkative, more open with the prosthetist than with his own doctor. He may feel that the latter is busy, pressed for time, and not willing or able to sit and let him pour out the mass of small or large things which have made him tense and unhappy. He will be specific with the physician and tell him about the pain he has and ask what can be done about it, but to the prosthetist he may have another attitude. He may tell you, if you are sympathetic, about his son's illness, his wife's pregnancy, his anxiety about holding his job, his father's death, his worry over threats of war, or even the man-made moon. This may seem, somewhat unrelated to an amputation, or even trivial, but to the man or woman concerned about himself and his future, feeling anxious and depressed over his new situation, they are real threats and real sources of disturbing anxiety.

Every newly amputated patient thinks that he alone has had this experience, and that he is the only person who has ever felt the way he does. Nothing will give him more relief than to be helped to realize that other people whom you have fitted with hooks or braces or crutches have had such feelings and managed to overcome them, and that doctors and nurses and prosthetists do not consider his depressive state an evidence of weakness.

You as one member of the skilled team now including therapists, psychiatrists, vocational counselors, social workers, bracemakers, and physiatrists, will teach the amputee—if he has the will to learn—that he *can* develop from bed to job. In very small communities you, the prosthetist, may have to take on much of the whole clinic's job yourself. In every case, you can accomplish much good—or you can damage both the spirit and the body of your client.

Not only must you be a good listener, but also you must know your community's resources, and those of your state. Your client's own surgeon should have referred him, before you see him, to your state's Division of Vocational Rehabilitation. This is part of a vast network of public and private agencies throughout the country now providing rehabilitation service for disabled persons. See that your client is fully acquainted with those in and around the place he lives. The National program has been greatly expanded since 1954, when Congress passed a law aimed to bring vocational rehabilitation services within reach of all who can benefit by them. The amputee who comes to you may be aware only vaguely if at all—that he is entitled to this kind of help, regardless of his economic condition. If you are interested in giving him more than just the mechanical aids he needs, tell him that the State-Federal program of vocational rehabilitation offers these services: diagnostic examinations, medical care, physical aids, vocational counseling, job training, and job placement to handicapped persons of working age, to enable them to become economically independent.



The Federation of the Handicapped was instrumental in getting the Park Department of New York to build a ramp so that disabled men and women for the first time could use the beach at Coney Island. This photograph was taken the first day the ramp was open and shows a typical client of the Federation of the Handicapped. (The photographer, Kay Simmon)

In our own Federation building at 211 W. 14th Street, New York City, we have a co-operative program with New York State's Division of Vocational Rehabilitation. We are together helping homebound adults who have never worked in their lives, and who cannot now work outside their own homes, to learn trades. Many of them are amputees, with other complications which make it impossible for them to use public transportation. We secure contracts from New York manufacturers, make pick-ups of raw merchandise, and deliver the finished goods the homebound execute after they have been trained by us. Each worker is paid at the going rate in the industry. This, we hope, will set an example in other communities which will bring hope to thousands who never had a chance to earn before.

The goal of everyone concerned with an amputee should be directed not so much at "What can I do to help this patient?" but "What can I do to help this patient help himself?" Obviously, this means that the team's work—or yours—must begin with an analysis of how much physical capacity remains to the individual. Points of spinal-cord compression, for example, may have to be relieved by neurosurgery; uncontrollable muscle spasms may be lessened by one of various nerve-cutting operations. But once he knows his ultimate capacity or his potentialities, the patient is ready to begin thinking, and working, toward a job, the end result of all rehabilitation, whether in the home or out of it. This is as true for the housewife as for the man of the house. For the State-Federal program now provides services to handicapped women so that they may learn how to manage their homes and care for their children.

At Federation of the Handicapped, we know through the records of thousands, that nothing aids a person more than having the satisfaction of giving back to society a dollar's worth of work for every dollar spent in rehabilitation service on him. The effort to attain this goal has to be tremendous, and your client will probably need the hope and faith you place in him as much as the appliance you fit to his special needs. It is common knowledge that any new amputation will make a man or woman want to shrink from being seen, cause him to slip his hand that lacks fingers, or the arm without a hand, under the table, or in a pocket. Very often he wants nothing more than to turn his face to the wall and hide what looms up in his mind as a great "deformity." It is here through sympathy, not the maudlin type, and encouragement, that the prosthetist can be of priceless help.

Encourage him to use dumbbells and "pushups" even if he has to lie in bed or sit in a wheelchair. Tell him that he risks lifelong invalidism if he doesn't stimulate the flow of blood, overcome a tendency to kidney stones or prevent his joints from locking and his bones from decalcifying. If he is bedbound, somehow he must try to get the strength to rise; perhaps he won't be able to stand for more than an hour a day, even with crutches. He may have to be aided at first with a special tilt-table. Even when he can stand with his braces, the secret of safe balance will have to be patiently learned. If he has the opportunity to take lessons with the use of low parallel bars, encourage him to keep at them steadily; if he can do it with the aid of disabled teachers who have already learned, he'll make just that much more progress.

Take the extra step that will help the new amputee: introduce him to people who have overcome the obstacles he is just beginning to face. At the Kingsbridge Hospital for Veterans in New York City, Junius Kellogg, the great basketball star now a paraplegic, is an inspiration to every man around him. He had to learn 137 separate daily activities, from tying shoelaces to

driving a car. His indomitable spirit has brought him back into spotlight. As coach for the "Pam-Ams," wheelchair basketball enthusiasts who have toured both North and South America, Junius Kellogg has proved that rehabilitation is a combination of physical techniques, sweat, and moral grit.

The surface of rehabilitation has only been scratched. Since World War II the techniques of rehabilitation have spread to thirty-eight countries, from far-away Korea to every hamlet in this country. Formerly the "way back" for many led only to the veteran's or a city hospital; today over 260 physicians and 3000 therapists have received special training in rehabilitation techniques. We need at least 10,000 more medical doctors who understand the techniques of civilian rehabilitation. Your own job will grow as longevity stretches even farther for those now young. By 1960 there will be one out of every ten people in our country sixty-five years old. Since they are particularly vulnerable to disablement, they will need you even more than you are needed now.

Never forget that you are not alone, no matter how small the community in which you live. You are a member of a *team* which even now is returning nearly 85% of the physically rehabilitated to work. The disabled among us now cost the Federal-State program some \$40 millions annually; yet in approximately three years the income taxes alone of those who have returned to work will match the public funds spent on them during their helpless period of disability.

In New York last spring a group of nearly twenty disabled men and women, of all ages—twelve of them in wheelchairs—took a plane for Europe. They were the pace-setters for what may well become a commonplace sight within a few years. "Wings for the Disabled" aims to make it possible for polio victims, like our own Harriet Weingast, to "wheelchair" across Europe. But it will also serve as an inspiration to thousands who will never be able to buy a plane ticket. Harriet is an expert secretary, trained in our own shorthand and typing classes. She now has a responsible position as assistant to the head of the rehabilitation department in St. Vincent's Hospital in New York. Last year she taught typing to other victims of crippling diseases. To see her wheel herself rapidly across any room, get in and out of her own automobile which she drives to work every day through New York's most crowded streets, is to know that the motto of the Federation of the Handicapped is true, for "the way back is back to work."

The "Yankees" of NRA Hear Miss Switzer

The New England Division of the National Rehabilitation Association, sometimes known as the "Yankee" Division, held its annual session June 12 and 13, at Rye Beach, New Hampshire. Miss Mary E. Switzer, Director of the U. S. Office of Vocational Rehabilitation, delivered the keynote address, "The Road Ahead". In other sessions, members heard a panel discussion on "Social Security Disability Insurance—A Continuing Challenge"; "Human Relations in Rehabilitation" and "A Labor Union's Approach to Rehabilitation". E. H. Whitten, Executive Director of the National Association, addressed the session on the legislation now before Congress in the field of Rehabilitation. Among the technical exhibits were those of OALMA members Boston Artificial Limb Co. (Howard Mooney, Manager) and the New England Brace (Jack Guimond President).

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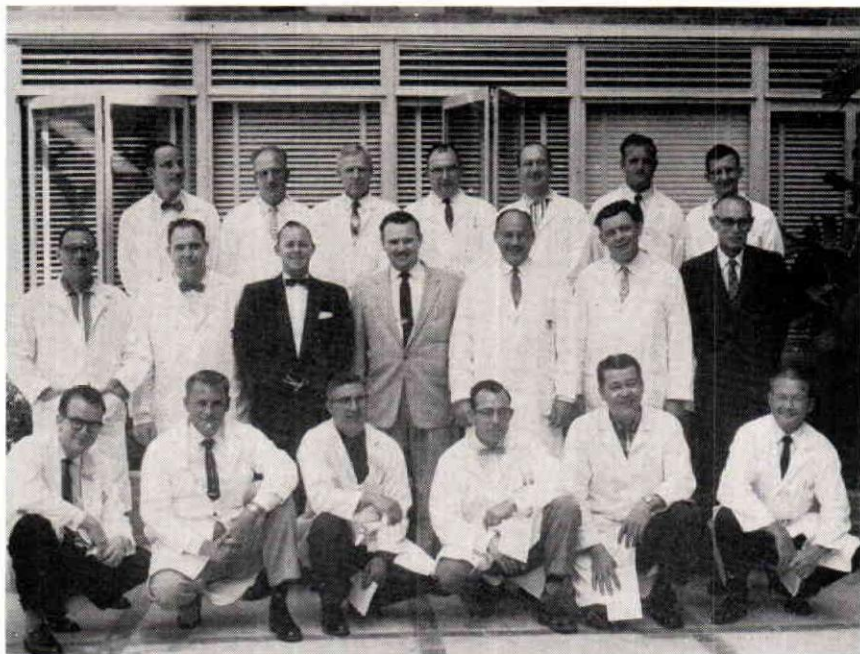
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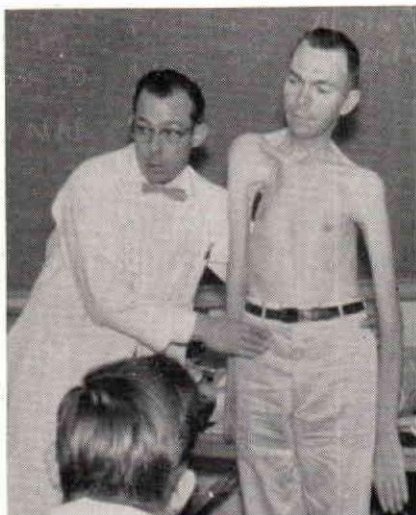


PIONEERS IN FUNCTIONAL BRACING—Students and instructors of the Pilot Class in Functional Bracing of the Upper Extremities given at U.C.L.A. Medical School April 7-23, L. to R., front row, LeRoy Nattress, U.C.L.A.; Roy Snelson, Instructor, Clyde Peach, Pope Foundation, Kankakee, Ill.; George Robinson, Instructor, U.C.L.A., (Robin-Aids); Larry Czap, University of Michigan, Ann Arbor; Dr. Miles H. Anderson, Director, Prosthetics Education, U.C.L.A.; Second Row, Arnold Viner, U.C.L.A.; Jack Conry, Instructor, Jerry Leavy, Instructor, U.C.L.A. (Hosmer Co.); Wesley Prout, Engineer, Hosmer Co.; Frank Harmon, Atlanta, Ga.; William Tosberg, Institute for Physical Medicine and Rehabilitation, N.Y.C.; Walter Stauffer, Edmonton, Canada; Third Row; John Bray and Fred Sanders of U.C.L.A.; Paul Shipp, Nashville, Tenn.; Bert Titus, Duke University, Durham, N. C.; Stephen Hall, Institute for the Crippled and Disabled, N.Y.C., Frank Jones, Georgia Warm Springs Foundation; Edward Thompson, Cleveland, Ohio.

The completion of the "Pilot Class" in "Functional Bracing of the Upper Extremities" at the University of California, Los Angeles, Medical School marks a historical event in the field of orthotics, as this is the first time an educational program has been offered by a medical school for the benefit of those engaged in the fabrication and fitting of braces.

The purpose of the "Pilot Class" was to bring in a group of experts in the field of orthotics and have them take the course in a "trial run" so that any inaccuracies and errors could be spotted and corrected. The students in the "Pilot Class" were largely from polio respiratory centers where they had considerable experience in upper extremities paralytic cases, since functional arm braces and splints are used chiefly on patients suffering from various degrees of paralysis of the hands and arms. The members of this first class were: *John J. Bray*, U.C.L.A. Medical Center, Los Angeles; *Lawrence Czap*, University Hospital, Ann Arbor, Mich.; *Stephen Hall*, Institute for Crippled and Disabled, New York City, N. Y.; *W. Frank Harmon*, Atlanta Brace Shop, Atlanta, Georgia; *Frank R. Jones*, Georgia Warm Springs Foundation, Warm Springs, Georgia; *Clyde E. Peach*, Pope Brace Division, Kankakee, Ill.; *Fred*

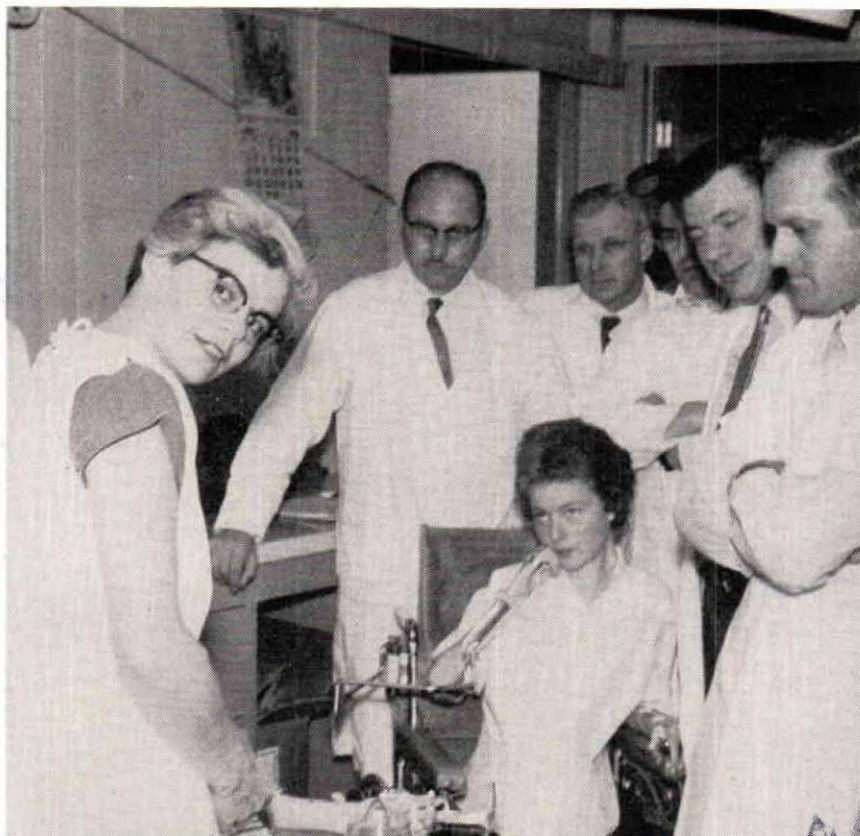
Instructor George Robinson explains the method of analyzing the patient's functional losses as a means for determining the type of functional arm brace to fit him with. The patient, Mr. Kenneth Musselman, offered a number of problems to challenge the students.



J. Sanders, U.C.L.A. Medical Center, Los Angeles; *Paul B. Shipp*, Mid-South Brace Shop, Nashville, Tenn.; *Walter Stauffer*, Edmonton Artificial Limb Co., Edmonton, Canada; *Edward L. Thompson*, Cuyahoga County Hospital, Cleveland, Ohio; *Bert R. Titus*, Duke University, Durham, N. C.; and *William A. Tosberg*, Institute of Physical Medicine and Rehabilitation, New York, N. Y.



Ed Thompson and Clyde Peach (at right) fit bilateral shoulder suspension hoops on patient Mrs. Vivian Ross as part of their instruction in the orthotics laboratory.



Dr. Jacquelin Perry, Orthopedist at Rancho Los Amigos Hospital Respiratory Center, demonstrates the usefulness of a ball-bearing feeder for a patient with severely involved upper extremities. Left to Right, Frank Harmon, Paul Shipp, Clyde Peach, William Tosberg, Frank Jones.

The class started April 7 and was completed April 23, a total of fifteen days. The work was divided into four sections: *functional hand splints, feeders, special assistive devices, and functional arm braces*. The material on splints, feeders, and special assistive devices was taught by Roy Snelson, Chief, Orthotics Department, Rancho Los Amigos Hospital, and a member of the instructional staff in the Prosthetics Education Program at U.C.L.A. Medical School. He was assisted by Jack Conry, orthotist at Rancho Los Amigos Hospital, and formerly of Georgia Warm Springs Foundation. Functional arm bracing was taught by George Robinson, of "Robin Aids Co.", also a member of the instructional staff for the Prosthetics Education Program at U.C.L.A.

The instructional manual used in the course was written and illustrated by Dr. Miles H. Anderson, Director of the Prosthetics Education Program at U.C.L.A. The manual has 480 pages and 1057 illustrations, and explains the principles of operation of each of the devices in addition to showing step-by-step exactly how they are fabricated and fitted. The manual is available to anyone interested in obtaining a copy, and may be ordered from Charles C. Thomas Publishers, Springfield, Illinois, under the title "Functional Bracing of the Upper Extremities".



Instructor Roy Snelson demonstrates the proper technique for adjusting a ballbearing feeder. Left to Right: Clyde Peach, Larry Czap, Frank Jones; Walter Stauffer, William Tosberg, Stephen Hall.

Classes to be Available

When the "Pilot Class" students completed their evaluation of the course, it was revised and corrected into the version that will be used when offered for regular enrollees in September. The first such class will start September 10 and be completed September 26. Others will follow on November 5 to 21, February 4 to 20 (1959), and April 8 to 24 (1959).

During the last week of each of these courses, concurrent sessions for therapists and doctors will be offered, following the same "clinic team pattern" established by the U.C.L.A. Prosthetics Education Program when it was started in 1952 with the "arm schools". The emphasis in the doctor-therapist classes will be on evaluation of the patient's condition, prescription of the correct device, how to train the patient to use the device, re-evaluation, and principles of operation of the various devices available. The fact that functional splints and arm braces are very useful for patients suffering from paralysis caused by spinal cord lesion, hemiplegia, brachial plexus injury,

arthrogryposis, muscular atrophies and dystrophies, and post-traumatic conditions, as well as post-poliomyelitis paralysis, will be stressed in the classes for physicians. In addition, excellent material will be offered on the relationship between surgical procedures and the use of splinting and bracing.

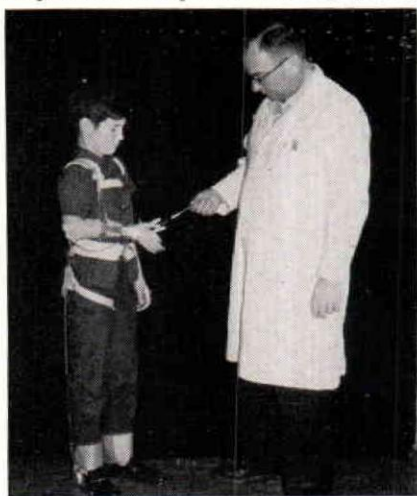
When more physicians understand the many uses of these versatile devices other than for post-polio cases, they will find more occasions to prescribe them. However, it will do no good for physicians to prescribe them if no one is available to fill the prescription, which certainly points up the importance of the team as a whole. Also, the availability of the services of occupational and physical therapists means the difference between success and failure, as the patients must be carefully trained or they will refuse to wear a splint or brace. Because it has been found that the therapists fill an important role on the team, every course given at U.C.L.A. for prosthetists or orthotists has always been accompanied by related courses for the other members of the group.

Lectures, Demonstrations, and Laboratories Used

Several subjects in the pilot course followed the same general pattern, lecture, demonstration, and laboratory practice. Taught in this manner were: How to: Make and Fit the Basic Opponens Hand Splint with Spring Swivel Thumb; Make a First Dorsal Interosseus Assist; Make and Fit the Lumbrical Bar; Make and Fit a Dynamic Finger Flexion Assist; Make a Long Opponens Hand Splint with "C" Bar and Thumb Interphalangeal Assist; Make an Interphalangeal Extension Assist with Metacarpophalangeal Extension Stop; Install and Adjust a Ball-Bearing Feeder; Make an Action Wrist with Dorsiflexion Assist; Make and Fit the Adjustable Metacarpophalangeal Flexion Control; Make and Fit a Flexor Hinge Splint—Wrist Driven; Make the Splint Portion of the Flexor Hinge Splint, Wrist-Driven, and Assemble the Splint; Make a Flexor Hinge Splint, Shoulder-Driven, with Pressure Relief Control; Fit the Cable-Controlled Hook, including Wrist Splints; Fit Straight Shoulder Suspension Hoop and Forearm Cuff Elbow Flexion Assist; Assemble and Fit the Axillary Shoulder Suspension Hoop and the Abduction



Frank Harmon and Paul Shipp restored to Kenneth Musselman much of the arm function he lost through paralysis, by fitting a functional arm brace.



Bert Titus of Duke University is convinced by Glenn Sallows that useful function can be restored to a marked degree in a completely flail arm through the use of a functional arm brace and reciprocator assembly



William Tosberg successfully fitted Clyde Cole with a functional arm brace that made it possible for him to get his hand to his mouth for the first time since he sustained an injury that paralyzed his arm. Tosberg applied upper-extremities prosthetics harnessing principles in providing Cole with a functional brace.

Outrigger; Fit a Shoulder Rotation Stabilizer, Shoulder and Elbow Flexion Assists with Locking Elbow on a By-Pass Shoulder Suspension Hoop; Fit the Shoulder Rotation Stabilizer, Free Elbow, Shoulder and Elbow Flexion Assists with Forearm Cuff; and Fit a Shoulder Supported Functional Arm Brace.

Anatomy Related to Corrective Devices

In addition to the "How to Do It" variety of subjects, the following studies were covered: Functional Anatomy of the Hand; Hand Measurements, Use of Hand Measurement Data Sheet; Functional Hand Splints and Attachments, Nomenclature, Application, Description, Indications, Contra-indications; Review and Critique of Patients and their Splints, Discussion of Various Applications for them other than Polio, Discussion of Proper Splint for Each Patient's Needs; Review of Hand Splint and Feeder Patients at Rancho, Analysis of Needs of Each Patient, Discussion of Proper Equipment for Each Patient; Special Assistive Devices, Suspension Type Feeders, with Lecture and Demonstration; Application of Outside Power Sources to Activate Flexor Hinge Splints, Carbon Dioxide Gas and Artificial Muscle, with Lecture, Demonstration, and Film; Biomechanics of Splints, Feeders and Functional Arm Braces; Kinesiology of the Hand and Wrist; Functional Anatomy of the Arm and Shoulder; Review of Names and General Function and Uses of Each Type of Functional Arm Brace; Analysis of Patients (Measurements, Strength, Range of Motion, and Determination of Device Needed); and Leg Reciprocator and Control Cable Operation of Forearm Cuff Type Elbow Flexion Assist.

Discussions, Reviews, and Practice

With most of these courses, there were opportunities for laboratory practice. One session was devoted to final fitting of patients with equipment they would keep and wear. There were many opportunities for discussion, review, and for covering questions related to the entire program, as well as clinic team procedures and practice in clinic team prescriptions.

An example of one day's schedule in the course is given to show the way the lectures and lab practices were, and will be, related as the school continues.

Saturday, Sept. 20, 1958 Functional Bracing of the Upper Extremities

| | |
|------------|--|
| 8:00 A.M. | How to Fit the Cable-Controlled Hook, including Wrist Splints, Lecture & Demonstration. |
| 10:00 A.M. | Lab Practice: Fit Cable-Controlled Hook with Wrist Splints. |
| Noon | Luncheon |
| 1:00 P.M. | Lab Practice: Complete Cable-Controlled Hook and Wrist Splints |
| 2:00 P.M. | Summary: Review and Discussion of Cable-Controlled Hook |
| 2:30 P.M. | How to Fit Straight Shoulder Suspension Hoop and Forearm Cuff Elbow Flexion Assist, Lecture & Demonstration. |
| 3:30 P.M. | Lab Practice: Fit Straight Shoulder Suspension Hoop and Forearm Cuff Elbow Flexion Assist |
| 4:30 P.M. | Summary: Review and Discussion of Cases Fitted. |

The Prosthetics Education Program at U.C.L.A. is supported by funds granted by the U.S. Office of Vocational Rehabilitation, directed by Miss Mary Switzer. A limited amount of money is granted for traineeships to help defray the cost to the student of travel, expenses, and tuition in attending the courses. Traineeship application forms may be obtained from U.C.L.A. on request.

Last year all the U.C.L.A. classes in prosthetics for prosthetists, therapists and doctors were filled many weeks ahead, and because of this many who applied late were disappointed. It is strongly recommended that applications for enrollment be sent in early to assure places in the classes.

Review of the Text:

FUNCTIONAL BRACING OF THE UPPER EXTREMITIES

Written and illustrated by Miles H. Anderson, Ed.D., Director, Prosthetics Education Project, School of Medicine, University of California, Los Angeles. Edited by Raymond E. Sollars, Assistant Director of the Project.

Published by Charles C. Thomas, Springfield, Illinois, 1958. \$9.50. 463 pages. 1,070 illustrations.

Reviewed by Bert R. Titus, C.P. and O., Director of the prosthetic and orthopedic facility, Duke University Medical Center.

This excellently edited and well illustrated manual was prepared to give detailed step by step instruction on how to fabricate and fit a score of different braces and self help devices.

The book is divided into seven sections; starting with the anatomy of the hand, the arm and the shoulder. The bones, the joints, the muscles and their movements are clearly illustrated. Specifications of all materials, parts, tools, and equipment to make the assistive hand splints and devices are included in the text.

The information in the section on biomechanics can be applied to all types of bracing.

The A. J. Hosmer Corporation is manufacturing the parts for the functional arm braces and supplying them in complete kits or individual parts. The application and fitting technique of each brace or combination of parts are fully described.

I feel that this book would be one of the most useful reference books in the library of every facility.

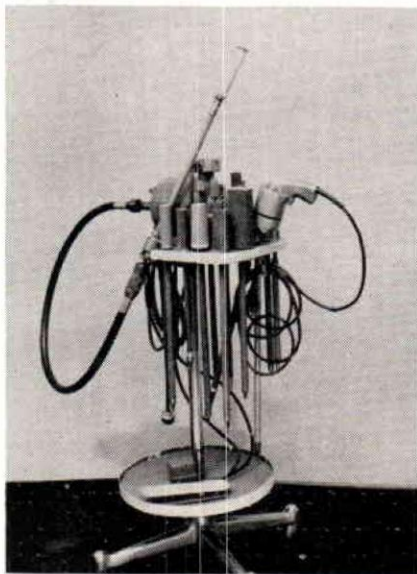
Laboratory and Shop Notes

A Column of Practical Ideas

*Contributing Editors, Alvin L. Muilenburg, Chairman;
G. E. Snell, C. O. Anderson, Erich Hanicke, Joseph Martino.*

"This column is for the use of readers of the Journal in sharing ideas. It can be a success only if we all contribute. Up to this day only some 20 out of 1,100 certified orthotists and prosthetists have contributed ideas. Take time out now and send in that helpful suggestion"—*Alvin L. Muilenburg, Chairman.*

Erich Hanicke of Kansas City finds this portable sanding tool unit very practical, since it can be used at various benches in the shop.



"The $\frac{1}{2}$ horsepower motor is equipped with foot control and flexible cable, also $\frac{1}{2}$ " jacob's chuck. The unit has a rotary upper section to prevent binding or cramping of cable when in use. The small drill press of $\frac{3}{8}$ " chuck clearance is used for the finer and smaller sanding operations. This stand has a capacity for about a dozen tools and can be wheeled freely to any place needed. It is a handy, orderly arrangement to have a place for everything one needs."

Carlton Fillauer of Chattanooga writes us about a new material:

We now have a new material that can be added to Laminac #4110 or any resin to increase its viscosity. It is not just a filler for one of these. Bentone, Cork or Wood may still be used. You have probably noticed that

even though you add a lot of filler, it is difficult to build up $\frac{1}{4}$ " or more thickness of filler to a socket. The "gunk" flows to the lowest level. Now by adding LD Silica—the name we have given to this low density colloidal silica particles to the mixtures mentioned above the material will stay where you place it. You need only to add about 6% to obtain a consistency like vaseline.

We now add on-two percent to the straight #4110 resin which enables us to apply a thicker and glossier coat to the socket walls. This small amount does not affect the wetting ability of the resin yet in laminating a shank or thigh piece the resin will not run beyond the end of the shank or the top of socket. You will find many more useful applications for this wonderful new material LD Silica. This powder is packaged in $\frac{1}{2}$ gallon containers for \$2.00 or in gallon sizes for \$3.50.

Herbert Kramer, C.P., sends along a comment from Dr. T. Ritchie of Roehampton House, Roehampton, London, England. Dr. Ritchie, who is principal medical officer in the field of artificial limbs at Roehampton, read the article, "Checkout Procedures" by Herb and Marshall Graham, which appeared in the March 1958 issue of this Journal. As a result he suggested a technique used there for determining the correct length of a prosthesis under dynamic conditions. At the Roehampton Center they use an adjustable sandal with one-eighth inch leather inserts.

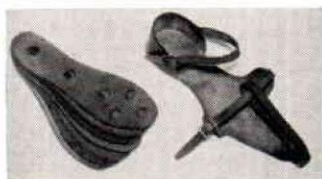


Figure 1.
Adjustable Sandal and Leather
inserts.

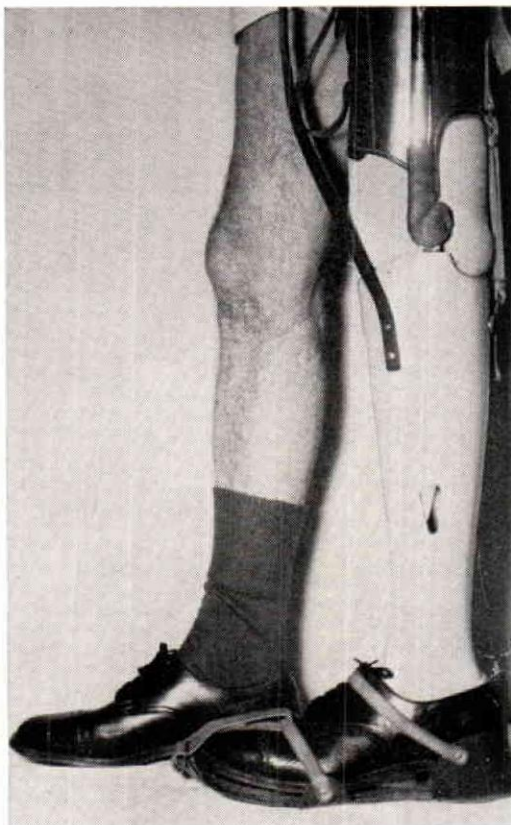
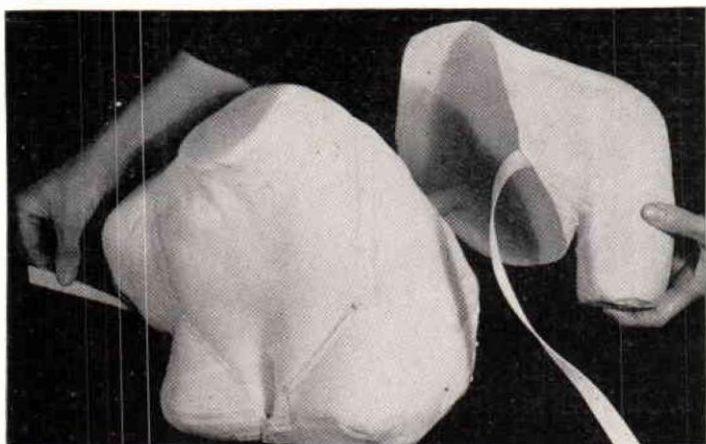


Figure 2.
Adjustable Sandal in Use.

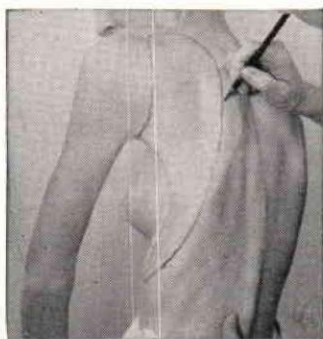
By attaching the sandal to either the prosthesis or the normal foot, the amputee can ambulate and determine, to the satisfaction of all concerned, the proper length of the prosthesis. This technique offers many advantages, permitting ascent and descent of inclines and stairs as well as level walking, while wearing the adjustable sandal.

From experience with this sandal to date, it is felt to be an excellent instrument for the prosthetist to use in determining correct length of the prosthesis.

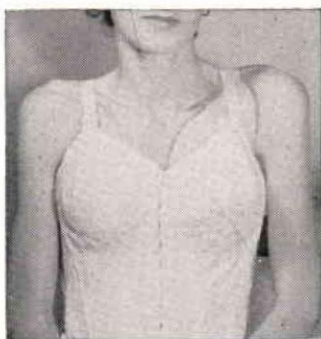
The sandal is made of $\frac{1}{8}$ " strap leather. The cross strap encompassing the dorsum and instep area of the foot, allows adequate length for use on many different shoe sizes. Seven inserts of $\frac{1}{8}$ " strap leather are available, to correct the length within a two inch range.



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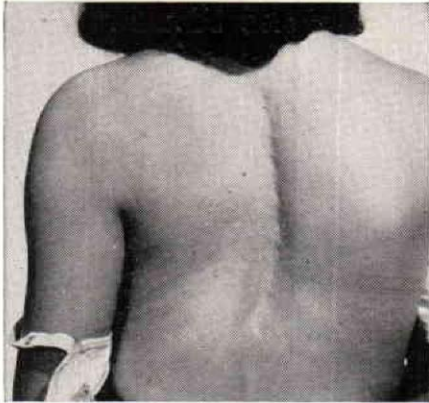
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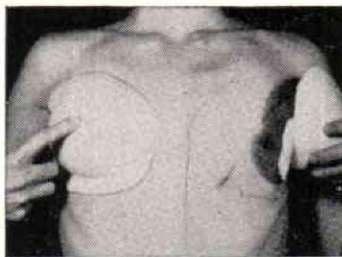
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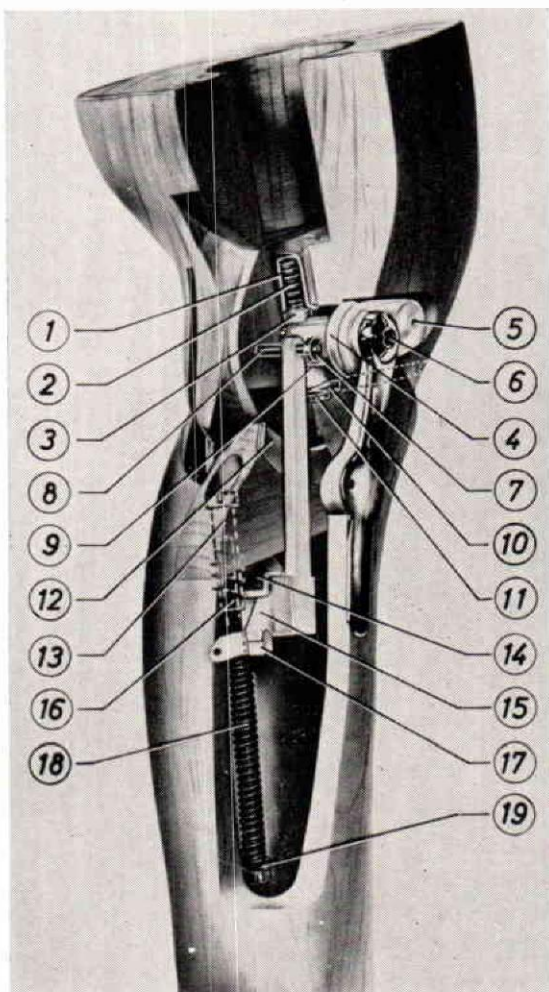
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Rehabilitation of Persons with Bilateral Amputation of Lower Extremities

By ARTHUR L. WATKINS, M.D. and
SUNG J. LIAO, M.D., Boston*

EDITOR'S NOTE: This article originally appeared in "The Journal of the American Medical Association," March 29, 1958, and is reprinted with permission.

The loss of both lower extremities through amputation represents one of the severest physical handicaps, particularly as it occurs most commonly in the older age group. During the last six and one-half years, from May, 1950, through December, 1956, over 500 persons with amputation of a lower extremity were admitted to the Bay State Medical Rehabilitation Clinic. Of these, 10% had bilateral amputations, and the present study deals with the end-results of rehabilitation in this group of patients. Of these 54 patients, 50 completed appropriate treatments and have been followed up for end-results.

Case Material

Age and Etiology.—The average age of the 50 patients was 55. Of these, 41 were men, with an average age of 56, and 9 were women, with an average age of 52. As might be expected in this age group, etiology was most commonly that of peripheral vascular disease, usually arteriosclerosis, although a few cases of thromboangiitis obliterans were included. In 29 men, with an average age of 60, and 5 women, with an average age of 65, the etiology was peripheral vascular disease. The average age of these 34 patients was 61 years. In 12 men, with an average age of 46, and 4 women, with an average age of 38, the etiology was trauma and miscellaneous causes. The average age of these 16 patients was 43 years. The primary etiological causes of amputation were arteriosclerosis, 60%; diabetes mellitus, 38%; thromboangiitis obliterans, 8%; trauma, 25%; and miscellaneous, 6%.

Site of Amputation.—There were 31 patients, with an average age of 59, who had bilateral amputations above the knee, and 8, with an average age of 48, who had bilateral amputations below the knee. Eleven patients, with an average age of 52, had one amputation above and one below the knee. Table 1 shows the relationship between the site of amputation and the etiology.

Training in Use of Prostheses.—The amputees were given training in the use of prostheses in our clinic. The patients with amputations above the knee started with bilateral pylons or short non-articulated prostheses for training purposes and later used long standard above-knee prostheses. As the artificial limbs were often prescribed elsewhere, we did not have control of this entirely, and so some patients started immediately with bilateral

* Medical Director, Bay State Rehabilitation Clinic, and Assistant Clinical Professor of Medicine, Harvard Medical School (Dr. Watkins). Clinical Fellow in Physical Medicine, Massachusetts General Hospital (Dr. Liao). Dr. Liao is now Assistant Chief of Physical Medicine and Rehabilitation, State of Connecticut Commission on Chronically Ill, Rocky Hill Hospital Unit, Rocky Hill, Conn.

Read before the Section on Physical Medicine at the 106th Annual Meeting of the American Medical Association, New York, June 5, 1957.

long limbs. The number of visits required for training indicates that the longer the prostheses the greater the number of training periods necessitated. The 21 patients who used bilateral pylons required an average of 16 visits, the 10 who used bilateral above-knee prostheses required 31, the 10 who used one above-knee and one below-knee prostheses required 27, and the 8 who used bilateral below-knee prostheses required 21 visits for training purposes.

Rehabilitation Results—A grading table was used to measure degree of rehabilitation. Those persons in grades A and B (table 2) were considered to be successfully rehabilitated from an economic point of view. Those in grades C and D were considered rehabilitated, although not employed—usually because of age and general physical condition. The failures in rehabilitation received grades E, F, and G. From the tabulation of end-results, it can be seen that 30% of the patients became economically independent and that 70% were considered rehabilitated. Fifteen patients, or 30% were considered failures.

The relationship between end-result and age is noted in table 3 and the relationship between end-result and site of amputation in table 4. It is, perhaps, surprising to note the number of successful rehabilitations among the older groups and also in those with bilateral above-knee ampu-

TABLE 1.—*Relationship Between Etiology and Site of Amputation*

| Etiology | Site of Amputation* | | | Total Patients |
|----------------------------------|---------------------|-------|-------|----------------|
| | AK-AK | AK-BK | BK-BK | |
| Peripheral vascular disease..... | 23 | 4 | 2 | 34 |
| Trauma and miscellaneous causes | 3 | 7 | 6 | 16 |
| Patients, no. | 31 | 11 | 8 | 50 |

* AK refers to amputation above and BK to amputation below the knee. tion sites. As would be expected, there were successes and failures in both the group with peripheral vascular disease and the group with trauma and miscellaneous ailments. There were 23 successes and 11 failures in the former group and 12 successes and 4 failures in the latter. This indicates that some factor other than age, etiology, or site of amputation determines the end-results as far as rehabilitation is concerned.

Some thought was given to the idea that perhaps the interval of time between operation and rehabilitation was the determining factor. There were 24 successes and 3 failures in the group for whom the interval of time between operation and rehabilitation was less than 1 year, 9 successes and 4 failures when the interval was 2 to 5 years, and 2 successes and 3 failures when the interval was 5 to 36 years. The number of successes and failures was not related to the factor of time of starting rehabilitation.

Types of Prostheses

For training purposes for patients with bilateral amputation above the knee, training pylons are often used. These are short nonarticulated prostheses. They are constructed with willow sockets, usually for ischiatic weight bearing and with muscle contour, with pelvic band suspension, and with either a single or double swivel two-way hip joint. There are no knee joints. Occasionally ankle joints are included, with a balancing platform instead of a foot that has toes extending in reverse direction. The latest

TABLE 2.—*Results of Rehabilitation Program*

| Results | Rehabilitation Grade | Patients, No. | % of Total Patients |
|--|----------------------|---------------|---------------------|
| Gainfully employed*..... | A | 10 | 20 |
| Homemaking; spouse employed*..... | B | 5 | 10 |
| Employable but not placed..... | C | 6 | 12 |
| Independent in activities of daily living but unemployable..... | D | 14 | 28 |
| Rehabilitated, total..... | A, B, C, D | 35 | 70 |
| Partial independence in activities of daily living and unemployable..... | E | 5 | 10 |
| Use of wheel chair necessary..... | F | 7 | 14 |
| Died during rehabilitation..... | G | 3 | 6 |
| Failures, total..... | E, F, G | 15 | 30 |

* Economically independent.

development in this type of prosthesis is the incorporation of quadrilateral socket fit, providing better control of the limb.

Long above-knee prostheses were manufactured from willow sockets of the same shape and the same suspension as those used for pylons. Standard knee joints were utilized, with the exception of an occasional case when a knee lock was necessary. In one instance a patient came to us with two temporary long limbs consisting of laced-leather thigh corsets, drop ring locks for the knees, and shoulder suspension. The patients with amputations below the knees were, with one exception, given standard below-knee prostheses. In one case, experimental suction sockets were provided and were very successful.

Analysis of our cases revealed that the factors of age, etiology, or amputation site were not the most significant factors in rehabilitation end-result, nor was the interval between surgery and prosthetic training. Because of the small numbers of patients involved, these conclusions cannot be drawn with entire satisfaction. Our experience indicates, however, that when patients were given equal opportunity for rehabilitation, success seemed

TABLE 3.—*Rehabilitation Results According to Age of Patient*

| Age Group | Successes per Grade, No. | | | | Failures per Grade, No. | | | Total Successes | Total Failures |
|------------|--------------------------|---|---|---|-------------------------|---|---|-----------------|----------------|
| | A | B | C | D | E | F | G | | |
| 20-30..... | 1 | | | | | | | 1 | |
| 30-40..... | 2 | | | | | | | 2 | |
| 40-50..... | 2 | 1 | | | | 2 | | 3 | 2 |
| 50-60..... | 2 | | | 1 | | | 1 | 3 | 1 |
| 60-70..... | 1 | 2 | 2 | 4 | 2 | 1 | 1 | 9 | 4 |
| 70-80..... | 2 | 1 | 3 | 8 | 2 | 3 | 1 | 14 | 6 |
| 80-90..... | | 1 | 1 | 1 | 2 | 1 | | 3 | 2 |

most dependent on motivation. Unfortunately, this factor could not be pre-determined and was not measurable except through clinical judgment.

Comment

It may be emphasized that this group of patients were mostly elderly individuals, who are generally considered poor candidates for training in the use of prostheses. Sixty per cent had arteriosclerotic changes and had bilateral amputations above the knee. The amputations due to trauma were mostly below the knee or combinations of above and below and occurred in patients with a wide range of ages. In spite of these handicaps, 70% of the entire group became independent, at least in self-care, and 30% achieved economic independence. If the three patients who died during the course of rehabilitation are excluded, rehabilitation figure would be 75%.

Our rehabilitation program consisted in preprosthetic training, instructions in activities of daily living, prevocational evaluation and guidance, and, finally, job placement when indicated. Our minimal goal, in general, was self-sufficiency in self-care of the patient by using prostheses so that the

TABLE 4.—*Rehabilitation Results According to Site of Amputation*

| Location of Amputation | Successes per Grade, No. | | | | Failures per Grade, No. | | | Total Successes | Total Failures |
|------------------------------|--------------------------|---|---|----|-------------------------|---|---|-----------------|----------------|
| | A | B | C | D | E | F | G | | |
| Bilateral, above knee ----- | 5 | 3 | 4 | 10 | 2 | 4 | 3 | 22 | 9 |
| One above and one below knee | 2 | 1 | 1 | 2 | 2 | 3 | | 6 | 5 |
| Bilateral, below knee ----- | 3 | 1 | 1 | 2 | 1 | | | 7 | 1 |
| Total ----- | 10 | 5 | 6 | 14 | 5 | 7 | 3 | 35 | 15 |

family members could be free to carry on their own routine. In the younger patients, and whenever possible in others, we attempted to achieve employment as a goal. As a result of our study, we intend to prescribe prostheses and institute appropriate rehabilitation programs in the future for more patients with amputation of the lower extremities whenever they are motivated and regardless of age.

Summary

During a six and one-half year period (May, 1950, through December, 1956), 50 patients with bilateral amputation of lower extremities were treated and followed up at the Bay State Medical Rehabilitation Clinic, Boston. On admission, one-half of them were over 60 years of age, with an average of 55 years for the entire group. There were 41 men and 9 women. There were 31 patients (62%) with bilateral amputations above the knee, 8 (16%) with bilateral amputations below the knee, and 11 (22%) with amputations both above and below the knee. Most of the arteriosclerotic patients were elderly and had bilateral amputations above the knee.

After appropriate training programs, 70% of the patients were considered rehabilitated, with 30% becoming economically independent. The effects of age, primary etiology, and site of amputation on the outcome of rehabilitation were analyzed. It seemed that these had no direct bearing on the patient's potentiality to become self-sufficient in activities of daily living. Lack of motivation and presence of severe medical complications were most likely the contributing factors in the failures.

Massachusetts General Hospital, Charles Street (14) (Dr. Watkins).

Addendum: Comments on Prostheses for Bilateral Amputation of Lower Extremity

By MARION S. KESSLER, C. P., *Manager of the Hanger Co. Facility, Boston, Massachusetts*

We would like to report that the Hanger Facility in Boston has delivered prostheses and followed through on twelve cases of this type during the past two years. These twelve patients fell in the age group between forty and seventy-eight. Types of prostheses included double below-knee, a below-knee and coupled with above-knee prosthesis, and a double above knee prosthesis. We did not attempt to fit this older age group with prostheses equipped with knee joints. However, all patients under the age of fifty were successfully fitted with conventional prostheses and were rehabilitated. I personally feel that all healthy bilateral amputees without flexion contracture should be given a chance to try a conventional prosthesis.

We have fitted some older patients with pylons, some with ankle joints and others without (stationery). Although it is not as easy to train a patient on pylons without ankle joints, once they have learned to use the pylons they seem to walk as well without joints as with. It is our opinion that either is satisfactory. We also feel that any amputee over the age of 65 should have a mental test as well as a physical to determine their ability to accept pylons cosmetically.

CRIPPLED CHILD CONVENTION

Nationally recognized authorities in rehabilitation and prominent personalities from almost every field of endeavor will participate in the 1958 convention of the National Society for Crippled Children and Adults, Nov. 16-20 at the Statler Hotel, Dallas, Texas.

Dean W. Roberts, M.D., executive director of the Easter Seal Society, predicts that the annual meeting will be one of the most informative conventions in the National Society's 37 years of service to crippled children and adults.

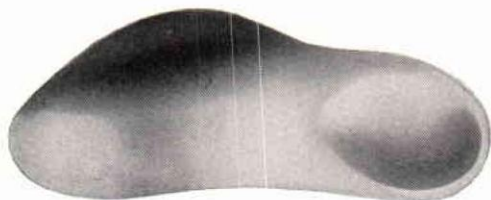
Four nationally known doctors will be cited for their outstanding contributions in the field of cerebral palsy, at the annual meeting. They are Drs. George G. Deaver, professor of physical medicine at New York's Bellevue Hospital; Leslie B. Hohman, professor of psychiatry at Duke University Medical School, Durham, N.C.; Winthrop M. Phelps, medical director of the Children's Rehabilitation Institute, Reisterstown, Md.; and Meyer A. Perlstein, chief of the Children's Neurological Service, Cook County Hospital, Chicago.

Nicholson J. Eastman, M.D., past-president of the American Academy for Cerebral Palsy, chief of obstetrics at Johns Hopkins University School of Medicine, will speak to professional rehabilitation workers attending the convention.

The keynote address will be given by Ben Wooten, President of the First National Bank of Dallas, who is vitally interested in the welfare of crippled children and adults. Kenneth Porter, of Phoenix, a successful management consultant, will tell how he outwitted his severe handicap to become a contributing member of society. He is also serving as treasurer of the Maricopa County Society for Crippled Children and Adults in Phoenix.

OALMA will have an exhibit on "Progress in the Limb and Brace Field". The Hedgecock Artificial Limb and Brace Company will have a display and other OALMA members are expected to be represented.

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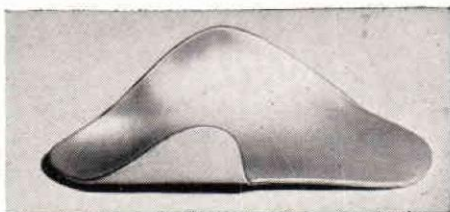
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THE WEIGHT BEARING X-RAY IN SHOE FITTING PROBLEMS

By **DONALD R. ADAMS, M.D.**

Chief, Physical Medicine and Rehabilitation Service
Veterans Administration Hospital
Muskogee, Oklahoma

In the process of prescribing and fitting of special orthopedic shoes the x-ray has been found as a useful adjunct in determining errors in fit and fabrication providing that the foot in the shoe can be filmed in weight bearing. In usual techniques such an exposure is difficult to procure, the positioning uncomfortable for the patient and to a degree wasteful of film since under normal circumstances all of a 14" x 17" film must be exposed when half of the length is adequate.

To meet this recurring problem the Engineering Division of the VA Hospital, Muskogee, Oklahoma, designed a cassette holder and stair to facilitate easy procuring of x-ray films of the feet in weight bearing. The original idea was advanced and used by Dr. Edwin L. Libbert, Chief Roentgenologist at the VA Regional Office, Indianapolis, Indiana, and our device utilizes a similar principle with some additions to more readily adapt to the equipment at this station. The fabrication is simple and can be assembled by a good carpenter in a short period of time. The cassette holder is easily stored and the stair will be found to have additional daily uses in the x-ray department.

We present here a device that we have made for the securing of weight bearing films of the feet. For want of a better title we have referred to it as the x-ray analyst for feet in weight bearing.

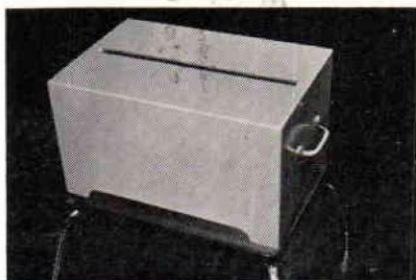


FIGURE 1: Cassette Holder for Weight Bearing Films.

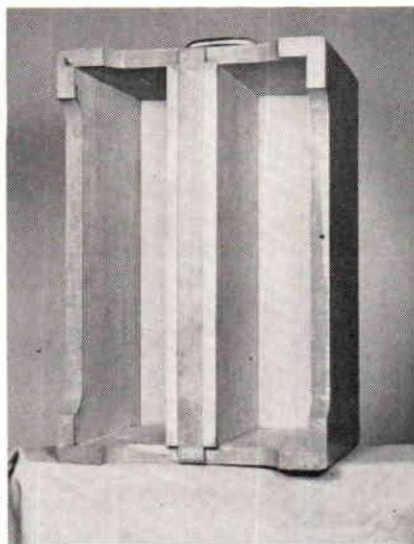


FIGURE: II: Inside View of Cassette Holder Showing Lead Lined Center Compartment.

FIGURE I consists of a wooden box with a central slot the length and width of a 14" x 17" x-ray cassette. This slot opening leads to an internal compartment which, like an envelope, has a wood surface and a wood floor and is lined with sheet lead.

FIGURE II illustrates the undersurface of the box showing how the lead envelope is constructed.

FIGURE III shows the box in front of the x-ray tube and is sitting on an ordinary cardiac stairway. It will be noted that the cassette has been placed in the leadlined slot so that only half of it is exposed to the roentgen tube. For the purpose of this picture the cassette was inserted backward, actually the black shiny surface should be as you know, facing the tube of the x-ray.

FIGURE IV is the view of the patient positioned on the box in front of the roentgen tube preparatory to securing an exposure of the right foot in weight bearing on half of the 14" x 17" cassette.

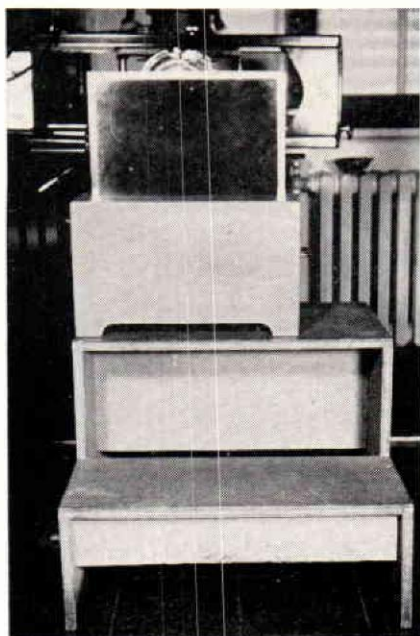


FIGURE III: Cassette In Position on the Holder on the Stair in Front of the Roengen Tube.

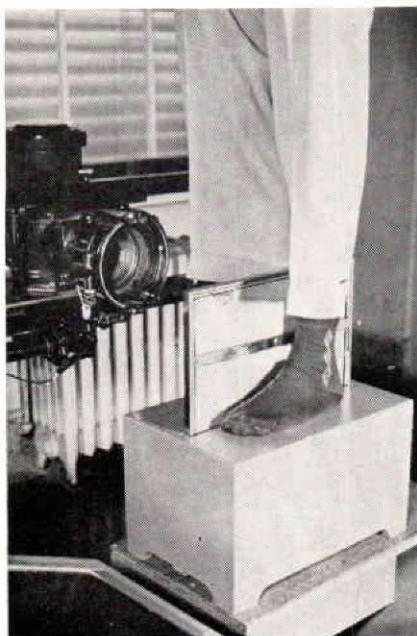


FIGURE IV: Patient Positioned for Exposure of the Left Foot in Weight Bearing.

FIGURE V shows the patient's foot as it were from the tube position. When this exposure has been made the ends of the cassette would be reversed and the patient turned around to secure a film of the opposite foot in weight bearing.

In our opinion this device has several advantages, the chief of which is showing the structures of the patient's foot as they relate to the support of his body weight and their positional relationship on a supporting surface, elements which cannot be secured with the extremity in repose. X-ray films of the feet in weight bearing are also useful to the roentgenologist in affording him impressions of pes planus or pes cavus or joint ankylosis.

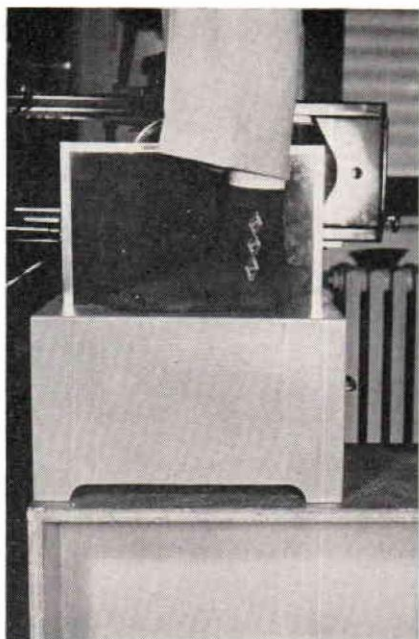


FIGURE V: Port View of Patient in Position On Weight Bearing Device.



FIGURE VI: X-ray of Shoe and Chopart Amputation Stump in Shoe.

FIGURE VI shows two films, the upper one of the empty shoe and the lower one of the shoe with the Chopart amputation stump in place to best illustrate how much of the foot-shoe relationship can actually be shown by a weight bearing film of the foot in the shoe. An important relationship here was one that can be visualized at the instep of the shoe in showing why there was a tendency to develop an unsightly break of the shoe in this area. Alterations to the fabrication necessitated certain changes in the design of the toe-block surface and the insertion of an over-the-stump elastic gore which not only stabilized the stump but prevented the unsightly break of the upper in the instep area. You will notice in this view the wedge type heel and I believe you can also notice the importance of the wedge-type heel in placing a special orthopedic shoe on this type of amputation. If the midline of the tibia is followed downward it will be noted that the maximum weight bearing falls in the instep area directly in front of the position that would be occupied by a shoe with a normal heel. This would result without the wedge heel in a rapid breakdown of the instep of the shoe, necessitating early replacement.

FIGURE VII of the patient's feet in shoes in weight bearing points up the clarity of bone, joint and soft tissue relationship of the feet and shoes, shows at a glance that the heel-to-toe steel in the right shoe is broken allowing the toe of the shoe to start turning upward and that the toe-block is absent from the left shoe. It was necessary to replace the right heel-to-toe steel and fabricate a new toe-block to meet the needs and continue these shoes in service with maximum comfort to the patient.

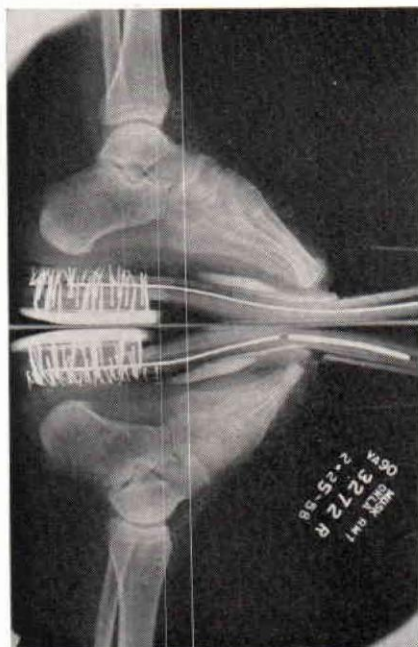


FIGURE VII: X-ray of Feet in Shoes. Note Broken Heel to Toe Steel on the Right and Absent Toe Block on the Left.



FIGURE VIII: Special Shoe with Incorporated Sole Plate and Short Leg Brace.

FIGURE VIII shows a fusion of the ankle joint which for comfort requires a maximum of foot-ankle stability at all times. Previously this has been secured through the use of a foot plate short leg brace. The foot plate and lateral and medial bars being quite bulky made the procuring of shoes to fit over the brace difficult and in this instance required the fabrication of a special shoe to accommodate the brace and foot plate. It was decided to combine the foot plate and special shoes in a single fabrication.

FIGURE IX illustrates the completed combination fabrication and the x-ray shows the foot in the shoe and brace for bone and soft tissue relationships and the resultant successful stabilization.

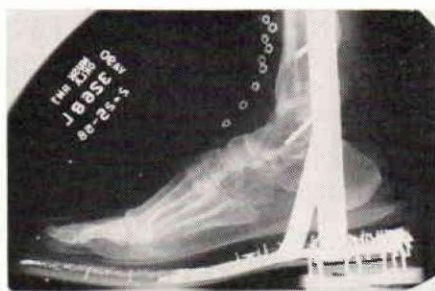


FIGURE IX: X-ray of Foot in Special Shoe with Sole Plate and Brace. Note Fused Ankle Joint.

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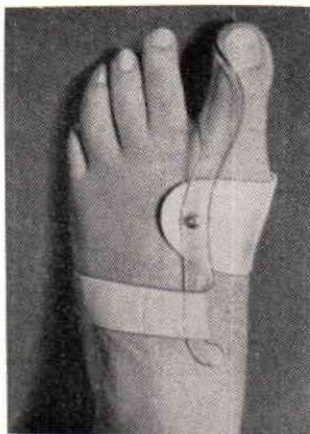
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PROSTHETICS EDUCATION AT NEW YORK UNIVERSITY

Since 1956, New York University has been the scene of important pioneer work in Prosthetics Education. Nearly 900 prosthetists, therapists and physicians have received advanced training in a series of short term courses offered by the Postgraduate Medical School of New York University. We are indebted to Dr. Sidney Fishman, Director of Prosthetics Education at New York University for this brief summary of the background and progress of the educational program there since its beginning:

Background

The fundamental purpose of this program has been to make available to professional persons dealing with amputee rehabilitation the results of the nation-wide artificial limb research program, which has been carried out over the last twelve years under the leadership of the Prosthetics Research Board of the National Academy of Sciences-National Research Council. To this end, a series of short-term, intensive courses have been developed for the four professional groups most intimately concerned with this problem.

A. Physicians and Surgeons

Course #744 Upper Extremity Prosthetics—one week

Course #741 Above-Knee Prosthetics—one week

B. Occupational and Physical Therapists

Course #745 Upper Extremity Prosthetics—two weeks

Course #742 Above-Knee Prosthetics—two weeks

C. Prosthetists

Course #746 Upper Extremity Prosthetics—five weeks

Course #743 Above-Knee Prosthetics—three weeks

Course #749 Above-Knee Advanced Seminar—three days

D. Rehabilitation Counselors

Course #7410 Prosthetics and Orthotics—two weeks

Developments

Amputee rehabilitation can be thought of as a process of adjustment and interaction between a man (the amputee) and a machine (the artificial appliance). These circumstances make it imperative that the material comprising courses in this area be drawn from the biological, psychological and physical sciences. This multidisciplinary approach is accomplished through the cooperation of individuals from many fields and many departments of the University.

A guiding committee responsible for the overall planning of the Program meets on a regular basis and is composed of Dr. Donald Covalt of the Department of Physical Medicine and Rehabilitation, Dr. Walter Thompson of the Department of Orthopedic Surgery, Mr. Renato Contini of the College of Engineering, and Dr. Sidney Fishman of Prosthetics Education. In-

cluded on the teaching staff are representatives of the fields of medicine, engineering, prosthetics, orthotics, physical therapy, vocational counselling, and psychology. Several of these people are on the full time staff of the Program, while the larger number are drawn from the Departments of Physical Medicine, Orthopedic Surgery, Physical Therapy, and the College of Engineering within the University, as well as from various sources outside the University. Each of the groups that study in the Prosthetics Education Program are thus exposed to a curriculum planned and taught by representatives of various fields of knowledge.

During the course of the current academic year, a number of changes have been made.

1) The course in Above-Knee Prosthetics for Prosthetists has been lengthened to three weeks (15 days, full time) in contrast to the 11 day course presented during the previous year. This change has enabled the introduction of several new topics such as the use of SACH feet and plastic laminate finish, as well as further emphasis on the analysis and solution of prosthetic fitting problems.

2) Course #742, Above-Knee Prosthetics for Therapists, has also been lengthened from 8 days to 10 days. Again, additional emphasis on important topics became possible. In both instances, a relaxation of the highly intensive nature of instruction was an important result of the increased time.

3) Another significant development was the introduction of two new courses. The first of these was Course #7410, Prosthetics and Orthotics for Rehabilitation Personnel. This course was designed to provide anatomical, psychological, prosthetic, orthotic and vocational information for rehabilitation counselors, social service workers, psychologists, rehabilitation center directors, and other personnel concerned with prosthetic rehabilitation.

The second new course was #749, Above-Knee Prosthetic Diagnosis for Prosthetists. This was a three-day advanced seminar which dealt primarily with the diagnosis and methods of solution of complex fitting problems.

Students in Attendance

As of June 1958, the following numbers of students will have attended courses:

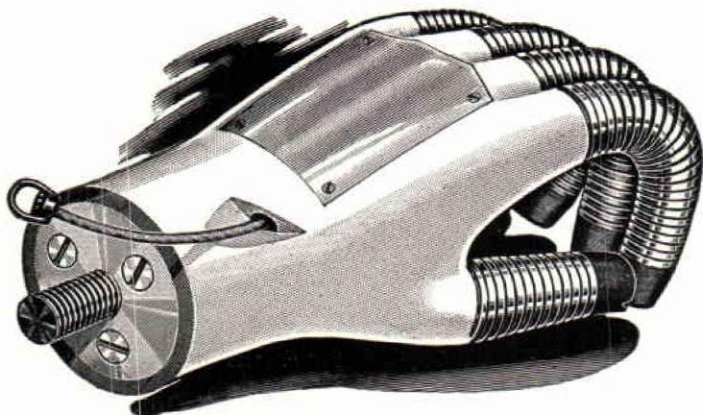
| | <i>Upper Extremity</i> | <i>Lower Extremity</i> | <i>Advanced Seminar</i> | <i>Rehabilitation Course</i> | <i>Total</i> |
|-----------------------------|----------------------------|----------------------------|-----------------------------|----------------------------------|--------------|
| Physicians | 97 | 213 | | | 310 |
| Therapists | 99 | 185 | | | 284 |
| Prosthetists | 48 | 150 | 28 | | 226 |
| Rehabilitation Personnel | 0 | 0 | | 54 | 54 |
| | <hr/> 244 | <hr/> 548 | | | <hr/> 874 |

NEW YORK UNIVERSITY PROSTHETICS EDUCATION

Tentative Schedule—Academic Year 1958-59

| <i>Date</i> | <i>Course No.</i> | <i>Title of the Course</i> |
|-------------------|-------------------|---|
| Sept. 22-Oct. 10 | 743A | Above-Knee Prosthetics for Prosthetists |
| Sept. 29-Oct. 10 | 742A | Above-Knee Prosthetics for Therapists |
| Oct. 6-Oct. 10 | 741A | Above-Knee Prosthetics for Physicians and Surgeons |
| Oct. 27-Nov. 7 | 745A | Upper Extremity Prosthetics for Therapists |
| Nov. 3-Nov. 7 | 744A | Upper Extremity Prosthetics for Physicians and Surgeons |
| Nov. 10-Nov. 21 | 7410A | Prosthetics and Orthotics for Rehabilitation Personnel |
| Dec. 8-Dec. 19 | 7410B | Prosthetics and Orthotics for Rehabilitation Personnel |
| Jan. 5-Jan. 23 | 743B | Above-Knee Prosthetics for Prosthetists |
| Jan. 12-Jan. 23 | 742B | Above-Knee Prosthetics for Therapists |
| Jan. 19-Jan. 23 | 741B | Above-Knee Prosthetics for Physicians and Surgeons |
| Feb. 2-Feb. 13 | 7410C | Prosthetics and Orthotics for Rehabilitation Personnel |
| Feb. 23-March 13 | 743C | Above-Knee Prosthetics for Prosthetists |
| March 2-March 13 | 742C | Above-Knee Prosthetics for Therapists |
| March 9-March 13 | 741C | Above-Knee Prosthetics for Physicians and Surgeons |
| March 30-April 3 | | Syme's Prosthesis for Prosthetists |
| April 6-April 10 | | Syme's Prosthesis for Prosthetists |
| April 13-April 24 | 7410D | Prosthetics and Orthotics for Rehabilitation Personnel |
| April 27-May 29 | 746B | Upper Extremity Prosthetics for Prosthetists |
| May 18-May 29 | 745B | Upper Extremity Prosthetics for Therapists |
| May 25-May 29 | 744B | Upper Extremity Prosthetics for Physicians and Surgeons |

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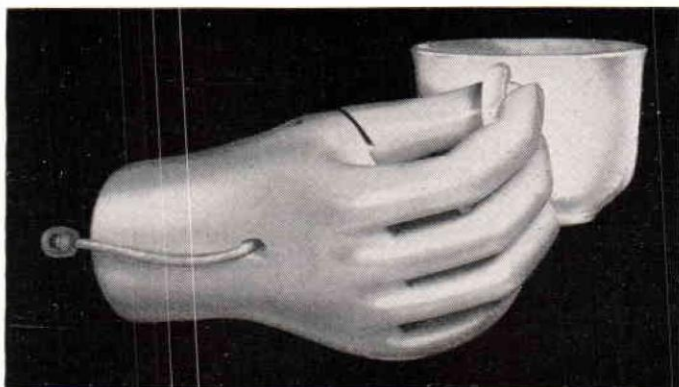
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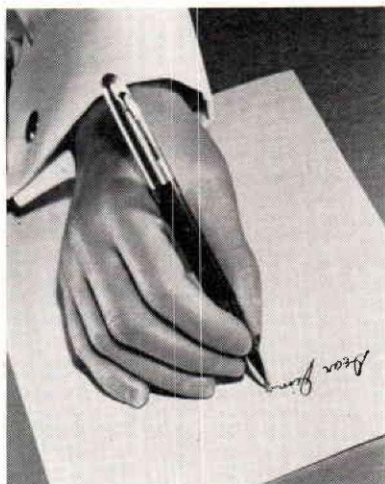


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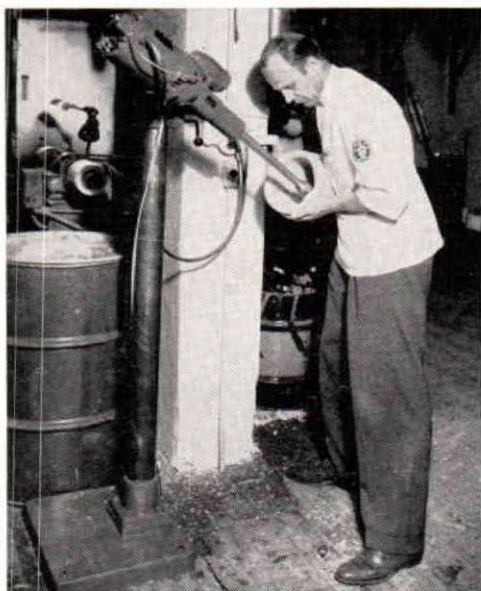
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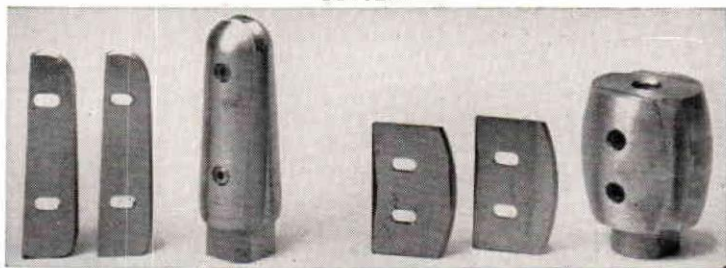


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Contributing Committee: Everett J. Gordon, M.D., *Chairman;* Joseph Ardizzone, P.T.; Raymond Beales, C.P.; Edwin M. Brown, Prosthetic Representative; Victor L. Caron, C.P.; Charles Ross, C.O.&P.



The prosthetic-orthopedic clinic team in Washington, D. C.: Front row, left to right: Edwin M. Brown, V.A. Prosthetic Representative; Dr. C. F. Muller, Assistant Director of the Clinic; Dr. Everett J. Gordon, Director of the Clinic; Joseph Ardizzone, R.P.T., Physical Therapist. In the back row: Joseph Ufheil, Chief Orthotist, Veterans Administration; W. J. Ferris, C.P.&O.; Victor Caron, C.P.; R. A. Beales, C.P.; and Anthony Troiano, Orthopedic Shoe Technician.

In the past three months, we have heard from several of our confreres and clinics, who have passed along valuable information and ideas for exchange.

From New Orleans, Dr. Daniel Riordan sends along the following thought: "On many occasions, we have heard orthopedists wish that they had had more exposure to artificial limbs, and orthopedic braces during their schooling and residency. Consequently, Tom Maples, C.P., Manager of the Hanger Limb and Brace Facility, New Orleans, in conjunction with one of the teaching orthopedists at one of the local medical schools, just completed a series of comprehensive night seminars in which he has demonstrated many of the aspects of taking measurements for and actually fabricating AE, BE, AK, and BK limbs. A resident orthopedist and the therapist, who witnessed these demonstrations, were well pleased with the additional education they received." We heartily agree with this thought, and note that Dr. Hamilton Allan, Regional Consultant, has also recommended a similar type of program for this area, in order to teach local students, and particularly orthopedic residents, some of the fundamental aspects of prosthetics and brace prescriptions.

Dr. Arthur A. Thibodeau has reported to us in his study of approximately 75 amputations resulting from vascular disturbances, whom he now

has under his care at the Boston Veterans Administration Hospital. Their study is concerned with the present condition and usefulness of the prostheses of these amputees, utilizing the Social Service Department to aid follow-up study. He reports that most of his lower extremity amputees are being fitted with temporary prostheses made in the hospital orthopedic shop, delaying the issue of permanent limbs until several months of study with the temporary limbs. In this way, they hope to better delineate the need of prostheses and the unnecessary prescriptions of prostheses for those who will be confined to a wheelchair and have no use for such limbs.

In our clinic, we have recently made excellent use of a dietician who attends all of our clinics, thereby encouraging cooperation from the overweight amputee. We have found it much easier to refer the patient to the dietician when she is present rather than give the veteran a slip and hope that he will eventually report to her. When a new prosthesis is ordered for an over-weight amputee, we try to delay fitting until the weight reduction program is well underway and his weight is stabilized.

The Social Service worker has proven to be of great aid in the solving of many of the associated problems of the amputee. We definitely feel that the prostheses that we prescribe are being better utilized as a result of this follow-up procedure.

Several prosthetists have suggested that emphasis be placed on proper orientation of the fresh amputee because of difficulties arising with anticipated spectacular and immediate success with the new prosthesis. Certainly the fresh amputee should be well informed of the necessary time lapse following surgery before a prosthesis-fitting can be accomplished. The necessity for pre-prosthetic training must continually be emphasized, dispelling the frequently encountered idea that a prosthesis can be fitted immediately after wound healing. The need of constant surveillance to prevent the use of a pillow under the stump and resultant contractures, the use of a prone position for a considerable portion of the day, particularly in the aged amputee, gluteal sitting and side-lying positions, and hip extension exercises should all be emphasized to the fresh amputee during the pre-prosthetic training period.

SACH feet have been used progressively with few untoward incidents. However, recently we had our first SACH foot casualty, a stud shearing off the glued joint. The patient states he was merely walking, but there appears to be considerable doubt as to his activities at the time of the accident.

Incidentally, the "sweating season" is now beginning and should bring along the usual crop of problems. Have you any particular method of solving this problem? We have some ideas and are trying them out this year.

Please let us hear from you if you have something new to suggest. Incidentally, *Joseph Martino*, C.P., reports that United Limb & Brace Company of Boston, Massachusetts, are trying Protek-sorb Silica Gel for some of their suction socket wearers. We hope to hear of their results to report in our next issue.

We haven't had a word from the brace men. If you have a new idea or a picture of a new piece of apparatus, by all means send it along and we will be glad to use it in this column. A very pleasant summer to all of you!

Prosthetic Devices for Children with Emphasis on Fitting Upper Extremity Amputees

A Report of the Area Amputee Program of the Michigan Crippled Children Commission, Carleton Dean, M.D., Director

As the director of the Michigan Crippled Children Commission, I have been administratively responsible for the Child Amputee Program, and have the opportunity to observe the case histories of child amputees, in which are recorded the services and prosthetic devices that are being provided and prescribed by the medical directors of the Amputee Program; namely, C. H. Frantz, M.D., and G. T. Aitken, M.D. In line with the objectives of our program, certain information has been compiled that is of value to anyone contemplating such a project. Having conducted a Child Amputee Program for over eleven years in a population now approaching seven-and-a-half million, the statistical records furnish sufficient information to be significant. We will, in this paper, list the frequency distribution of types of child arm amputees in a given population. We will further describe and illustrate, by exploded diagrams and pictures, prosthetic devices for child amputees. In addition, the medical and prosthetic services will be tabulated by presentation of forty observations selected to emphasize the requirements of child amputees in regard to frequency of repairs, changes and replacement of prostheses.

Before we started our original project, a survey of Michigan child arm amputees showed that seven out of eight were not wearing their prostheses. This was partly due to the lack of proper fitting, but basically was due to the lack of a suitable and adequately functional prosthesis for the various types of amputation. In addition, there were no existing facilities or established procedures to establish whether the child was physically conditioned to accept a prosthesis or to provide him with instruction and training in its use, and no orderly sequence of follow-up care for adjustment, repair or replacement.

As a result of these findings, a program devoted entirely to child amputees was originated by the Michigan Crippled Children Commission and initiated in 1946.

The program was selected by the Advisory Committee on Artificial Limbs of the National Research Council, National Academy of Sciences, of which General Strong is Chairman, as a state crippled children agency in the United States having a program that would readily lend itself to a research project in the formation of an armamentarium in the prosthetic devices for children.

The physical aspects of the treatment are under the direction of George T. Aitken, M.D., and Charles Frantz, M.D., who are members of the Children's Prosthetic Committee of the Prosthetics Research Board of the National Research Council, as well as members of the American Board of Orthopedic Surgery. To the chairman and members of this Committee, we owe a debt of gratitude for their support, cooperation and interest in the child amputee problem.

Until two years ago, the project was financed entirely by the Commission, its services being limited to Michigan children. The success of our endeavor prompted the Children's Bureau of the U. S. Department of Health, Education and Welfare to make a special grant to the Commission in order that services to child amputees of other States might be made available.

Our prime consideration in continuing, expanding, and further developing the program is given to providing for the fundamental needs of the child amputee which, we have found by experience, dictates the early fitting of a prosthesis.

As growth and development are dependent upon use and exercise, it is essential that a child amputee be fitted with a prosthesis and trained in its use as early as he will tolerate same. Whether a congenital or traumatic amputee, this is important in order that his greatest potential of purposeful movements and motor patterns be obtained within the limitations of the prosthesis. The demands of daily activities develop his skill in the use of the appliance; thus he becomes more natural in using it and at maturity is better adapted physically and emotionally toward his condition. As a non-wearer, a child encounters the danger of greater disability due to the atrophy of disuse, contractures, ankylosis, or development of ancillary deformities. He may also develop hostile attitudes and faulty habit patterns that are difficult to change.

One must remember, "An ounce of prevention is worth a pound of cure." Early treatment is the criterion for the best functional results, thereby eliminating the serious difficulties previously mentioned.

Program Team

We are convinced by our experience that in order for such a program to be successful, it is essential to have an informed team composed of physicians, therapists, prosthetists, nurses, and social workers. They must have knowledge of what consists of a modern prosthesis and know the potentials and utility of the various new devices. This is important in order that the physician may know how to prescribe, the therapist how to train, and the prosthetist how to manufacture the prescribed prostheses. Further, a successful program must be coordinated in a physical setup which is convenient for, and will permit, close relationship of team services including clinical supervision, training, limb fitting, and follow-up services.

Psychological Preparation for Acceptance of Prosthesis

Every child amputee realizes his physical loss because it restricts him in competing in many normal activities to a greater or lesser degree, but the psychological problem varies in children of different ages. Anxieties, present and future, must be allayed by sympathetic explanations of the advantages in using a proper and adequate prosthesis. All children are born with an inherent desire to compete in physical and/or mental activities and to be independent. A child amputee, during his initial visit to the Amputee Clinic, has an opportunity to see other amputee children with prostheses doing things he has wanted to do. This observation excites his curiosity and creates within him an eager desire, which heretofore may have been expressed or suppressed, to be able to do likewise. As a result he is more willing to accept a prosthesis and to cooperate in the training program that is directed towards dexterity in his use of it.

Past experience has shown the importance of parental influence. The attitude of the family toward the child and his prosthesis can determine whether or not the child will be a good user of his artificial limb. To enhance a positive psychological environment, parents are interviewed on their first visit to the clinic by the medical social consultant and the orthopedic nursing consultants. Opportunities are given on subsequent visits and whenever questions or problems arise, to confer with the clinic staff.

Selection, Manufacture and Fitting of Prosthesis

The true criteria of an adequate and efficient limb is its fit and utility. The amputee rehabilitation team works closely in evaluating the individual needs of the amputee in relation to his age, sex, and social background, and recommending the type of prosthesis that will assure the maximum efficiency and service.

Leg prostheses have already reached a high degree of perfection. New developments in artificial arms are rapidly changing the picture for arm amputees and more adequate and satisfactory functional arm prostheses are being manufactured. Careful selection of the prosthesis for the various types of amputations is of primary importance for maximum physical restoration.

To have a good prosthetic user it is essential that the prosthesis be in good working order, that worn components be replaced or repaired, and that it be altered or replaced concomitant with growth. Periodic checking and re-evaluation by the team for fit of socket and alignment and length of prosthesis is important. It is important, too, for the child amputee to be checked at intervals to determine need for further training in activities that later may be related to the individual's future vocational plans.

Training in the Functional Use of the Prosthesis

Teaching a child to efficiently use his prosthesis is a basic and vital step of the program, and yet in the past was so neglected. The training of a child is different from the adult as regards the use and acceptance of prosthetic devices. This is particularly true with the very young amputee. Each prosthesis presents a separate training problem, requiring skin and muscle adaptation and habit pattern. The age and the type of amputee determine the instructive training efforts to be employed. In the very young the training is directed towards activities adaptive to age. As the age of the amputee increases, so do the training efforts become more involved to perfect the motions required in activities such as eating, writing, buttoning clothes, tying shoes, opening and closing doors and other important activities of daily living that are normally done without thought of the action involved. Leg amputees must be impressed with the fact that merely learning to get around on an artificial limb is not enough. Maximum efficiency with the prosthesis is not attained until balance, muscular coordination and smoothness of walking rhythm, climbing and descending stairs and even roller skating has been accomplished.

The type and length of training required is dependent upon the needs of the individual, the age of the child, the site of the amputation, and the type of prosthesis provided. Although individual cases may vary, an established pattern of training is followed in that the child is started with the simplest of activities and graduated to the more complicated ones. The goal in every case is to encourage and train the child in the proper and efficient use of his artificial limb and restore, insofar as possible, his normal social and physical capacity, thereby preparing the child to ultimately attain his maximum economic and social independence.

Follow-up Services

It is our opinion that the continuing success of our program can be attributed to a large degree to regular follow-up supervision and developmental guidance. In our program, definite clinic appointments are made for the child's return visit on a month-to-month basis, every three months, etc. Postal cards are sent out ten days in advance of the appointment date to remind the parent when the child is to return. If the child fails to keep the appointment, arrangements are made for one of the Commission's orthopedic public health nursing consultants to make a home visit to determine the reason for the broken appointment. The parents are encouraged and/or urged to return immediately to the clinic if the appliance should be worn or broken or if it does not function properly. Attempts by parents to remedy or repair the prosthesis are not approved or condoned.

Prostheses for Short Below Elbow Amputees

It would be impossible, in the time allotted, to cover the entire field of prosthetic devices for child amputees. In this paper we will discuss chiefly the most frequent type of congenital arm amputee, the short below elbow, covering the period of life from birth to twenty-one years of age. In this group we will discuss type of prosthesis for different ages, considering growth requirements, with its frequency of change, frequency and type of repairs, as well as cost of same.

For the past year-and-a-half, we have been fitting children with short below elbow prostheses at five months to thirty months of age with a Figure 8 harness, triceps pad, double wall socket, usually a flexible elbow hinge, modified friction wrist unit, and APRL plastic mitt. The "Mitten" is a passive device, having no moving parts, and was developed by Colonel Maurice Fletcher, Director of the APRL Research Laboratories.

The first prosthesis, with a pink plastic mitt, is usually very acceptable to the mother. It is clean looking, cosmetically appealing, and at a short distance resembles the normal hand. The mitt has a certain amount of flexibility which gives the child support without slipping when creeping and when he pushes himself to a standing position. (Figure 1)

SHORT BELOW ELBOW PROSTHESIS

PASSIVE MITTEN TYPE
5 MONTHS TO 30 MONTHS

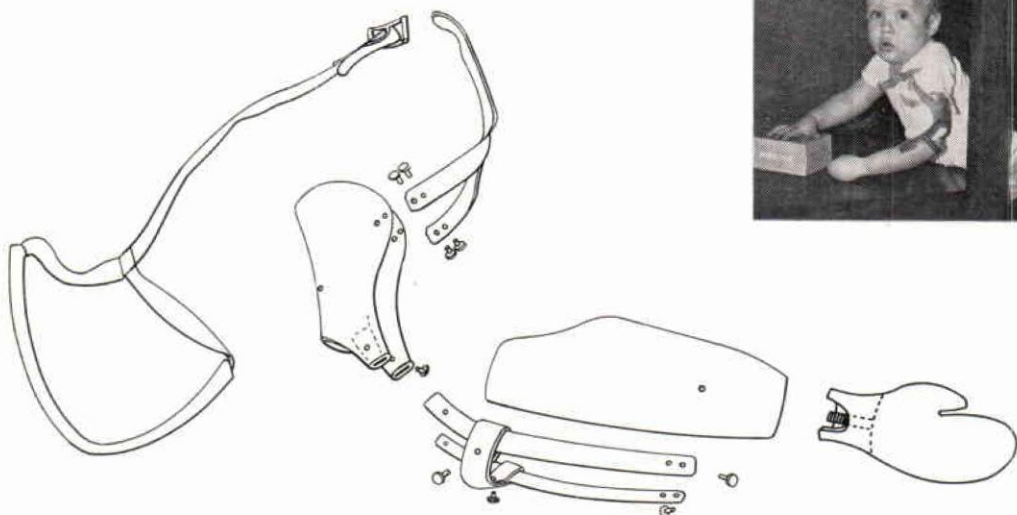


FIG. 1—Short below elbow prosthesis, passive mitten type, 5 months to 30 months: Figure "8" harness, triceps pad, flexible elbow hinge, double wall socket, modified friction wrist unit, APRL plastic unit. Services: 16 days rehabilitation training, 11 out-patient clinic visits, 20 physician services, 12 parts, 13 hours of labor for repairs, including two new forearms.

Fitting a child at an early age gives him "two arms" of equal length and allows him to function in a more normal pattern. At six or seven months, he will use the prosthesis to balance himself in a sitting position. One mother tells us her son (8½ months) "uses the mitt to bat balls and balloons, to spin figures on the side of the playpen, and to squeak his toy kitten". At about fourteen months, the child attempts to pack mud, sand, clay, etc., into the palm of the mitt.

By about twenty-one months he uses the mitt to assist him in eating, by pushing the food onto the spoon and holding his cup. He wears the prosthesis all of his waking hours, seems aware of its function, and is unhappy when for any reason he is not wearing it.

In-service care for fitting and training of children at this early age averages sixteen days. At the time of discharge, the child has built up a tolerance for the appliance. He demonstrates his acceptance by the offering of his stump when the therapist or attendant starts to put the prosthesis on him. The appliance is checked carefully by the team to see that the harness is correct and comfortable, and that the socket fits perfectly on the stump.

When the child is between twenty-four and thirty months of age, the passive mitt is changed to a grasping device which is a voluntary-opening hook, operated by a single control cable system. Now, for the first time, the child has a means of grasping an object. In order to utilize this new device, a second period of in-patient training is necessary. It is interesting to note that during the first few days the child will use his new appliance in the same manner as he did the passive device; i.e., pushing, pulling and hugging larger objects to him. In a short time, with the training provided by experienced therapists, he learns to open the hook, grasp objects and release them. Taking the paper off a lollipop is one of the activities he does best in the earliest period of his training. The length of in-patient training, of necessity, averages more for this age group than the younger age group. Our records show that fifteen to twenty-one days of training are required for children of twenty-four to forty-eight months.

At the age of four years, the child with the short below elbow amputation (stump length two to three inches) is ordinarily changed to a split socket type appliance, which allows him to increase his activities greatly. The new prosthesis has a Figure 8 harness and half-cuff; the elbow hinge is a rigid step-up hinge. The plastic part of the arm is made up of a socket and forearm piece. The socket must fit the child's arm perfectly. The step-up elbow hinge allows the child to get his hook to his mouth without the short stump slipping out of the socket. When he flexes his elbow one degree, the forearm piece flexes two degrees.

As the arm amputee becomes older, the type and number of his activities, as well as skill also increases. The prosthesis becomes more a part of him. He dresses and undresses himself with greater ease and is more adept at handling a knife, fork and spoon. Outdoors, he rides his bike, hangs and swings on monkey-bars, and plays ball (interchangeable hook and baseball mitt). One "mother's little helper", at three years, assists with the dishes by scraping them with her hook.

From four years to ten or twelve years, there are no major changes in the type of mechanical components which make up the prosthesis. Maintenance will include reconditioning and replacing the hook, replacing cables, lengthening the forearm and reconditioning the socket. Two or three complete new arms may be required during the six to eight-year period.

At this writing, there are no functional child-size hands commercially available which are practical. The APRL hand and cosmetic glove is now

available only in adult sizes. However, functional child-size hands with cosmetic glove that are practical have been designed by Colonel Fletcher. The manufacturer has now delivered the first models which will be used for testing purposes. Later they will be made commercially available.

At thirteen or fourteen years of age, both boys and girls are given a hand in addition to their hook. Instructions for operating the hand are given at the Amputee Center; a child occasionally is admitted to the hospital for one week of training in its operation.

From fourteen years on, adjustments for growth are not so great. Added now to the maintenance problem is that of the replacement of the cosmetic glove. The child who wears the hand at school and for all occasions will require a new glove every three to five months. The wearer who puts it on only for social occasions will get along with fewer during a year. A glove tends to darken and stain easily. Therefore, a good user requires replacement more frequently.

For the purpose of gaining an estimate of the number of prostheses required, we will take a hypothetical child and fit him at the various age levels.

Age 5 months to 30 months (Passive Pylon Type—Figure 1):

Figure "8" Harness
Triceps pad
Flexible elbow hinge
Double wall socket
Modified friction wrist unit
APRL plastic unit

SHORT BELOW ELBOW PROSTHESIS

RIGID HINGE TYPE
30 MONTHS TO 4 YEARS

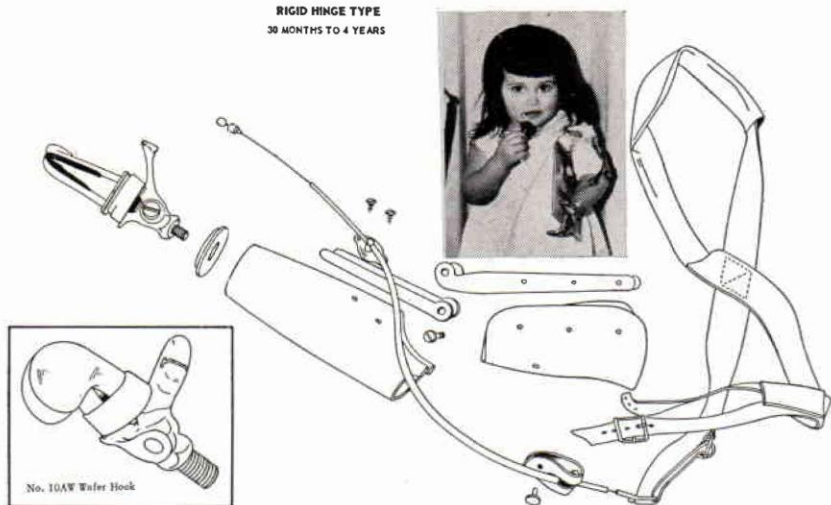


FIG. 3—Short Below Elbow Prosthesis, Rigid Hinge Type, 30 months to 4 years: Figure '8' harness, Single control cable system, Half cuff, Single or double pivot hinge, Double wall socket, Child size friction wrist unit, No. 10X Dorrance Terminal Device or No. 10AW wafer hook. Services: 21 days rehabilitation training, 8 out-patient clinic visits, 14 physician services, 12 parts (cables, joints, cuffs, harness, fabricated parts, etc.) 5 hours labor for repairs including one new forearm.

Between the ages of 6 months and 30 months, a child may require the following services:

- 16 days rehabilitation training
- 11 out-patient clinic visits
- 20 physician services
- 12 parts
- 13 hours of labor for repairs, including two new forearms

Age 30 months to four years: (Rigid Hinge Type—Figure 3)

- Figure "8" Harness
- Single control cable system
- Half cuff
- Single or double pivot hinge
- Double wall socket
- Childsize friction wrist unit
- No. 10X Dorrance Terminal Device, or
- No. 10AW Wafer Hook

SHORT BELOW ELBOW PROSTHESIS

SPLIT SOCKET TYPE

4 YEARS TO 14 YEARS

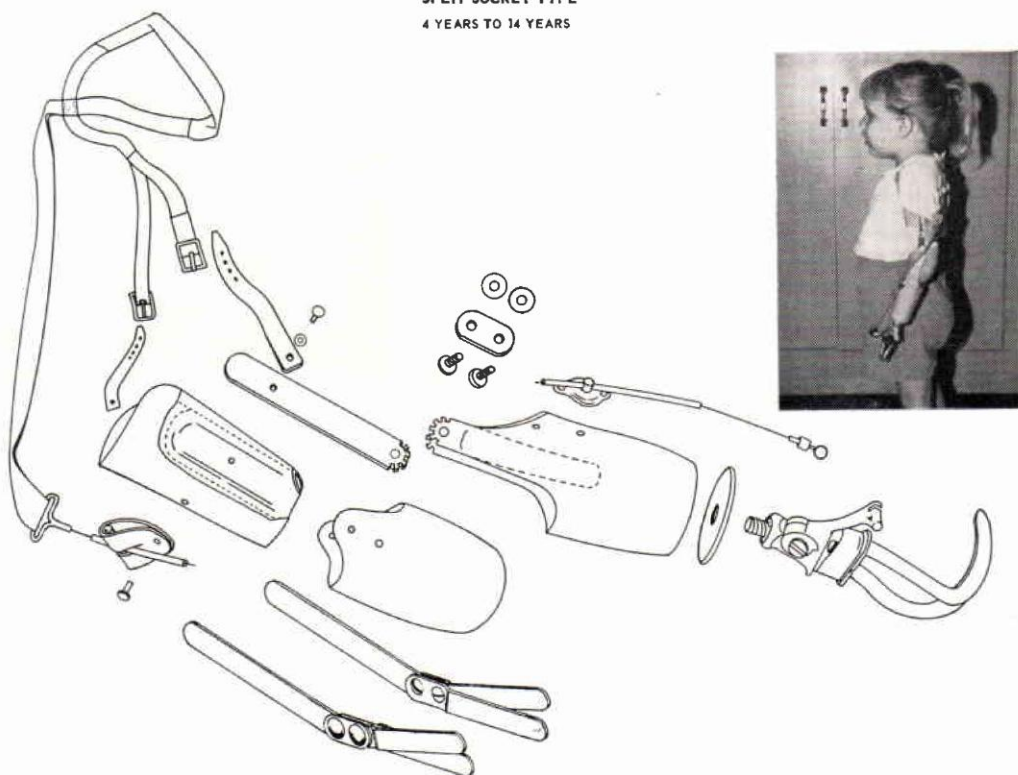


FIG. 4—Short below elbow prosthesis, split socket type, 4 years to 14 years: Figure "8" harness, single control cable system, half cuff, step-up hinges, split socket, child size friction wrist unit, No. 10X or 88X Dorrance Hook. Services: 18 out-patient clinic visits, 15 physician services, 22 parts, 16 hours labor for repairs, including one new socket.

Between the ages of two years and four years, a child may require the following services:

- 21 days rehabilitation training
- 8 out-patient clinic visits
- 14 physician services
- 12 parts (cables, joints, cuffs, harness, fabricated parts, etc.)
- 5 hours labor for repairs, including one new forearm

Age 4 years: (Split socket type—Fig. 4.)

- Figure "8" Harness
- Single control cable system
- Half cuff
- Step-up hinges
- Split socket
- Child-size friction wrist unit
- No. 88X Dorrance Hook

Age 5 years:

- B. E. split socket prosthesis without terminal device

SHORT BELOW ELBOW PROSTHESIS

SPLIT SOCKET TYPE

14 YEARS TO ADULT

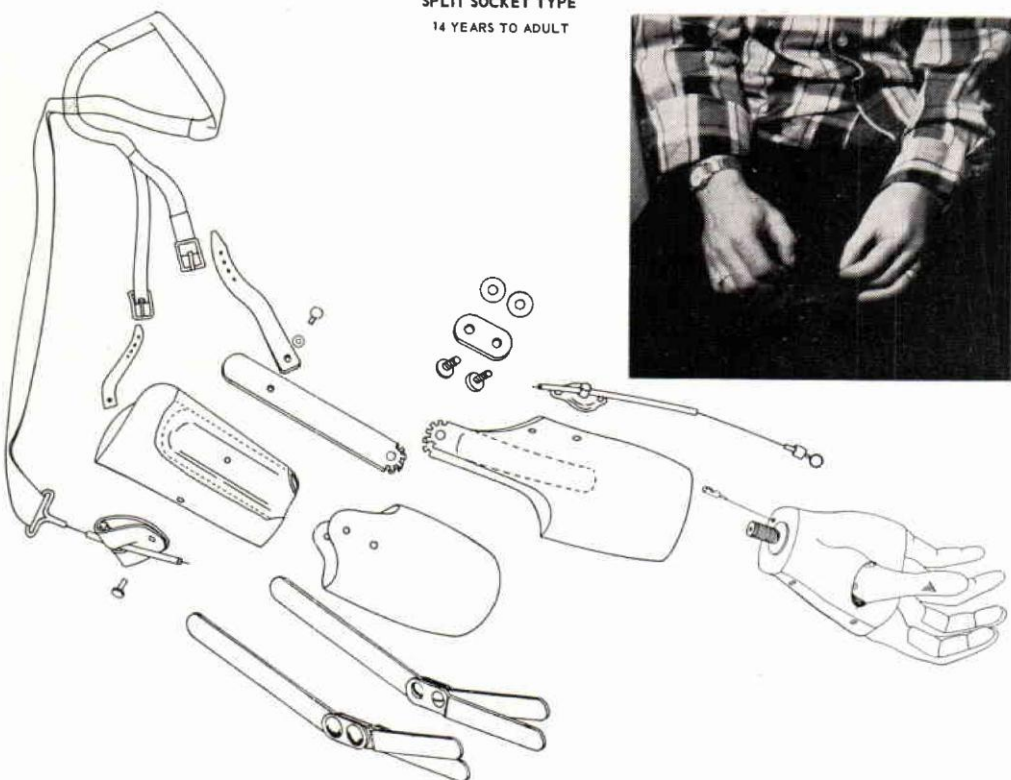


FIG. 2—Short below elbow prosthesis, split socket type, 14 years to adult: Figure "8" vinyon harness, single control cable system, half cuff, step-up elbow hinge split socket—plastic, standard forearm sizing, FM wrist disconnect unit, APRL hand and glove. Services: 3 out-patient clinic visits, 3 physician services, 6 parts, 6 hours labor for repairs, including 2 new gloves.

Age 7 years:

- B. E. split socket prosthesis with hook and child's small size APRL hand

Age 9 years:

- B. E. split socket with hook (Child's APRL hand, when available)

Between the ages of four years and nine years a child may require the following services:

- 18 out-patient clinic visits
- 15 physician services
- 22 parts
- 16 hours labor for repairs, including one new socket

Age 9 years through 15 years, the child may require the following:

- 17 out-patient clinic visits
- 17 physician services ----
- 29 parts

- 9 hours labor for repairs, including a new No. 3 Dorrance Hook

Age 15 years: (Split Socket Type—Fig. 2)

- Figure "8" Vinyon Harness
- Single control cable system
- Half cuff
- Step-up elbow hinge
- Split socket—plastic
- Standard forearm sizing
- FM wrist disconnect unit
- APRL hand and glove

Between the ages of fifteen years and sixteen years the child may require the following services:

- 3 out-patient clinic visits
- 3 physician services
- 6 parts
- 6 hours labor for repairs, including 2 new gloves

Age 18 years:

- B. E. split socket, as listed above at 15 year period, without terminal devices

Between the ages of sixteen years and nineteen years the child may require the following services:

- 9 out-patient clinic visits
- 9 physician services
- 22 parts
- 13 hours labor for repairs

Age 20-21 years:

- Figure "8" Harness
- Single control cable system
- Half cuff
- Variable ratio elbow joint
- Split socket
- Hosmer friction wrist unit
- Two load hook

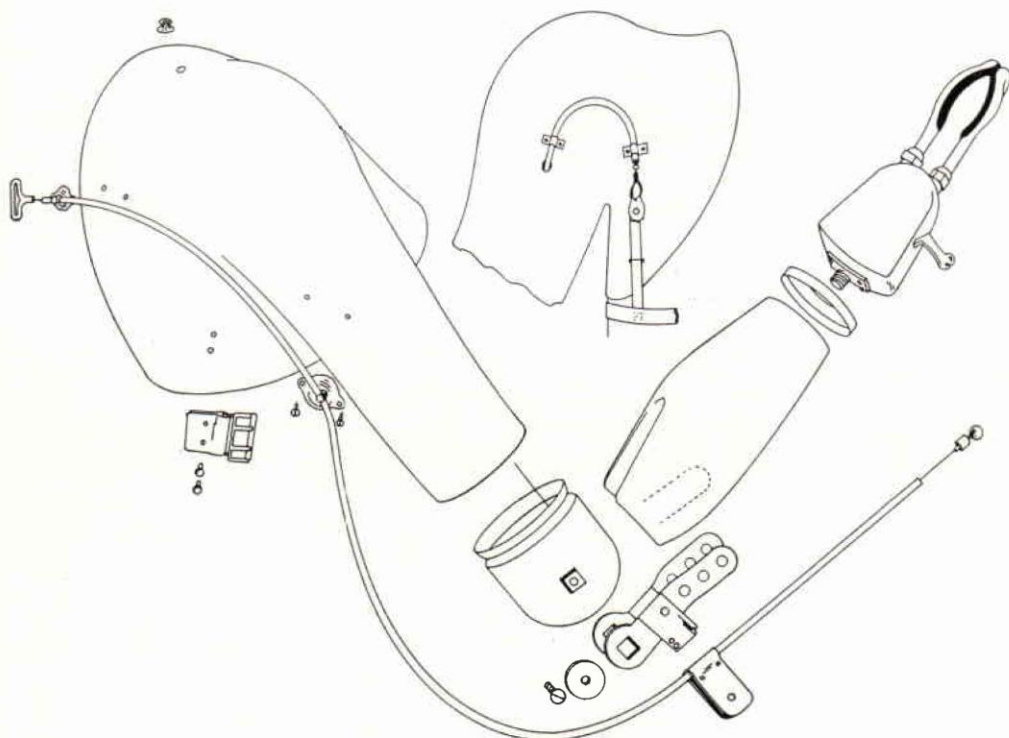
Between the ages of nineteen years and twenty-one years the child may require the following services:

- 8 clinic visits
- 8 physician repairs
- 12 parts
- 5 hours labor for repairs

Nine new limbs are required for the first 20½ year period of life for the short below-elbow congenital amputee.

Michigan's Child Amputee Program has not been operating long enough to predict what the very young group of children wearing prostheses will be doing vocationally at twenty-one years of age. We can say, however, that those children treated early in our program are now working successfully as school teachers, farmers, and homemakers. Others are in the industry and business offices. From a monetary standpoint, the cost of rehabilitating the person with an amputation is very small compared to the compensation gained socially, emotionally and economically.

We are convinced that there is much yet to be accomplished for the child amputee in the fields of education and prosthetic appliances, and in the environmental situation. Progress in this field of human endeavor and adjustment is rapidly gaining ground. We look forward with enthusiasm and optimism.



The Area Amputee Program
MICHIGAN CRIPPLED CHILDREN COMMISSION

FIG. 5—Shoulder disarticulation type prosthesis, APRL terminal device voluntary closing: Chest strap harness, dual control system—1st, cables control terminal device, forearm lift; 2nd, cable attached to abdominal belt, to brassiere or to a nudge control; controls elbow lock—shoulder cap and humeral section one solid piece, Hosmer elbow, standard forearm shell, FM wrist disconnect, APRL Hook.

TABLE A. UPPER EXTREMITY CHILD AMPUTEESCONGENITAL AND ACQUIREDCHARACTERISTICS OF 226 CHILD AMPUTEES RECORDED ON THE STATE REGISTER OF MICHIGAN CRIPPLED CHILDREN WITH
UPPER EXTREMITY AMPUTATIONS AS OF JUNE 30, 1956.

| AMPUTATION TYPE | TABLE A-1. TYPES OF AMPUTATION, BY CONGENITAL AND ACQUIRED, BY SEX | | | | | | | TABLE A-2. TYPES OF AMPUTATIONS BY CONGENITAL AND ACQUIRED, BY LOCUS OF AMPUTATION, RIGHT, LEFT OR BILATERAL | | | | | | | | |
|--------------------------|--|------------|------|--------|----------|------|--------|--|------------|-------|------|--------|----------|-------|------|--------|
| | TOTAL | CONGENITAL | | | ACQUIRED | | | TOTAL | CONGENITAL | | | | ACQUIRED | | | |
| | | Total | Male | Female | Total | Male | Female | | Total | Right | Left | Bilat. | Total | Right | Left | Bilat. |
| TOTAL | 226 | 163 | 83 | 80 | 63 | 48 | 15 | 226 | 163 | 50 | 102 | 9 | 63 | 30 | 30 | 1 |
| ABOVE ELBOW Total | 53 | 21 | 14 | 7 | 32 | 25 | 7 | (2) 53 | 21 | 5 | 12 | 4 | (2) 32 | 13 | 16 | 1 |
| TYPE NOT ESTABLISHED | 1 | 0 | 0 | 0 | 1 | 1 | 0 | (1) 1 | 0 | 0 | 0 | 0 | (1) 0 | 0 | 0 | 0 |
| SHOULDER DISARTICULATION | 6 | 3 | 2 | 1 | 3 | 2 | 1 | 6 | 3 | 0 | 0 | 3 | 3 | 1 | 2 | 0 |
| SHORT ABOVE ELBOW | 10 | 6 | 1 | 5 | 4 | 4 | 0 | 10 | 6 | 2 | 3 | 1 | 4 | 1 | 3 | 0 |
| STANDARD ABOVE ELBOW | 23 | 6 | 6 | 0 | 17 | 13 | 4 | 23 | 6 | 1 | 5 | 0 | 17 | 8 | 8 | 1 |
| ELBOW DISARTICULATION | 13 | 6 | 5 | 1 | 7 | 5 | 2 | (1) 13 | 6 | 2 | 4 | 0 | (1) 7 | 3 | 3 | 0 |
| BELOW ELBOW Total | 173 | 142 | 69 | 73 | 31 | 23 | 8 | 173 | (2) 142 | 45 | 90 | 5 | 31 | 17 | 14 | 0 |
| VERY SHORT BELOW ELBOW | 37 | 32 | 13 | 19 | 5 | 4 | 1 | 37 | 32 | 14 | 17 | 1 | 5 | 3 | 2 | 0 |
| SHORT BELOW ELBOW | 45 | 41 | 22 | 19 | 4 | 4 | 0 | 45 | 41 | 15 | 25 | 1 | 4 | 1 | 3 | 0 |
| LONG-MEDIUM BELOW ELBOW | 33 | 23 | 12 | 11 | 10 | 7 | 3 | 33 | 23 | 5 | 17 | 1 | 10 | 8 | 2 | 0 |
| WRIST DISARTICULATION | 34 | 26 | 13 | 13 | 8 | 7 | 1 | 34 | (2) 26 | 7 | 17 | 0 | 8 | 3 | 5 | 0 |
| PART OF HAND (1/) | 24 | 20 | 9 | 11 | 4 | 1 | 3 | 24 | 20 | 4 | 14 | 2 | 4 | 2 | 2 | 0 |

1/ When Prosthesis Can Be Utilized

Figure in Parenthesis: () Locus Not Reported, Included in Totals

S.H.K.

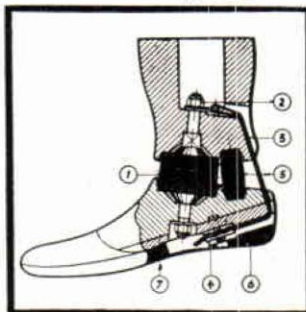
the natural aligning ankle

*Transverse and lateral
ANKLE MOTION
For the AMPUTEE . . .*



Satisfied Customers, Increased Profits!

This revolutionary new ankle joint climaxes years of research and testing by the German Limb Industry. This multi-functional ankle assembly, with its ingenious construction, gives the amputee a noiseless, shock-absorbing, natural gliding motion, which has never before been attained. Old AND new amputees will enjoy increased comfort and activity—and, the complete foot and ankle assembly is priced low so you may enjoy a greater margin of profit.



1. Flexible Angle Joint
2. Stop Nut
3. Nylon Strap
4. Pinch Fitting
5. Rubber Damper
6. Foam Latex Rubber Sole
7. Hardwood Base

TRANSVERSE ROTATION

prevents skin abrasion caused by twisting the stump in the socket.

BLOCK RUBBER MOUNTS

provide noiseless, gliding motion with no lubrication necessary.

FULL SOFT RUBBER SOLES

reduces sock wear to a minimum.

ENTIRE ANKLE IS CONSTRUCTED

to decrease shock, give cushioned weight bearing, which is important to wearer's comfort and activity.

Fidelity Orthopedic

FIDELITY BLDG., DAYTON, OHIO

Planning Our Future

The Augusta Conference

on

The Future of the Prosthetic-Orthopedic Industry and Profession

Reported by Glenn E. Jackson

The eight Past Presidents and the present Executive Committee of the Orthopedic Appliance and Limb Manufacturers Association met in Augusta, Georgia, in January. The purpose was to analyze and appraise progress, present conditions and the future of the artificial limb and brace field.

Three key executives of the Prosthetics Research Board program lent strength to the deliberations. Although they could not remain for the entire time, General F. S. Strong, Chairman of the Board, Dr. Harold Glattly, Executive Director and Tonnes Dennison, Assistant Executive Director, took part in the discussions. Also present was an outside observer, James Tower of Industrial Relations Counselors, Inc. of New York City. This is an independent non-profit research organization which has had wide experience with research and personnel.

The eight Past Presidents of OALMA in attendance were Chester C. Haddan, A. P. Gruman, Lucius Trautman, Lee Fawver, McCarthy Hanger, D. N. McKeever, Frank Harmon, Charles Hennessy. The present Executive Committee, all present, were: John A. McCann, Karl Buschenfeldt, Paul Leimkuhler, M. P. Cestaro.

OALMA staff members present were Executive Director Glenn Jackson and Assistant Executive Director Lester Smith.

The conference in its deliberation realized that it was up to the official administrative bodies elected by members of OALMA to carry out conference thinking. At Augusta, the emphasis was on an analysis of the past, present and future, rather than decision as to actual steps to be taken. The major areas in which all important considerations could be fitted were agreed upon follows:

I. *General conditions Past and Present.* The first day of the conference was devoted to an attempt to identify all the different conditions and factors that affect the present and, possibly the Future.

II. *Research*—What impact will Research have on the Future? And how to participate for maximum benefit to all concerned?

III. *Professionalism*—This was an attempt to define what is involved if this art-science is to become a profession.

IV. *Personnel and Training*—What kind of Personnel with what kind of education and training will be required in the Future?

V. *Economic Factors*—How can we assure economic stability.

The key-points in these five areas were summarized in these words:

1. The old days were not "good old days." The shops were generally poor and did not have many earmarks of a profession. Price cutting was quite general. The Association was a volunteer organization of "limb manufacturers" where able and sincere leaders attempted to improve conditions.

2. The Medical Profession had little interest in Prosthetics. Surgery and orthopedic care related to the immediate impairment with little attention for eventful rehabilitation.

3. The association consisted of "limb houses." The workers were "limb mechanics." (Terms in quotes were those most commonly used in those days.) Now the shops are "prosthetic or orthopedic appliance facilities" and the technicians are "prosthetists" or "Orthotists." There is a body of scientific knowledge being developed. This is becoming the art-science of prosthetics or orthotics.

4. Prices were determined hardly at all by an analysis of costs but by two other things: One: What competitors were charging and, Two: How badly the shop needed a new customer. High percentage of owners and key personnel entered the business because of a crippling condition or because the family was in this business.

5. The economic problems have always dogged this industry. The people it serves are generally up against it. Unlike other industries there can, of course, be no talk of finding "new markets." Conditions over which this industry has no control determine the total clientele.

6. Today the clientele, and their doctors are rapidly becoming more discriminating and more demanding. In the past the amputee knew "from nothing," as to where to turn—what to do. He now is guided by better common knowledge, or by agencies or doctors, all better informed and ready to advise him.

7. The federal government has become most active in our field. The department of Health, Education, and Welfare, through its office of Vocational Rehabilitation is putting large funds into state grants, into the Research program and is now bent on making a study of what's ahead the next five years. This is a crucial moment for Rehabilitation. All this behooves the Prosthetic Orthotic industry and profession to do likewise. This Augusta Conference should be the stepping stone to more hard thinking and planning as to "what's in the Future."

As to possible government operated facilities this is unnecessary so long as we continue improving our service under free enterprise. If we fail, government might well find this a field where public opinion would support socialization as in England.

As to government contracts, with the Veterans Administration we have a sound one as to prostheses and one where all three parties, e.g. the government, the prosthetic facility and the amputee are all well served. This condition is uniquely satisfactory to everyone concerned.

In braces it is different and few there are who find the present methods of procurement anything but confusing, unfair and contrary to the best interests of any of the three parties concerned. The lack of standard terminology, the endless variations in prescriptions and conditions in local agency offices have made it impossible to draw intelligent, workable brace contracts.

8. Formerly the individual shops made everything. Then came suppliers who made, increasingly, the various components that go to make up prosthetic and orthopedic appliances. In the future we will buy most everything from the supplier. And less personnel will be needed in our professional facilities.

9. Formerly, only in isolated cases was there close relationship to the medical profession. *This is changing.* In fact, there are those who express concern lest the medical profession "take over." But more thoughtful men are gratified over the new relationship. Those who worry over this often speak of the "totem pole" where the lowly prosthetist-orthotist is said to occupy the bottom rung. But discerning men dismiss his concern by assert-



YOUR NATIONAL OFFICERS AT THE AUGUSTA CONFERENCE—Dr. Harold W. Glatly, Executive Director of the Prosthetics Research Board, confers with OALMA officers at the session on Operation Future, held at the Bon-Air Hotel, Augusta, Georgia, January 8-12. Left to right: Dr. Glatly, Glenn Jackson, Treasurer M. P. Cestaro, Vice Presidents Paul E. Leimkuehler and Karl Buschenfeldt, and National President John A. McCann.

ing that the position of the prosthetist-orthotist depends upon his professional competence and standards of performance. The growing teamwork approach and the increasing clinical settings where prosthetists are an essential part, support this opinion.

10. Formerly, government was of minor importance to our field. Now it is the most important in many ways. Government launched and financed the whole Research program. Government is the largest benefactor of the handicapped. Here again some have been concerned that the industry sat on the sidelines. But there is general consensus now as to two things: One, that the Research program could never have been conducted and paid for by the industry, and two, that the industry is fast taking its rightful place in the Research organization and program. It was noted that seven men at the Augusta Conference are now in responsible places in the Research organization. These are: Lee Fawver, Chester C. Haddan, Lucius Trautman, Paul Leimkuehler, McCarthy Hanger, Charles Hennessy and Frank Harmon.

11. The industry has made remarkable progress over the past decade. In 1946 it organized the new association consisting not only of firms in the limb field but also those in the brace field. From that date on, there has been no fundamental distinction between the two.

A national office with an experienced staff established an administrative center which has achieved national recognition for its leadership in progress and service to mankind.

In 1949 there was launched the *Certification program*. Headed by a board of four eminent leaders from the industry and three eminent orthopedic surgeons, this new movement soon commended itself to agencies, the medical profession, and the public in a marked degree. The creation of the

new strong association and the Certification Board dramatized the determination of the industry's leaders to make all possible speed in improving the competence, ethical standards and all-round professional standing of those engaged in prosthetics and orthotics in this nation.

12. As to education—only a small percentage of the key personnel has in the past completed even High School. This is changing. The Certification Board requires a High School diploma or an Equivalency Certificate.

It is inevitable that a growing percentage of personnel in the future will have had a college education.

13. The shop of the past is giving way to the facility of the future. This facility must be well located for its purpose, with good transportation available, good parking space nearby, with a minimum of 3 fitting rooms, well equipped, with typical efficient group of 4 people one of whom is the head and one of whom should be a woman attendant. The work week will not be over 44 hours. The facility must be open at least full-time ordinary business hours. A new facility for the future can hardly justify opening short of \$30,000.00 capital and a Dun and Bradstreet report should be able to say—"adequate for its purposes."

14. Brace Research—the coming into the Association of the brace firms of America and the Certification program's equal attention to brace and limb facilities and personnel has been an important development.

It is natural, now, that the Prosthetic Research Board should enter the field of Brace Research. Already three moves have been made in this direction. One,—the PRB took official action approving a study of this field to the end that it might be determined what aspects of orthotics needed improvement. Second,—a conference of interested agencies and persons was held on the West coast. Their general conclusions—there is real need for a fundamental research program in braces, particularly as to functional bracing. Third, a conference along the same lines in the East at Richmond, Va. This conference was predominately one for doctors of large experience in bracing. They concluded that there is all too little general agreement even as to the purposes, the indications and contraindications for bracing of various conditions. Until there is an improvement here, there cannot be decision as to the structure of the brace.

Expert orthotists participated in these two events and made valuable contributions to the proceedings. It is of the utmost importance that the orthotic profession be very much in the middle of this emerging Brace Research program making its vital contribution. For, when it comes down to the making and fitting of the Brace according to the Doctor's prescription, only the Orthotist is experienced and competent.

It was noted that this plan is in contrast to the unfortunate isolation of the expert prosthetist in the early days of the Prosthetic Research.

15. Are we a business or a profession? Hopefully we have to be both. And, are we mechanics, with engineering skills, or are we in the medical field where the structure of anatomy is all important? Again,—we have to be both. Therein lies our complicated future.

16. What general influences on us are ahead?

a. The scientific advances, such as in geriatrics means longer lives. This, plus increasing population, means, inevitably, larger numbers of crippled people.

b. International relations—we are now a world unit.



PRESIDENTS OF OALMA—The Augusta Conference, January 8 to 12, 1958, was highlighted by the participation of OALMA's Presidents from 1940 to 1958. In the picture above, left to right are: the current President, John A. McCann; Charles A. Hennessy, 1956-57; W. Frank Harmon, 1955-56; McCarthy Hanger, Jr., 1954-55; Lee Fawver, 1952-54; Lucius Trautman, 1951-52; D. A. McKeever, 1949-50; A. P. Gruman, 1948-49; Chester C. Had-don, 1940-46. (The late Walter R. Sievers was President from 1946 to 1948).

c. Sociologically—we are fast becoming urbanized or perhaps, suburbanized. Educationally, a higher percentage of youth now go to college than went to High School two generations ago.

d. Industry—the trend is toward strong companies. It's going to be a tough time for little business of any kind. Probably there will not be a shorter week. But wages, fringe benefits, profit sharing are going to continue the upward spiral. Some think it will be better for most to be an employee of a strong concern than the struggling head of a little business. The day when the ambitious young man finds it most alluring to become head of his own small business, is, for the most part, a thing of the past.

e. Economics—perhaps there will not be war. But we shall live in a "run-scared" society. Recessions will come—but not deep depressions. The brakes of federal government and safeguards now built in our financial structure will prevent that. There will be continuing inflation, largely because of labor shortage.

f. Government is with us in a big way. The humanitarian aspect of government has become popular—both to the recipients of the benefits and to the politicians who dare not buck it. In 1938 only one third of all hospital beds were tax supported. In 1956 this was up to 66% or two thirds. Now 7 million employees look to the government for their pay checks. In health services, particularly, it is popular to expand. Government finds it publicly acceptable to take care of people's health at public expense. Herein lies a challenge to our industry to so improve its services as to assure public support of free enterprise.

17. Professional Advancement—We are not the only group who need to, or are, advancing. The doctors of this country have started to learn prosthetics—and, shortly will be in courses in orthotics. Doctors are, in increasing numbers, staying with their patients until rehabilitated. To some degree, this poses the problem of a few doctors who are “Johnny-come-late-lies” having a little knowledge that is not enough to justify a sound judgment and which can be actually damaging to the welfare of the patient. But this condition will pass.

18. Business management—someone in every facility of the future must know cost accounting or the facility will face hazardous conditions. The competent prosthetist-orthotist often lacks knowledge of business management. The business and the profession are closely tied together.

The Research Program

1. The Research Program is fortunately placed in the National Academy of Science where independent action uninfluenced by special interests or prejudices can be carried on.

2. Fundamental research goes far deeper than a mere appraisal of existing practices or products. It must look into all possibilities to determine whether some wholly new idea may prove to be good. It is not true to say that a lot of money and effort spent on, say, an electric arm, is “wasted.” It is valuable, indeed, worth the cost to be able to say, if it is proved, that an electric arm is not practicable. And it may be that, by applying some new variation such a revolutionary device may become useful someday.

True research requires the talents of engineers, medical experts, even psychologists who, after their basic work is done, require the expert practitioner to evaluate the new idea as to its practical applications.

3. The PRB now sees its work as being twofold in nature. One side is the development of new items, sometimes referred to as the new “gadgets”—or the “hardware” side. The other side is the Practice and Profession. On this side, a start on which has been made, we see the educational programs at UCLA and NYU and, shortly at Northwestern U. in Chicago.

After the “hardware” is developed by PRB it offers its assistance to the profession in its advancement. Mr. Tonnes Dennison is now the executive in charge of the Research & Development side. Dr. Harold Glatly serves as the Executive of the Education Information side—now just getting under way.

4. Phase IV is where the Research and Development office has finished its work and transfers the results for use in the profession. A member of the profession, Lee Fawver, now heads this phase IV.

5. Education and Information. One of the weaknesses in the Research program to date has been the lack of adequate communication. Not enough people have known what was being done. Not enough agencies, doctors, nor other disciplines, understood it. It is the purpose of this new phase to work with the prosthetic-orthopedic profession, agencies, etc. to see to it that adequate information is now communicated. One purpose of this is to secure a more adequate “feedback” so the Research Program will be more influenced by the results of their original research. This will be accomplished by wider participation by the profession, by better reports to all who are concerned and by better presentations wherever paramedical disciplines gather for meetings, assemblies or courses.

III. Professionalism—Will we really be a Profession in the future?

1. A body of scientific knowledge is emerging which is in addition to the definite mechanical skills.

2. Relationship with doctors has become vastly better—there is more communication—more mutual respect.

3. Relationships between patients and prosthetists—orthotists vastly improved—this is favorable.

4. Research and education are contributing to a major degree to advancing the cause of professionalism. This is in marked contrast to the past where, whereas rugged individualists did help advance the techniques of artificial limb making, these important improvements were buried under a mountain of distrust, antagonism and ill-will.

5. Our professional status seems to be bound up closely with other groups, called "para-medical" groups. There is, as yet, only limited acceptance by these groups but, as we progress with Research, education, and professional attitude, the atmosphere becomes favorable for full acceptance.

6. The struggle for professional status will require a combination of factors, that, taken together, are a heavier load than ever carried before. It is recognized that there does not any longer exist an alternative to becoming professional. The agencies, both public and private, the doctors and even the patients are demanding professional conduct and service.

IV. Personnel and Training

1. The professional prosthetist and orthotist of the future must be a rare combination of four things.

a. Mechanical aptitude—this has always been true and needs no argument here.

b. Physical health and vigor—for the strain of dealing in complex ways with crippled people.

c. Outgoing Personality—he must like people and want, very much, to work with them. Neither afraid or combative. His "fitting room manner" must be what the doctor calls "bedside manner," and this will be most difficult because, unlike the doctor, he does not have the professional respect of the patient. His patients often are in a bad mental state, bereft not only of health, but job,—insecure, inferior feelings become expressed in irritations, or other symptomatic behavior. The professional in this field must, indeed, have the patience of Job, the wisdom of Solomon and the grace of the saints.

d. Teachable—his must be an inquiring mind. Confident of what he really knows, but reaching out for new ideas. So anxious to learn that he is able to push aside the pull of recreation, of limited funds, of tired body, to study, to read, to go to school.

2. On the educational side—as already noted, there is an important beginning in the courses at UCLA and NYU and presently at Chicago. Inevitably there will be college level schools, perhaps at these places.

Presently there are five universities interested. Besides the three listed above there are Tulane in New Orleans and the University of Florida.

If and when such schools are established it is believed that there will be made available a considerable number of scholarships. In fact, the Augusta conference showed strong sentiment in favor of the Association earmarking \$2,000.00 of its funds for scholarships. Sentiment was in favor of granting these on the basis of superior achievement such as the highest grades at the

Certification examination. There was no sentiment in favor of grants to be made on the basis of "hardship".

The Augusta conference identified the principal criteria which should be considered by a university before launching a college level school in Prosthetics-Orthotics. These were:

a. *The need*—Is there real need for this school? Someone has estimated that the profession could absorb from 35 to 75 graduates a year, while others cautioned against presuming to know what the needs of the growing future might be, still, it is generally believed that the number is nearer 100 than it possibly could be to several hundred. On this basis, any university should examine the available schools and determine that there is need for an additional college course.

b. *Clientele*—both the students and the pilot patients to be used in teaching the techniques of the profession, should be available in the area. This indicates the advisability of location in a populous metropolitan area.

c. *Department of Medicine and of Engineering*—Also, there should be a strong department of medicine and of engineering. There are already many bases for training in the para-medical groups and it would be natural to integrate any school in Prosthetics within these established courses. It now appears inevitable that the American Board for Certification will, in a few years, require college education as a condition of certification. When this is done, it will serve immediately to expand the demand for these college courses. Of course, the school must be started before the condition can be set. So it may be that, while starting with a small class, the demands will shortly outgrow the beginnings.

3. *On the doctor education* in the Prosthetics-Orthotics side there is one encouraging factor. It is in the fact that, through the office of the surgeon-general there are plans and some funds for support of courses related to Civilian Defense. These courses now exist in 35 medical schools and the number is rising. Courses in Prosthetics-Orthotics become a natural part of these schools. In this way, the resistance of Deans of Medical Schools to adding anything new to their courses, is resolved in a natural way.

Every patient has been to a doctor at some time. Therefore as it becomes common practice to retain contact with the patient toward his Rehabilitation, the combination of courses in Prosthetics-Orthotics for doctors, prosthetists and allied disciplines becomes a natural development.

4. *The financial side* must be considered. Education in Prosthetics-Orthotics will likely be for sometime in small classes. In the current costs of the two week courses in Prosthetics at U.C.L.A., for example, the "out-of-pocket-cost" per student is \$280.00.

5. *Curriculum*—Those who establish the first college courses in Prosthetics-Orthotics must be pioneers. There is little to guide them. However, a Commission established by the American Board for Certification in 1950 under the chairmanship of Dr. George Young, assistant director of the Mellon Institute, made a study of this question. Its findings are contained in its report made in 1951.

The conclusions of the Young Commission are valuable for study by any college considering the curriculum for a school in Prosthetics. Besides, the experiences of UCLA and NYU with their courses in Prosthetics have been most valuable in considering what kind of curriculum fits the needs and demands of para-medical groups desiring to study in this field.

V. *The Economic Side*—Can we become economically secure? Three major influences have, in the past, kept this industry from becoming economically secure. These were:

1. *Attitudes*. The majority of shop-owners considered that they were in a business in competition with all the others in the business. The effort was to make as much money as possible on each sale. Only a few of them could be considered as professional and dealing mainly in services. And, these few who acted professionally had a hard time of it. This was because neither the public nor the Medical profession knew enough about the matter to be able to make any intelligent distinction. Therefore, it was costly to have ideals of service and professional conduct. Brace patients do not, generally, shop around. Their brace has generally been made by prescription, of a doctor. Therefore, it did not make so much difference where it was made.

In prosthetics however, the situation is more serious. And, in the past, high pressure salesmen so impressed the amputee that he was not impressed with the professional prosthetist's approach.

There are some who now predict that the prosthetist will either become a part of a recognized medical facility or will set up a professional practice and office separate from any manufacturing operations.

Already, some doctors who have received training in modern prosthetics are inclined to prefer a nearby facility as an out-patient department within a hospital. But when they seek the evidence of experience they find that such a setup is financially costly and is administratively complicated. Besides, there are professional prosthetists who state that they cannot do their best work as part of an institution.

It seems certain that the current free enterprise facility is to continue in our future, though it will have to render a more professional type service than in the past.

2. *Low Prices*—The second influence has been the low prices paid for appliances and their services. In his five-year report General Strong, then Executive Director of the National Research program in artificial limbs, refers to this situation. He does so by comparing the values of an artificial limb to replace the live one that has been lost with the purchase of a TV set or automobile. It is fantastic to believe, General Strong says, that American people can afford the \$350.00 TV Set but can't afford the \$300.00 artificial limb. Predictions for the Future on this question all point to a much higher return for the professional Orthotist-Prosthetist's services.

3. *Poor Management*—The emerging professional must become a better business manager else he may become a bankrupt professional. The Association is to be commended for its efforts to analyze the financial side of the picture. However, these efforts disclose such a variety of practices as to the keeping of accounts, ways of determining costs and prices, that there must be renewed effort to secure a wider participation in what has been called the "Economic Project".

What's needed? There is mounting evidence and sentiment favoring some standard accounting system being developed and offered as a service to the Association's members. To this end a new start is to be made in an effort to standardize definitions and practices. Sentiment of the Augusta Conference favors these moves designed to improve the business practices of the present firms which need better understanding of sound business practices.

Summary — What was accomplished at Augusta?

This is difficult to answer. The answer depends somewhat on how one looks at it.

For what it may be worth here is the considered judgment of this reporter who served the conference as its moderator.

1. It was the first and only time that so many of the eminent leaders in this art-science had been brought together. Never before had all the nine presidents of the last eleven years, sat, thought and talked together on the "state of the Union" and where it is going.

2. It was the first and only time that any group of leaders in this field had devoted so much time to fundamental thinking rather than immediate administrative problems.

3. The technique of the conference was that which is now most favored by conference experts. It is referred to as an "unstructured" conference—which, simplified, means, "there's no agenda to follow." But it was not "brain storming"—a method which is becoming popular in some business circles.

4. This all adds up to a new kind of conference in which the direct results are far less important than the indirect. Time will reveal these concomitants which become slowly articulate in administrative action. In a real sense—Augusta set the climate for the Future. Mr. Tower sensed this in his summary. As example: He sensed "the attitude that other competent people in the field should be considered more as colleagues than as competitors."

Another, "Factual professional discussions with doctors about specific cases and problems build more security of income and status than does conventional "selling" to the patient and, this is the essence of professionalism."

Still another: "This conference has set the stage for developing an "attitude of competence, integrity, self-confidence and dedication so that the truly professional prosthetist or orthotist takes his rightful and respected place on the team."

5. The Augusta Conference established a high degree of rapport between the industry and the Research program. This resulted in specific plans for the common benefit of all concerned.

6. The Augusta Conference came to see that "progress" in the past is related, in large part, to a new, observable organization like the American Board for Certification. From here on, it must relate more to quality than to quantity. Not "how many," but "how well." It means a transfer from talk to action. Example: The "talk" of "profession" visa-a-vis the actuality of a profession.

Another characteristic of today's problems as against earlier days is that things then were more black or white. Today they are grey. Formerly one could tell when a code was broken. Now we cannot be sure. Then, men took bribes, which was "bad." Today, this practice is about wiped out. But in its place are those subtle moves and influences designed to secure favor. This is harder to analyze and to adjudge as proper or improper.

To recognize these differences is, indeed, a vital step in progress—and Augusta did just that.

These, then, seem to this reporter as the observable, important results of Augusta. One could add others like the value of finding out what our leaders are thinking and worrying about,—and, the spirit of fellowship that grows in this kind of friendly setting.

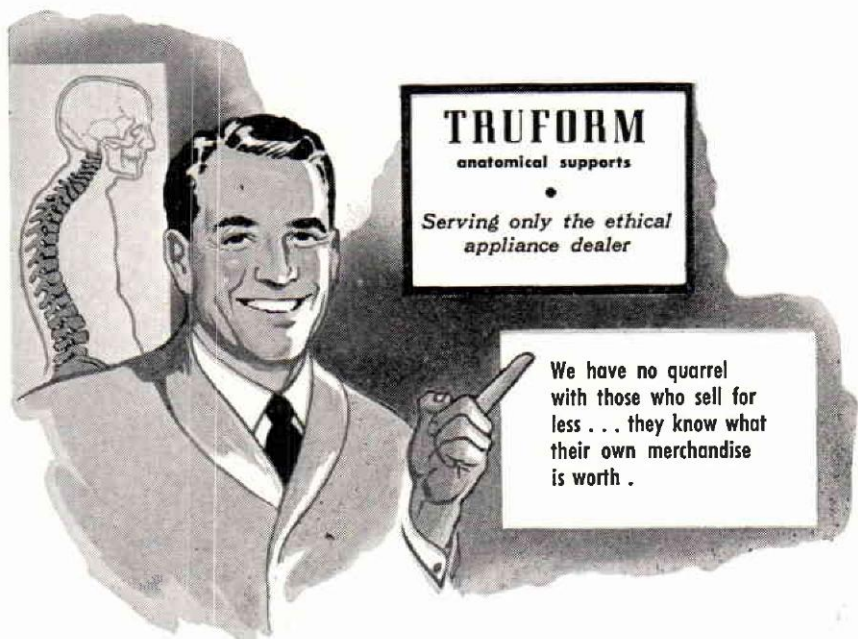
Yes—the Augusta conference was eminently worthwhile and important. The Future will disclose just how valuable it proved to be.

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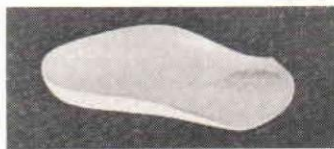


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To All Certified Orthotists and Prosthetists

Greetings from Roy M. Hoover, M.D.,
President of the
American Board for Certification

Active preparation is now in progress for the Certification examinations in Los Angeles, St. Louis and Miami this October. The deadline for application is near. Prospects are for a good number of applicants and it is hoped that arrangements for three locations will be justified. It is gratifying to see the increasing interest of those in the industry in Certification and the increasing general prestige which it carries. Certification is being more generally accepted as representing a well qualified man and an adequate, reliable, efficient, well run facility whose primary interest is service to the handicapped person in close cooperation with the Medical profession.

It is the desire of your Certification Board to see to it that Certification means as much as possible. For this reason standards of ability and training must be progressively raised and more and more be expected of each class. Only in this way will the profession of the Orthotist and Prosthetist acquire the standing and dignity due it. Our primary obligation is service to the disabled who need help—financial reward will come as a natural result and is not the primary objective.

It is my considered opinion that advancement, self satisfaction, and remuneration are in final analysis directly related to dedication to the needs of those we serve.

It is the hope of the Certification Board that the examination this October will have as candidates a large number of good, well-qualified Prosthetists and Orthotists, and that we may have the pleasure of certifying a large proportion of them.

Roy M. Hoover

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CROSS COUNTRY REPORT

What's New in the Brace and Artificial Limb Field
Meetings - OALMA - Suppliers - Certiftees



Region VII Luminaries—Left to right: Past Presidents Lee Fawver and Lucius Trautman with the two men who planned the meeting of Region VII at Des Moines in April, Everett Haines, Council President and Joseph Gitlin, Regional Director.

REGION VII MEETING

The meeting of Region VII at Des Moines, Iowa, April 12, geared its program to tie in with the services of State Rehabilitation Division and the Veterans Administration. As arranged by Regional President Everett F. Haines, members from this eight-state Region shared experiences and problems with these key figures in rehabilitation in the Midwest area:

Voight W. Baker, VA Area Chief, who came from St. Paul to talk on "Improved Services to the Amputee".

Merril E. Hunt, Acting Director of the Iowa Division of Vocational Rehabilitation, who reviewed projected legislation in this field.

E. L. Thomsen, District Supervisor of the Iowa Vocational Rehabilitation, whose subject was "Counseling Problems with Prosthetic Appliances."

Mario G. Barillas, who as State Supervisor of Psychological Services for D.V.R. was well qualified to handle this aspect of the disabled.

Col. Maurice J. Fletcher who reviewed research in the light of his experience with the Army Prosthetics Research Laboratory which he heads.

Joseph Gitlin, Regional Representative on the National Board of OALMA and Executive Director Glenn Jackson reported on services and program of OALMA. All was not work in this one-day session—time was found for a reception and an enjoyable report on foreign travel was presented by Wilbur Plager.

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Region IX Hears McLarnin—left to right: Glenn E. Jackson, Donald McLarnin, Regional Director of the U. S. Small Business Administration, and LeRoy Noble, who presided at the March meeting.

REGION VI MEETS IN CHICAGO

OALMA Region VI met at the Congress Hotel in Chicago, Illinois, June 13-15. (This was the tenth Region of OALMA to hold one or more sessions this year). The Program Committee, Richard Bidwell, Alfred Denison and Mr. and Mrs. John DeBender had their work in first-class condition. Their careful planning made life easy for Regional Director Ralph Storrs as he presided over these sessions:

A Day With Donna, a Bi-lateral Congenital Deformity, a color film presented by Erich Hanicke.

Effective Rehabilitation Procedures and Practices—an explanation of the current practice in Wisconsin, by Adrian Towne, Supervisor of Medical Services for the Rehabilitation Division of Wisconsin.

The Surgical Garments in the Limb and Brace Establishment—by Russ Johnson, Sales Manager of Truform Anatomical Supports.

The Pilot Course on Functional Arm Bracing at U.C.L.A., presented by Dr. Miles Anderson, U.C.L.A. and Clyde Peach. This was a "scoop" for Region VI, as it was the first report presented by the Director of the course, Dr. Miles Anderson and one of the successful students, Clyde Peach.

New Devices for the Upper and Lower Extremity—an account of the current research activities in this field by Hector Kay, Associate Director of Prosthetic Devices at New York University.

New Materials and Casting Techniques—by Milton Tenenbaum.

Rehabilitation of a Man with Flail Arms—a sound motion picture presented by Walter A. Pawlowski of Gary, Indiana.

New Applications of Plastics and Alignment Tools to Lower Extremity Prostheses—a report by Anthony Staros and Henry S. Gardner of the V.A. Prosthetics Research Center.

Prosthetics at Northwestern University, a progress report by: Colin A. McLaurin, B. A. S. C., Prosthetic Research Chief, Northwestern University, Chicago, Illinois.

Prosthetics Research and Development—by Professor Charles W. Radcliffe, of the University of California, Berkley, California.

News from the Washington Office, by Les Smith, Assistant Executive Director of OALMA.

Ninety persons attended the reception and banquet the evening of June 15. There they witnessed the unfolding of a new talent of John A. DeBender, who made a first-class master of ceremonies!

In a concluding business session, members heard greetings from National President John A. McCann. The 1959 session will be at Milwaukee with consideration being given to Indianapolis for 1960.

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Region V had a good time at its Toledo meeting in April. At the left we see five men who had much to do with making it a success: Regional Director, Charles Rosenquist, Professor Donald Hamilton of Ohio University Rehabilitation Center; Director Glenn Jackson; A. E. Kloene of Toledo; and D. R. Coon of Detroit. In the picture at the right A. E. Kloene and Ted W. Smith of the Knit-Rite Company chat with Paul Leimkuehler of Cleveland and D. R. Coon.

MINUTES OF REGION V MEETING—APRIL 19-20, 1958

The Fifth annual meeting was held in Toledo, Ohio, at the Hotel Secor, beginning at 5 P.M. with registration of 27 member firms and 67 dinner reservations. A very pleasant cocktail period before dinner was enjoyed by all and afforded the chance to renew many acquaintances.

Arrangements for the program and the various functions had been made by Mr. A. E. Kloene, President of the Region, who received many compliments on his work.

In the opening session the Executive Director, Glenn Jackson, reviewed the accomplishments of OALMA over the past eleven years. He suggested that we look to the future in the operation of our firms on sound business practices, ethical principles and the advancement of our industry as an art and a science. He referred to the planning that is being done to encourage training in this field on the college level. Mr. Jackson closed his remarks with a word of admonition, to look for our reward in the acceptance of our status, in professional respect and in our own pride in the profession.

Dr. Kenneth Hamilton, Director of the Ohio State Rehabilitation Center, presented a short film illustrating the procedure and accomplishments of team work in the rehabilitation of patients. Included were a polio patient, a person suffering from accidental injury, and the parents and a cerebral palsy child. The parts played by the Doctor, Physical and Occupational therapists, case workers, Orthotists and Prosthetists were an enlightening portrayal of team work and the accomplishment resulting from this combined effort.

In the business the next day, Mr. Jackson reviewed the work of the Prosthetics Research Board. The importance of "Feed Back" in the testing of appliances was emphasized. In the discussion of the question, "What Each of Us Can Do To Advance Ourselves and Aid Our Profession", Mr. Jackson advanced a program stressing the importance of professional conduct, appearance of the individual and his facility, and sound advice as to the business principles which helped bring about stability and respect.

The Region unanimously voted to accept the kind invitation of Vernon Murka to hold the 1959 Regional Meeting in Dayton, Ohio.

The Region unanimously re-elected the current officers as follows: A. E. Kloene—President; Charles Rosenquist—Vice President; and D. R. Coon—Secretary-Treasurer.

British Visitors:

Visiting the United States from London, England in May and June were four distinguished doctors and engineers from Roehampton Limb Fitting Centre, Queen Mary's Hospital, who are learning American techniques in the building, fitting and training in use of artificial limbs.

Fred Quisenberry, regional director of Orthopedic Appliance and Limb Manufacturers Association, took the group on a tour of the Alpha Orthopedic Appliance Company Facility in Los Angeles.



British Limbmakers—Noted British limbmakers from Roehampton Limb Fitting Centre, Queen Mary's Hospital, London, visit Alpha Orthopedic Appliance Co. in Los Angeles. Shown here from left are Brig. N. A. M. Swettenham, research engineer, J. P. Waggott, limbmaker, Dr. D. S. McKenzie, senior medical officer, Fred Quisenberry, of Alpha Orthopedics, and C. P. Steeper, limbmaker.



Pictured in front of the Hosmer plant following their inspection of the Hosmer and Dorrance facilities in California are, from left to right: Jerry Leavy, Hosmer Corp.; Mr. C. P. Steeper, London; General E. L. Johnson, Prosthetic Research Board, San Francisco office; Mr. E. L. McKenzie, F.R.C.S., London; Mr. N. A. M. Swettenham, London; Lloyd Brown, Hosmer Corp. and Mr. J. B. Waggott of Surrey, England.

AMPUTEE VETERANS OF AMERICA

Joseph Martino of Boston attended the first National Convention of the Amputee Veterans of America, and we are indebted to him for a report of this historic "first".

Sessions were held in Boston April 17, 18 and 19, with several hundred in attendance.

Mr. Martino reported to the veterans on the Sach Foot; Marion Kessler, Manager of the J. E. Hanger facility in Boston, presented the UC Berkeley Socket, and Ted Williams of Anthony & Williams facility discussed the Upper Extremity Laminated prosthesis.

From the Senior Vice Commander of the Association, Jack Miller, we have this comment:

"In what was probably one of the most unusual conventions ever held, these men, who came from all walks of life and all branches of the Armed Forces, had one thing in common. They had shared the experience of losing an arm or a leg—and in some cases, both—and they were gathered together, not only to discuss their own peculiar problems, but also to discuss ways and means to help the countless thousands of civilian amputees, who sometimes are forgotten or misunderstood in the fast pace of life as we live it today.

The seminar on rehabilitation was attended by several of the prosthetists in the Boston area and they spoke on the UC Berkeley socket, the Sach foot and the plastic laminate upper extremity prostheses. The cooperation given by the limb manufacturers in this area was most appreciated and without their talks on prosthetics, the program would not have been well rounded. We, in the New England area, are most fortunate in having very progressive men representing the limb industry and thereby our amputees have benefited by receiving the latest developments in prostheses.

The artificial limb industry should be commended for the advancement they have made toward professionalizing their profession. We, as an amputee group, will try to do our part singularly and collectively to work in conjunction with the industry for progress.

We plan to have, as part of our second convention, a display of the current developments in the prosthetic industry. When formal plans have been formulated, our representatives will contact your association for the purpose of working out the details for the exhibits.

We strongly feel that the Orthopedic and Prosthetic Industry has come a long way in the last ten years of streamlining their operations and, with the assistance of the Federal Government with their excellent program of development, research and education, the next ten years should be very productive."

A New Journal

PROSTHESES, BRACES AND TECHNICAL AIDS; English Edition

No. 1, March 1958. Published by the *International Society for the Welfare of Cripples (Committee on Prostheses, Braces, Technical Aids)*. Editor: P. Hoeg Albrethsen.

This sixteen-page illustrated magazine is published for readers all over the world. The first issue is made

possible by a grant from the Society and Home for Cripples in Denmark, and copies are being sent to prosthetists and orthotists, rehabilitation agencies and officials throughout the world.


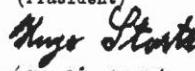

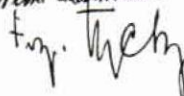
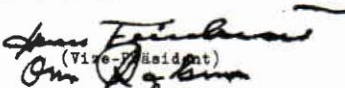
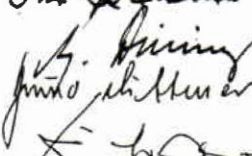
Readers of this Journal who wish to see a copy, should write to: P. Hoeg Albrethsen, The Society and Home for Cripples in Denmark, 34 Esplanaden, Copenhagen, Denmark.

Die in Essen tagenden Mitglieder
des Bundesinnungsverbandes für das
Orthopädie-, Chirurgiemechaniker- und Bandagistenhandwerk
haben mit großer Freude von der Grußadresse
ihrer amerikanischen Kollegen Kenntnis genommen
und nehmen diese Gelegenheit wahr,
ihnen recht herzlich dafür zu danken

Es ist unsere feste Absicht,
die Zusammenarbeit mit allen Handwerkern in aller Welt,
die im Dienste der Körperbehinderten tätig sind,
für die Zukunft noch enger zu gestalten
Insbesondere hoffen wir,
daß die fachliche Zusammenarbeit
mit unseren amerikanischen Kollegen noch weiter ausgebaut wird,
darin erblicken wir eine echte völkerverbindende Idee

BUNDESINNUNGSVERBAND
FÜR DAS ORTHOPÄDIE-, CHIRURGIEMECHANIKER- UND BANDAGISTENHANDWERK
IM BUNDESGBIET UND WESTBERLIN

ESSEN, DEN 8. MAI 1958


 (Präsident)




 (Vize-Präsident)

 (Geschäftsführer)

GREETINGS FROM OUR GERMAN COLLEAGUES

Shown on the opposite page is a reproduction of the Message of Greetings received from our German colleagues. This is in response to the message delivered at the reception at the German Chancery in Washington last October, by Charles A. Hennessy, then National President of OALMA. It was transmitted through the German Embassy to the annual meeting of the German Association in Essen.

We are indebted to Otto Becker, C.O. & P., of Birmingham, Michigan, for the English translation which follows:

The members of the German Orthopaedic Association at the annual meeting in Essen, Germany were very glad indeed to receive the group proclamation from their American colleagues and take this opportunity to extend their appreciation.

It is our definite hope that the technicians in the whole world who render service to the handicapped

will work still closer together in the future. We hope especially that by working closer with our American colleagues a still better understanding will be reached and see in it an idea of real world unity.

GERMAN ORTHOPAEDIC TRADE ASSOCIATION

Essen, Germany

May 8, 1958



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- ...exclusive metal disc molded into each tip prevents crutch from wearing through
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NO. 550 MEDIUM SAFE-T-GRIPS

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You can tell by the smile of J. Morgan Greene, President of the United States Manufacturing Co., holding new Hydra-Cadence shin unit, and Jack Stewart, inventor and developer; as well as A. A. Tilton, in Los Angeles, that they are happy to consummate the contract whereby the United States Manufacturing Co., will be the sole manufacturer, and the Hydra-Cadence, Inc., will be the distributor and sales representative for the prosthesis with the hydra-cadence principle which was conceived in 1940 by Jack Stewart and perfected in cooperation with the Vickers Corp. (recognized in the field of hydraulics). Since that time it has undergone extensive tests and field trials, and at present is widely accepted in the Southern California area by both the Prosthetist and the amputee.

Italian Journal Reprints Tosberg Article

The Italian Journal of Prosthetics in its January-February issue, reprints the article by William Tosberg entitled, "Rehabilitation in the Orient" from the September 1957 issue of the "Orthopedic and Prosthetic Appliance Journal." The Italian Journal appears under the title, "Scienza E Tecnica Ortopedica In Italia E All' Estero."

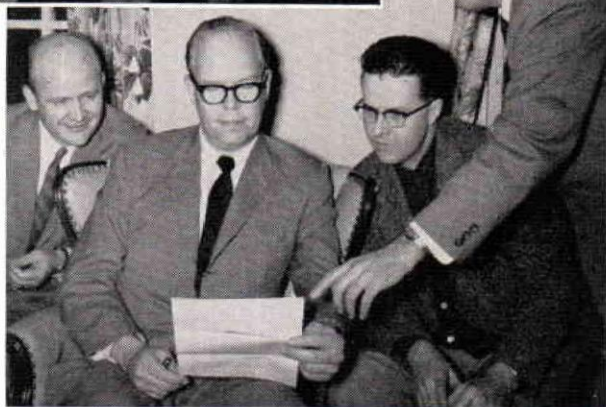
Telling the Northwest About Certification

Robert V. Horne, C.O. & P., of Walla Walla, takes time out to report on the Certification Program.



At a Public Health Meeting, Pendleton, Oregon, Bob Horne explains Certification Procedures to Mr. Emmett I. McGraw, Director of Vocational Rehabilitation for Oregon, John Burak, P.T.; and Dr. Donald D. Smith.

Three Orthopedic Surgeons of Spokane, Washington, look over an application form shown them by Mr. Horne. Left to right: Doctors R. D. Luther, G. T. Wallace and D. D. Popp.



NEW KENDRICK CAMPAIGN

A new advertising campaign directed to professional medical men, through the Journal of the American Medical Association, has been announced by James R. Kendrick Co., manufacturers of elastical stockings and surgical garments.

"We feel that we can help surgical supply dealers by telling doctors about the three basically different

Kendrick elastic stockings, and our 70 different models of surgical supports", Warren R. Kendrick, secretary of the Company, said.

Each advertisement explains that there are local Kendrick dealers qualified to fit the doctors' patients. The advertising is appearing every month in the Journal of the AMA with a readership of more than 170,000 medical men.



Mrs. Virginia Hedges
President



Mrs. Bobbye McGraw
1st Vice President



Mrs. Margaret Peters
2nd Vice President



Mrs. Gertrude Busch-
enfeldt, Secretary



Mrs. Pearl Leavy,
Treasurer

To the Ladies from the President of the Auxiliary

"TIME AND TIDE WAITS FOR NO MAN"—or woman either. The tide may be endless but the passing of time brings you nearer the exciting and glamorous vacation program, which we all hope to enjoy, at The National Assembly being held October 26 through October 30 in The Eden Roc Hotel at Miami Beach, Florida.

The meeting of Region VI, Chicago, June 13-15, afforded an opportunity for me to go over plans with Les Smith, Assistant Director of OALMA, and Mr. Ralph Storrs and Ted Smith, our Program Chairmen. We reviewed the highlights of the program being planned for the ladies as well as the members of OALMA. (Others attending the Chicago meeting were our National President, Mr. John A. McCann, our Second Vice President, Mr. Paul Leimkuehler, and three Past Presidents of the Ladies Auxiliary: Mrs. Kay Leimkuehler, Mrs. Alex Findley, and Mrs. Betty Hanicke). While in Chicago the ladies enjoyed luncheon at the "Kungsholm" and attended a performance of "Carmen" in the Miniature Grand Opera Theatre at the Restaurant. This was a complete performance by puppets.

The ladies' program at the Assembly will be of limited activity. This is because most of us wish to relax and enjoy a vacation and also to attend some of the sessions of interest to their husbands. One highlight of the program, in which both ladies and their escorts may wish to participate, is a trip to The Viscaya Art Museum followed by a cocktail party which Terry Moore of Florida Brace is considering for our pleasure at The Roof Garden of The Columbus Hotel.

Registration is Sunday morning and afternoon, October 26. In the evening an OALMA Reception will be held honoring the Exhibitors. Invitations are extended to all members of The Ladies Auxiliary.

Two business meetings have been scheduled for the ladies. One will be of brief duration to acquaint the ladies with their surroundings and the session for the election of officers for the coming year and to conduct all business connected with the organization.

Tuesday morning is free time. All of the ladies will be interested in the feature speaker at The Certification Luncheon at noon that day. Miss Mary Switzer, head of the U. S. Office of Vocational Rehabilitation will be the speaker and she is one of the top women executives in the Federal Government.

(Continued on page 129)

KATHY AND FRIEND

Six year old Kathy Garcia, who was born without hands, playfully tweaks the nose of her chief benefactor, Saul Herstein, C.P. with one of the two artificial hands he made for her. Mr. Herstein, who is president of the Southwest Surgical Service, OALMA member at Pueblo, donated the child's artificial hands and is training her in their use.



This child has a short sharply tapered right forearm stump which, however, presented no serious problem and was fitted with a conventional BE arm with a Dorrance hook.

The left arm terminates just below the wrist with just enough of the trapezium and first metacarpal to permit a range of ten degrees palmar flexion and ten degrees dorsi-flexion. To utilize this downward thrust of ten degrees, and still retain the child's sense of touch, a stainless steel paddle forearm splint was fitted snugly to the anterior surface of the stump. The segment of metacarpal, acting as a thumb, dorsi-flexes sufficiently for the child to grasp thin objects such as silverware, comb, toothbrush, etc. and retains them with adequate pressure against the thin steel plate. As she develops more dexterity, additional splints will be designed to permit the grasp of larger objects.

Her adaptability has been very rapid and most gratifying, but the most dramatic transition has been psychological. From a morose, shy and reticent introvert, she has blossomed out into a cheerful, gay, normal youngster.

TO THE LADIES (Continued)

As in previous years, a Post Assembly trip has been scheduled and one that in my opinion will surpass all others. "HAVANA" . . . Just hearing or seeing the name is a thrill. This includes a trip by plane, a lovely new Hotel, the Havana Riviera, Cocktail Parties, sightseeing and . . . They say nothing can compare with the "NIGHT LIFE IN HAVANA."

In the near future a program will be mailed to all of you, so in the meantime, concentrate on Miami and the wonderful time ahead for *you* at the October OALMA Assembly.

Worthy mention should be given to Mrs. Susan Shearer and Mrs. Mary Fawver, our Birthday Committee. They are doing a lively job of sending out "Best Wishes." I received my card recently and it brought many memories of past good times with the ladies of the Auxiliary. I will certainly be looking forward to seeing all of you this fall in Florida.

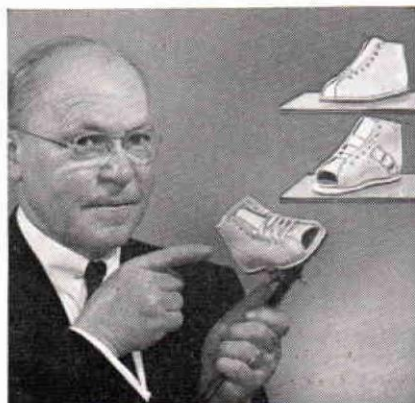
Sincerely yours,

Virginia L. Hedges, *President*

JUNE, 1958

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Mr. Louis C. Weld, President of G. W. Chesbrough Co., demonstrates straight last, rigid sole of Cosyfoot surgical. Will not buckle or warp in splint.

These corrective pre-walkers will help you and your customers

Big promise? Maybe. But here's why I think it's safe to say this new line of high-grade but *moderately* priced corrective pre-walkers offers you an opportunity.

A while ago a child in my own family needed a corrective shoe. I discovered then what a hardship the expense of most corrective footwear can mean to parents.

That's when we got busy in our Cosyfoot plant and put all our 58 years of experience into the shoes you see here: Corrective pre-walkers—moderately priced!

OUTSIDE COUNTER

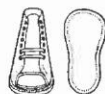


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Meets strict orthopedic specifications.

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Open toe surgical Pre-Walker. Straight line symmetrical last, firm heel.



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Closed toe surgical Pre-Walker. Lace-to-toe design permits snug, gentle fit.

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CRAIG TAYLOR, 1909-1958

Craig Taylor, Professor of Engineering at UCLA, died suddenly April 24, as the result of a fall from the Engineering Building at Los Angeles.

Craig Taylor was educated at the University of Washington, where he received his Bachelor of Science Degree in 1933, and at Stanford University, where he received the Master of Arts in 1937, and the Doctor of Philosophy Degree in 1940.

Soon after the United States entered the War, he was given responsibility for carrying on experimental studies to determine a quick and reliable test for choosing Air Force pilots. In 1943 he was commissioned in the Army Air Force with the rank of Captain. He spent the war years at Wright Field in the application of physiological principles to air warfare.

Dr. Taylor came to the University of California-Los Angeles in 1946. In addition to his teaching duties in the School of Engineering, he held parallel appointments in the Departments of Biophysics and Physiology. In twelve years at the University, Craig Taylor achieved international recognition for his professional contribution. He has been described as a "go-between" in the wedding of engineering with human biology". "Because of him, engineering has been strengthened through fuller consideration of biological factors in design. And physiology has been strengthened through engineering analyses of physiological responses."

Since 1947 he had been project leader of the Engineering Artificial Limbs project, U. C. L. A., which conducted fundamental research in prosthetics under the correlation of the Prosthetics Research Board, National Academy of Sciences—National Research Council.

In prosthetics as in heat tolerance, Craig's contributions were of two kinds: the discovery of new knowl-



edge, systems, and techniques, and the application of advanced technical knowledge to practical use. A manual of standard practice for fitting upper extremity prostheses was published, and standardized limb components were developed. He and his staff were largely responsible for raising the level of prosthetics from a manual craft to a biotechnical skill through the establishment of special schools for training prosthetists, physical therapists, and orthopedic surgeons in this field.

In 1954 Dr. Taylor received two awards for his research in prosthetics. The Gilbreth Medal of the Society for the Advancement of Management was given for his development of new techniques for recording and analyzing hand, arm and body movements. The Louis Levy Medal of Franklin Institute was awarded for the paper 'The Mechanical Design of Muscle-Operated Arm Prosthesis.'

Dr. Taylor's personal library has been given as the nucleus of the Biotechnology collection of the Engineering Library, University of California, Los Angeles, which is named in his honor. A Craig Taylor Memorial Fund has been established to build up the collection. He is survived by his wife and a brother Robert of Seattle.

Reviews

THE FOREQUARTER AMPUTATION

By H. F. Moseley

*M.A., D.M., M.Ch. (Oxon), F.R.C.S.
(Eng. and Canada), F.A.C.S. Il-
lustrated by Helen T. MacArthur.
B.A.*

*Published by the J. B. Lippincott
Company, Philadelphia, 1958, 79
pages, 11 plates in color.*

*Reviewed by Henry C. Feller, C.P.,
Vice President J. E. Hanger, Inc.,
Washington, D.C.*

This book is well arranged and superbly illustrated.

The publication co-relates available historical and medical information on this rather unusual amputation and is devoted to furnishing information and guidance to the medical profession, and seems to fill a niche in medical literature.

However, there is much information of interest to the prosthetist wherein he may learn of the problems incident to fitting satisfactory prostheses for these patients.

Existing prostheses have excellent cosmetic result and good psychological effect but their function is limited.

When complete stability of the prosthesis is achieved the jacket or suspension becomes somewhat burdensome to the amputee.

Some amputees are fitted with an appliance to fill out the shoulder only with a short upper arm section to give shoulder contour and for filling and holding in place the garment sleeve. Others are fitted with full prosthetic appliances consisting of the upper arm, lower arm and terminal device with function somewhat less than that achieved for the prosthesis for shoulder disarticulation.

Experience has shown that the value of the cosmetic and psychological effect far outweighs any inconvenience encountered with this type prosthesis.

In Memoriam

As the Journal goes to press, word comes of the sudden death of *Adolph A. Margoe, C. O. & P.*, of New York City, June 20. Mr. Margoe was President of the Metropolitan Orthopedic Appliance and Limb Manufacturers Association, and head of the City Surgical Company. An obituary and biographical sketch will appear in the next issue of the Journal.

John M. Hauser, C.P. & O., died of a heart attack May 6, at his home in Chevy Chase, Maryland. For the past five years he had operated his own orthopedic brace facility in Bethesda. Prior to that he was in charge of the brace shop at Walter Reed General Hospital. A native of Austria, Mr. Hauser came to this country in 1932 to design surgical instruments.

Coming in the

Next Issue:

Plastics in American

Prosthetics

Maintenance of the

Prosthesis

Assembly Program

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