EPTEMBER, 1959

ORTHOPEDIC & PROSTHETIC APPLIANCE JOURNAL

The Journal of the Limb and Brace Profession

The National Assembly will meet at Dallas, Texas, October 18-22, 1959

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

DATES TO REMEMBER

1959 *What • When • Where*

OCTOBER

16-17	Certification Examinations—Conducted by the American Board for Certification	*Adolphus Hotel Dallas, Texas*
18-22	OALMA National Assembly	*Dallas, Texas*
22-25	Second OALMA Pan-American Session	*Mexico City, Mex.*

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Orthopedic and Prosthetic

Appliance Journal

(Title registered U. S. Patent Office)

VOLUME 13 • SEPTEMBER, 1959 • NUMBER 3, SECTION I

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Publication does not constitute official endorsement of opinions presented in articles.

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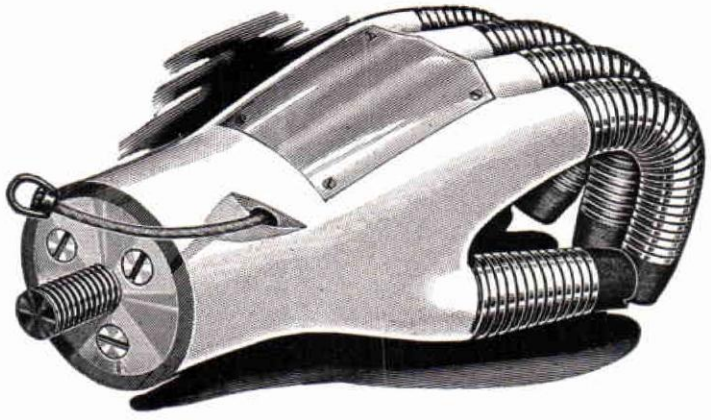
SEE THE NEW LOCKGRIP HANDS



WITH improved finger lineup, enabling the thumb to grasp between 1st and 2nd fingers.

WITH naturally shaped and molded rubber finger tips.

WITH Finer gauged and stronger flat finger spring wire, adding to the jointed fingers flexibility.

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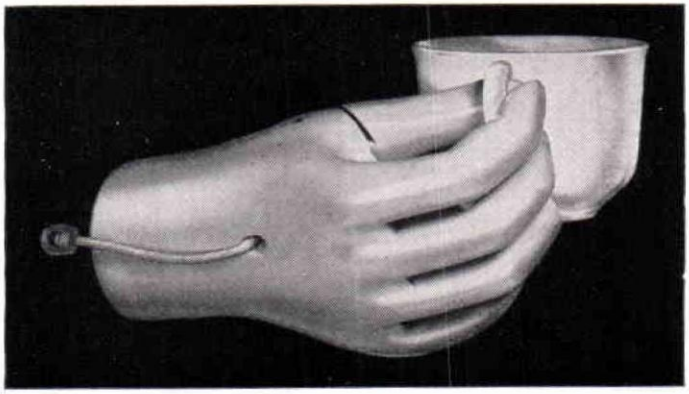
ALSO THE LAMINATED WOOD HAND WITH FIBRE CORED FINGERS **PLYLITE**

LOCKING



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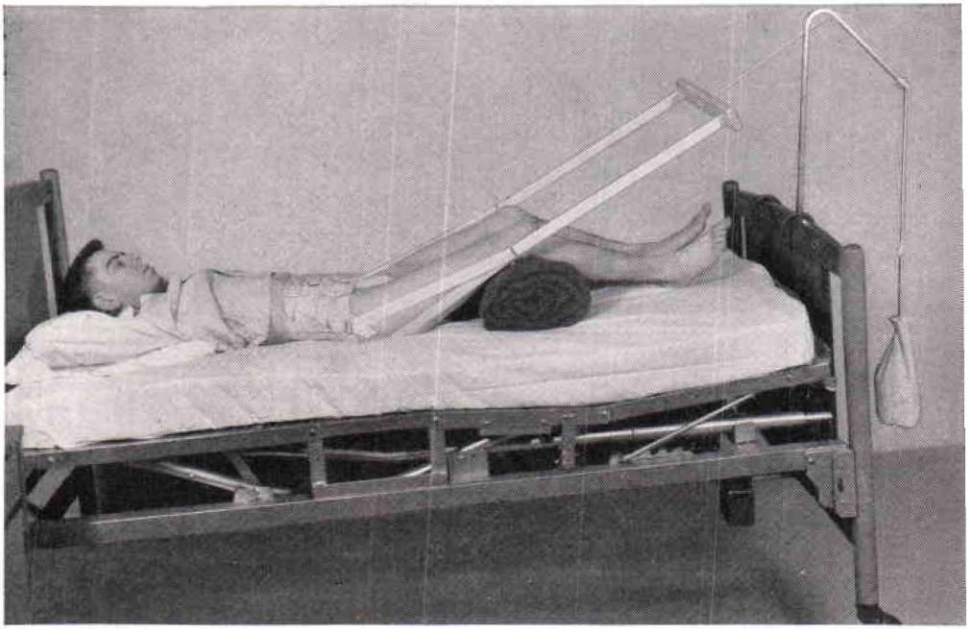

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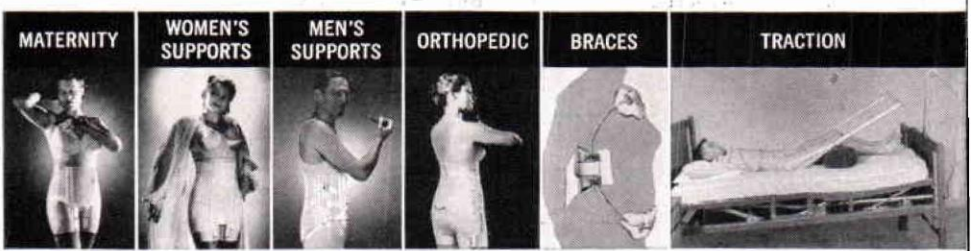

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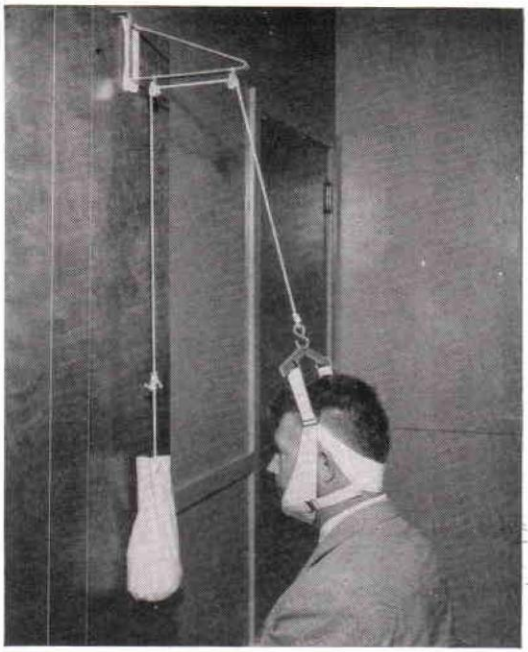

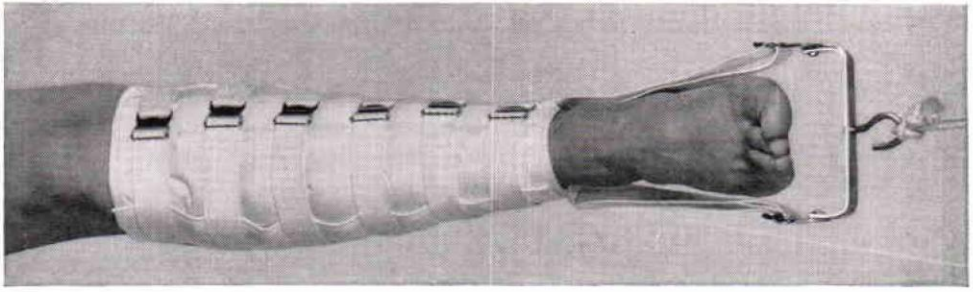

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Easy and simple to use . . . the skin adhering foam rubber and elastic corset material with attached straps and buckles can be applied by patients or other untrained persons with a minimum of instruction and no complications. It has an aerated elastic back inset for shaping to the leg as additional prevention against slipping. May be washed or autoclaved. In adult or child's sizes.

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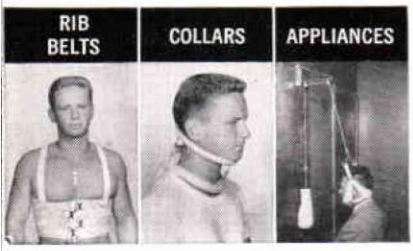

CAMP

50TH YEAR

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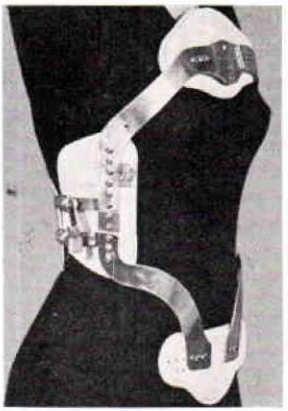
The Jewett HYPEREXTENSION BACK BRACE



A proven hyperextension brace for cases of uncomplicated compression fractures of the lower thoracic and entire lumbar spine. Adjustable, light weight, rigid, comfortable and convenient to fit.

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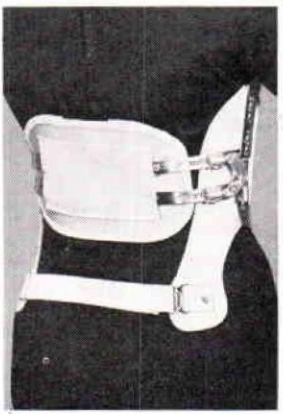

The Spinal Fusion Model has additional advantages which make it an admirable post-lower fusion brace where minimal motion in the fused area is desired.

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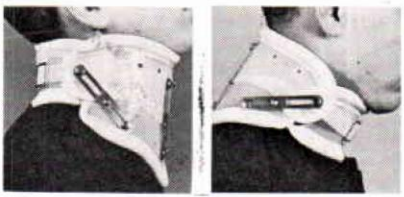
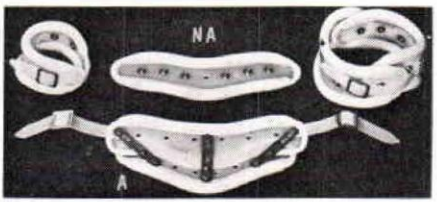
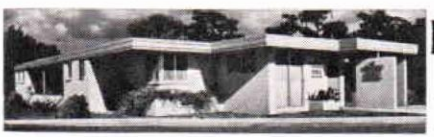
Custom made to your measurements or stock sizes available. Brochures, measuring charts and order blanks upon request.

THE EXTENSION-FLEXION COLLAR





For extension, flexion or stabilization. Adjustable, reversible, light, cool, comfortable and washable; semi-rigid and completely cushioned. Interchanging of parts and use of double buckle straps make possible 18 easy assembled variations with circumferences from 10 to 22 inches; heights from 2½ to 6 inches.



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FREEMAN QUALITY FEATURES • *Self-smoothing, Non-Wrinkle Fly. Exclusive. Speeds putting on garment, assures extra comfort* • *Petal-Soft Interior Finish. Cushions stay, avoids irritation* • *Nylon Laces at points of greatest strain* • *Soft Plush Padding under hooks and eyes* • *Superb Needle Work* • *Correct Materials.*

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ACCO Lined Conduit and Smooth Cable

provide Quiet, Easy Operation

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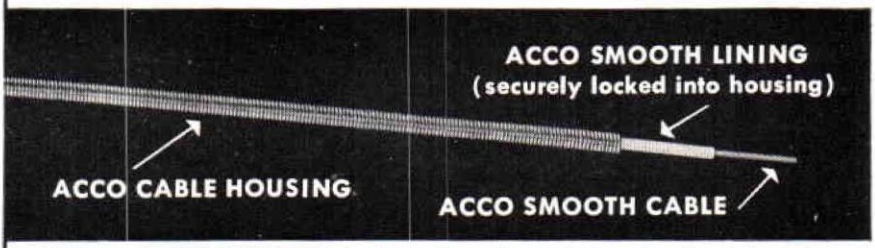
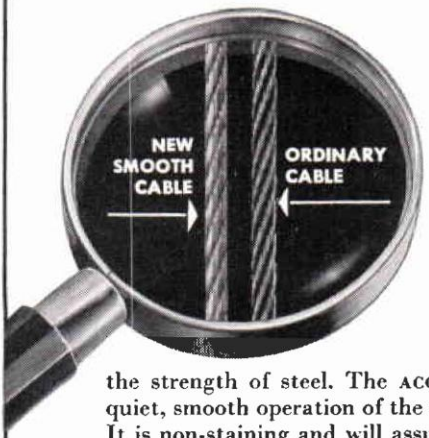


This exclusive ACCO combination of tough conduit, nylon-lined for minimum friction, and smooth cable assures quiet, smooth operation and exceptional service life. The nylon lining prevents squeaks, grunts, and jerks. Army Prosthetics Research Laboratory swaged fittings available.



You can SEE the Difference WITH New ACCO Smooth Cables

ACCO cables are completely processed to a smooth finish. They operate as smoothly as a silk thread, but retain the strength of steel. The ACCO lubricating stick complements the quiet, smooth operation of the nylon-lined conduit and smooth cable. It is non-staining and will assure easier operation with all cable and conduit systems.

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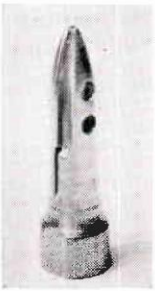


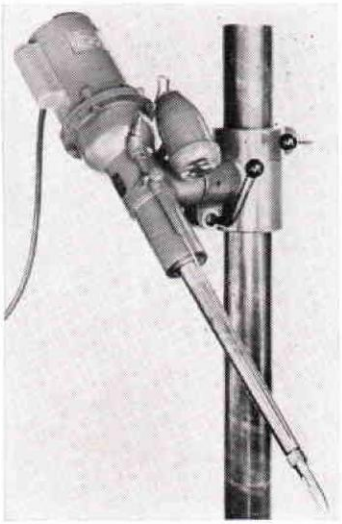
MIDGET CUTTER—No. 2100H

A new single blade cutter to help you pull small children's sockets—and to route out corners for all quadrilateral fittings. $25.00 including an extra blade.

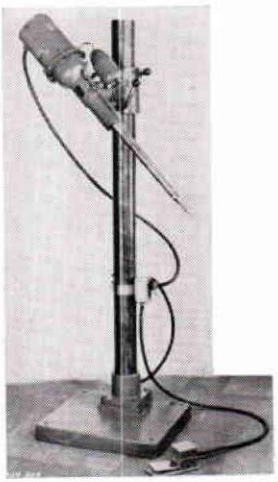
Air Attachment for

Trautman Carver

No. 2100J



Another tool to help you get ultimate efficiency from your Trautman Carver. This is a blower attachment which gently blows sawdust and chips away from the cutting tool. This enables you to see at all times exactly where and how you're cutting. Comes complete with airhose fitting—can be plugged into any standard airline. Flow of air can be regulated. Attach in minutes with screwdriver only tool needed. Cost $10.50.



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The Tarso Medius **with added support** is a true straight last with long inside counters, Thomas heels, and rigid shanks . . . a recognized prescription for the weak foot that toes in, and an excellent shoe for all youngsters needing medial support.

The Tarso Medius **with added support** has been an instant success because of its fine appearance and its unmistakable look of quality. Write for a trial pair today.

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TM 2666	**White elk blucher boot, Thomas heel long counter,**	**5½- 9 B-E**
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TM 842	**Black on black grain saddle, Thomas heel, long counter**	**8½-12 B-E**
TM 936	**Brown moc oxford, Thomas heel, long counter**	**12½-3 B-EE**
TM 942	**Black on black grain saddle, Thomas heel, long counter**	**12½-3 B-EE**

We stock a complete line of children's prescription footwear, including Tarso Pronator outflare and club foot shoes, Tarso Supinator shoes for weak or flat feet, and Tarso Medius straight lasts. The Tarso Medius is also available with straight heels and regulation counters, detailed to match the Tarso Pronator.

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Truform anatomical supports are available only from the Ethical Appliance Dealer.

Three pull straps control traction in this Model 430-EHS lumbo-sacral support . . . two rigid steels

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This excellent grade of BESSCO Orthopedic Stockinette of double thickness has a close-knit elastic rib stitch. It is used in the manufacture of prosthesis . . . under plaster casts, producing a firmer, smoother cast and compensating for plaster shrinkage . . . for dressings . . . for skin protection during operations. It is also invaluable as wristlets on Surgeons' Gowns . . .

BESSCO Orthopedic Stockinette meets all United States Government requirements and specifications . . . BESSCO Orthopedic Stockinette is available in:

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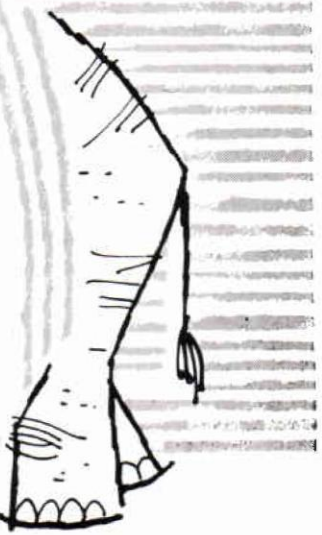
SUPERIOR AMPUTEE STUMP SOCKS

Your customers will appreciate the completeness of the BESSCO Amputee Stump Sock line. It includes socks of 100% Virgin Natural Zephyr Wool, 100% Virgin Natural Cotton and 100% Virgin White Dupont Stretch or Staple Nylon and many other fabrics . . . All are durable, soft and seamless . . . and are laboratory tested periodically to insure uniform top notch quality and perfect fit . . .



Your customers will appreciate also their low cost . . . the lowest in the industry, effected because BESSCO makes nothing but surgical knitware...

Write today for NEW catalog giving complete details...

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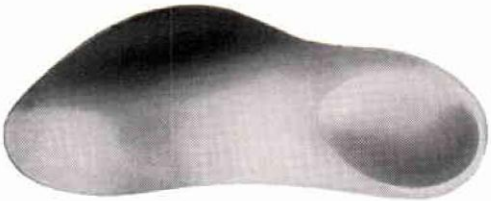

Style 4005

Flexible Type Support, Combination Longitudinal and Metatarsal with Concealed Metal Spring, Made in Women's, Men's and Children's Sizes.

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A Combination Support with Both Inner and Outer Flange, Made with One or More Springs, Women's, Men's and Children's Sizes.

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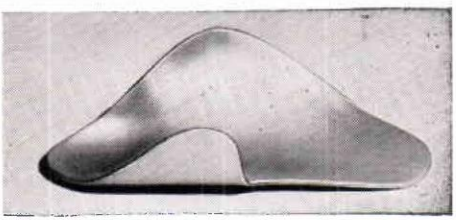
Stainless Steel Support with Moderate Inner Flange, Women's, Men's and Children's Sizes. The Above Style also available in Specially Treated Dural.



Style 900

Most Popular Metal Whitman, Made of High Grade Stainless Steel. Women's, Men's and Children's Sizes.

INVITATION TO THE 1959 NATIONAL ASSEMBLY

FRED QUISENBERRY
Program Chairman

The National Assembly of the Limb and Brace Profession will meet at the Hotel Adolphus in Dallas, Texas, October 18-22, 1959, under the sponsorship of the Orthopedic Appliance and Limb Manufacturers Assn. This Preliminary Program of the Assembly is published for the information of all interested. The final printed Program available at Dallas should be consulted for additional information, including room assignments and last-minute changes.

Who May Attend

Attendance is open to all interested in the rehabilitation of the handicapped. Although the technical sessions are planned for orthotists and prosthetists, many of the sessions will be of interest to physicians, therapists, nurses, members of other para-medical groups, and rehabilitation workers.

Registration
Mexico City Session

OALMA will join with the Mexican Rehabilitation Association in a Technical Session at Mexico City, October 22 to 26. This is entirely separate from the National Assembly at Dallas and separate registration is required.

Preliminary Registration

The Preliminary Registration Form should be filled out and mailed with a remittance of $10.00 per person to OALMA headquarters, 919 18th St. N. W., Washington 6, D. C.

Note, however, that OALMA members and their employees are given a special rate of $5.00 per person. This rate is established because as

members of the Association they have shared in the advance expense of the Assembly, such as printing, publicity, etc. Non-members who wish to qualify as members of OALMA to receive this rate and other benefits are invited to write OALMA headquarters for the necessary information.

Seminars:

Special seminars are being arranged; a fee of $2.00 per person for each seminar is charged.

Ladies Registration:

No registration fee is required of a lady in attendance with a registered delegate.

Business Sessions of OALMA

The annual Business Meetings of the Orthopedic Appliance and Limb Manufacturers Association will be held on Monday October 19, and Wednesday October 21. President Karl E. Buschenfeldt will preside.

Every session has been carefully planned, with the welfare of the Orthopedically handicapped as the ultimate goal. In addition to the formal sessions, there will be opportunity for consultation among members of the limb and brace profession and with various "resource persons" who have been invited to attend, in order that delegates at the Assembly may have the benefit of their experience.

Schedule of Daily Activities

Saturday, October 17

Advance Registration in the Ballroom of the Adolphus Hotel.

Sunday October 18

10:00 AM—Formal Opening of the Educational Scientific and Supply Exhibits by and under the direction of David McGraw, C. O. & P., Exhibits Chairman. Mrs. Karl W. Buschenfeldt, wife of the President of OALMA, will cut the ribbon opening the Exhibit.

1:00 PM—Seminar on the Anatomy of Upper Extremity for Orthotists and Prosthetists—John Bray, C. O. & P., Instructor of Prosthetics, University of California, Los Angeles, will give this seminar for which a special registration fee of $2.00 is charged. This session adjourns at 3:00 PM, but will meet again the afternoon of October 19.

3:30 PM—Plastic Reinforcement of Wooden Prostheses, an open session conducted by William E. Hitchcock, C. P., instructor in prosthetics, New York University (this session concludes at 5:30 PM).

6:30 PM—Reception. All persons attending the Assembly are invited to meet President Karl W. Buschenfeldt and other officers of the Association.

Evening—Free for individual consultation with resource persons, committee meeting and entertainment.

Monday, October 19

8:00 AM—"President's Breakfast"—All persons attending the Assembly are invited to this opening event.

10:00 AM—Official Meeting of OALMA—President Buschenfeldt will preside and officers of the Association will report. Non-members are cordially invited to attend and to become acquainted with the OALMA's program "by and for members."

Resolution and other motions presented at this meeting will be referred to the Resolutions Committee for a report. These will be discussed and acted upon at the closed session of OALMA Wednesday afternoon October 21.

11:00 AM—Bracing of the Neck—Ruth Jackson, M.D. of the Jackson Clinic, Dallas, will make the presentation. M. J. Benjamin, C. O., of Los Angeles will be moderator. There will be opportunity for a discussion.

1:00 PM—Anatomy Seminar (second session)—This is the concluding session of the seminar taught by Mr. Bray.

3:30 PM—Canadian Symes Prosthesis—a seminar taught by Colin McLaurin and Fred Hampton, Prosthetics Research Program in Northwestern University and Henry Gardner, C. P. of the VA Prosthetics Center (this seminar concludes at 5:30 PM. Note that a special registration fee of $2.00 is charged).

8:00 PM—OALMA members of Region VIII entertain all Assembly Delegates at a Square Dance and Western Party.

Tuesday October 20

9:00 AM—Bracing of the Back—Dr. Paul Williams, of Dallas, will make the presentation assisted by Orthotist William Miller of Dallas. Mr. Stephen Hall of the Institute for the Crippled and disabled will be the discussant.

10:30 AM—Appliances for the Very Young Child—Unusual Anomalies in the Upper Extremities—Alfred B. Swanson, M.D., Grand Rapids, Michigan.

Unusual Anomalies of the Lower Extremities—by James A. McDonald, M.D., Grand Rapids, Michigan. Dr. Swanson and Dr. McDonald appear through the courtesy of the Michigan Crippled Children Commission.

Components for the U/E Prostheses—Maurice J. Fletcher, Colonel, U.S.A., Director of the Army Prosthetics Research Laboratory.

1:00 PM—Certification Luncheon—All persons attending the Assembly are invited to attend the Luncheon and to witness the Business Session of Certification Board which follows.

3:00 PM—The SACH Foot and Other Advances in Prosthetics—a report by the Commitee on Advances in Prosthetics of OALMA. Carlton Fillauer, Chairman.

Evening—Free for consultation with "resource persons" and the official visit to the Texas State Fair.

Wednesday, October 21

9:00 AM—New Devices and Techniques Available From the Research Program—a presentation by Anthony Staros, Chief of the VA Prosthetics Center—New York City. This session will cover new materials, devices, and techniques, including descriptions of hydraulic principles and some hydraulic devices now, or soon to become, available. A brief description of some of the major projects currently in the research program will also be given.

10:30 AM—Where To?—Education in the Limb and Brace Field McCarthy Hanger, Jr., Moderator.

Lee Nattress, Jr., Washington, D. C., Special Assistant, OALMA Headquarters.

Miles H. Anderson, Ed.D., Director of Prosthetics Education, University of California, Los Angeles.

Sidney Fishman, Ph.D., Director of Prosthetics Education, New York University.

J. Warren Perry, Ph.D., Director of Prosthetics Education, Northwestern University.

1:00 to 2:00 PM—Seminar on Foot Conditions—Orthopedic Disabilities and the Role of the orthotist-prosthetist. Paul Meyer, M.D., Dickson-Diveley Clinic, Kansas City, Missouri and Ted R. Reynolds, C. O. ,Dickson-Diveley Clinic and W. E. Isle Company, Kansas City, Missouri.

This session will include a brief review of the anatomy of the foot, a discussion of foot imbalance, what it is, bowlegs, knock knees, footwear, types and kinds of shoes and their construction, corrections, inlays, wedges, etc. The program will include the physical examination of the patient and demonstration of inlay insertion. It will close with an informal discussion and question and answer session. Dr. Meyer and Mr. Reynolds will be available both in Dallas and in Mexico City as "resource persons" for informal discussions of problems.

2:30 to 3:30 PM—The Canadian Hip Disarticulation—by Colin McLaurin and Fred Hampton, Prosthetics Research at Northwestern University.

4:00 PM—OALMA—Election of National Officers and Closed Business Session. The resolutions introduced at the Monday session will be presented for action with the report and recommendations of the Resolutions Committee. National Officers will be elected (those chosen will be installed at the OALMA Banquet later in the evening).

7:30 PM—OALMA Reception and Dinner—President Buschenfeldt will preside. Mr. Seid Hendrix, President of the National Rehabilitation Association will attend as guest of OALMA, and accept the OALMA Citation for national service on behalf of the National Rehabilitation Association. Officers will be installed.

Thursday, October 22

9:00 AM—Improved Service to the Veteran—a roundtable conducted by Dr. Robert E. Stewart, Director of the VA Prosthetic and Sensory Aids Service, assisted by Mr. W. W. Anderson, Chief of the Operations Section, Purchase and Contract Division, Supply Service of the Veterans Administration. Representatives to be designated.

10:30 AM—The Business Side of the Limb and Brace Profession—Managers of OALMA firms and their guests in a roundtable discussion.
Adjournment at Noon.

2:45 PM—The Mexico—OALMA Tour begins. Departures from the Fort Worth, Texas International Airport at 3:40 PM (limousine service from the Hotel Adolphus in Texas at about 2:45 PM—direct to the Airport).
Additional information on the Mexican tour and registration forms may be secured from OALMA Headquarters, 919 - 18th Street, Washington 6, D. C.

BIOGRAPHICAL SKETCHES OF SOME ASSEMBLY SPEAKERS

For over twenty years, Dr. Ruth Jackson has devoted the major part of her efforts to the orthopedic and neurological relationships in the cervical spine, and her views on bracing of the neck are of importance to Orthotists everywhere. It is, therefore, a source of satisfaction to OALMA members that she has agreed to give a session on "Bracing of the Neck" at the National Assembly in Dallas (in order to meet this appointment, Dr. Jackson graciously rearranged her scheduled departure for the Western Orthopedic Meeting in Denver).

A native of Iowa, Dr. Jackson graduated from the Medical School of Baylor University. She was an Interne, later a Resident in Orthopedic Surgery at The Memorial Hospital in Worchester, Massachusetts and a Resident at The University Hospitals at Iowa City, Iowa. She was resident at The Texas Scottish Rite Hospital for Crippled Children. Also, in 1937 she was certified by the American Board of Orthopedic Surgery. She is the founder and director of The Jackson Clinic in Dallas, and she serves also as Assistant Clinical Professor of Orthopedic Surgery at the Southwestern Medical School of the University of Texas. She is a member of the American College of Surgeons, The International College of Surgeons, The American Academy of Orthopedic Surgeons, The Western Orthopedic Association, and numerous other Medical and Surgical Associations. Her book, "The Cervical Syndrome" is now in its second edition (published at Springfield, Illinois by Charles C. Thomas — and reviewed in the June, 1959 issue of the "Orthopedic and Prosthetic Appliance Journal").

PAUL C. WILLIAMS, M.D.

To orthotists, the name of Dr. Paul C. Williams is primarily associated with the famous Williams Back Brace. This well known orthopedic surgeon was born at the turn of the century in Barnsville, Ohio and graduated from the University of Michigan Medical School in 1928. After interning at

Grand Rapids, Michigan in the Blodgett Memorial Hospital, he was a Resident in General Surgery at the University Hospital at Ann Arbor and later an instructor in orthopedic surgery. Since 1930 he has been engaged in the practice of his specialty at Dallas, where he holds the rank of Associate Professor of Orthopedic Surgery at the Southwestern Medical College of the University of Texas. Dr. Williams was Certified by the American Board for Orthopaedic Surgery in 1936. He is a member of the Academy of Orthopaedic Surgeons, the American Orthopedic Association, the American Medical Association and other medical groups.

Dr. Williams will give the session "Disorders of the Back and Their Bracing" at the 1959 National Assembly at Dallas, with the assistance of William H. Miller of the Miller Brace Company.

JAMES A. MacDONELL, M.D.

James A. MacDonell received his Medical Degree in 1937 from the Stritch School of Medicine, Loyola University in Chicago. He served his residencies at Blodgett Memorial Hospital in Grand Rapids, Michigan and the VA Hospital in Dearborn and Wayne University Medical School, Detroit. He had a tour of duty in the United States Navy Medical Corps with the Rank of Lt. Commander in the Orthopaedic Service. Dr. MacDonell is now associated in practice in Grand Rapids, Michigan with Dr. George Aitken. He is a member of the American Academy of Orthopaedic Surgeons and the Clinical Orthopaedic Society; a Fellow of the American College of Surgeons. Dr. MacDonell is an instructor in the Juvenile Amputee Center in Grand Rapids, Michigan and Chief of Staff of Mary Free Bed Hospital there. He is also on the staff of Butterworth Hospital and Blodgett Memorial Hospital.

ALFRED B. SWANSON, M.D.

Dr. Alfred B. Swanson, who will appear on the Assembly Program with Col. Maurice J. Fletcher and Dr. James A. MacDonell, is a native of the University of Illinois. He graduated from the University of Illinois Medical School in 1947 and served his interneship at St. Luke's Hospital in Chicago. His residencies include the Illinois Crippled Children's Hospital, St. Luke's Hospital, Northwestern and Indiana University's Medical Centers. He was a Captain in the Orthopaedic Service of the Army Medical Corps. Dr. Swanson is associated in the practice of orthopedic surgery with Dr. Charles Frantz, Grand Rapids. He is a member of the American Academy of Orthopaedic Surgery and a Fellow of the American College of Surgeons. Dr. Swanson is a consultant at the Juvenile Amputee Center in Grand Rapids, Michigan and a member of the staff of the Sunshine Hospital, Mary Free Bed Children's Hospital and the Blodgett Memorial Hospital.

(Sketches of other assembly speakers will appear in the final printed program available at the assembly—For a description of the supply exhibits see page 63 and pages 105-108 of this Journal.)

OALMA SESSION IN MEXICO CITY

In a precedent-breaking visit to our great sister republic, Mexico, OALMA members will hold a joint meeting in Mexico City October 23 and 24, with the Mexican Rehabilitation Association. At the conclusion of the two-day meeting, members will tour Mexico City and take a side trip to Cuernavaca, Taxco and Acapulco, returning to the United States October 31.

The technical session at Mexico City is being planned by Dr. Rodolfo Martinez Herrejon and Mr. Charles A. Hennessy of Los Angeles. Dr. Martinez Herrejon is a leading surgeon and prosthetist in Mexico City. Mr. Hennessy, Past President of OALMA, is an instructor in prosthetics at the University of California, Los Angeles.

The technical session planned includes the following events:

Oct. 23 10:30 AM

Introduction—Dr. Rodolfo Martinez Herrejon
Formal opening of the Seminar
Dr. Jose Alvarez Amezquita
Minister of Health and Welfare, the Republic of Mexico
Greetings—Robert C. Hill, Ambassador of the United States of America to Mexico.
Welcome—Mr. Romulo O'Farrill, Sr.
President-Mexican Rehabilitation Association
Response by Charles A. Hennessy, Past President of OALMA.

10:30 AM

Demonstration of Upper Extremity Appliances
Mr. Jerry Leavy, Dorrance-Hosmer
Commentary in Spanish—Dr. Martinez Herrejon
Case Histories of the Rehabilitation of Amputees
Dr. Martinez Herrejon

12:00 noon

Demonstration of Lower Extremity Appliances by selected members of OALMA

1:00 P.M.

Tour of the Mexican Institute of Rehabilitation

2:00 PM

Lunch at the Mexican Institute of Rehabilitation

Oct. 24 10:00

Functional Bracing
By various members of OALMA
Prosthetic Rehabilitation Program for Amputees
Cosmetic Appliances

12:00 noon

Closing of Seminar by Dr. Martinez Herrejon

THE NEW MEXICAN INSTITUTE OF REHABILITATION FOR DISABLED PERSONS

By ROMULO O'FARRILL, SR.
President of Mexican Rehabilitation Association

Editor's Note: The new Institute at Mexico City will be the scene of the Joint Session of OALMA and the Mexican Rehabilitation Association, October 23-24. We are indebted to Mr. O'Farrill for this account of the founding of this Institute.

As a result of the accident I suffered some two years ago, I had the opportunity to visit the principal rehabilitation centers in the United States and become aware of the benefits which a rehabilitation program could bring to all the handicapped of Mexico.

In March of 1958, I began a campaign through *Novedades* and the *News*, two newspapers of which I am the publisher, to create a Mexican institute for the rehabilitation of disabled persons, which could also serve the needs of other Latin American nations.

Our idea has received the vigorous moral and material support of the country's leaders, principally from former President Adolfo Ruiz Cortines; Dr. Ignacio Morones Prieto, Minister of Health in the former administration; from different governmental departments; decentralized groups, and from the present President of the Republic, Adolfo Lopez Mateos, who has received and supported the idea with great enthusiasm. In addition, we have been able to count by the thousands the expressions of sympathy from all sectors of society.

At the meeting which was held at the Hotel del Prado, when I was installed as President of the Mexican Rehabilitation Association, representatives of the Mexican citizenry manifested the civic maturity of private initiative when, in just a few minutes, a good part of the necessary funds was raised.

Dr. Jose Alvarez Amezquita, Minister of Health, has received our work with great enthusiasm and from the start has offered us his moral support and his valuable cooperation to help insure the success of the program.

With the Department of Health acting as an intermediary, we have obtained the donation of a splendid building located on a large extension of land at San Fernando #15, Tlalpan, D. F., and which amply covers our present needs. Immediately thereafter a subsidy was agreed upon by the Department of Health, and Dr. Luis F. Vales Ancona was appointed as Executive Director of the proposed Mexican Institute of Rehabilitation. With the collaboration of the corps of engineers of the Department of Communications and Public Works, we formulated the plans for adapting the building as a well-rounded rehabilitation center.

At our suggestion, the Treasury Department has agreed to exempt taxes from donations made to the Institute, in addition to free importation of certain specialized technical equipment.

Taking advantage of one of my trips to the United States, I discussed with authorities of the U. S. International Cooperation Administration (ICA) the possibility of obtaining technical assistance for the Mexican Rehabilitation Association and the Institute it was setting up. I am glad to report excellent cooperation from ICA. We have now received scholarships, technical assistance, and surplus equipment.

David Amato, Rehabilitation Counselor, assigned by the U. S. International Cooperation Administration to our Embassy in Mexico City. Mr. Amato has been a leader in promoting cooperation between rehabilitation agencies in Mexico and the United States.

Mr. David Amato, Rehabilitation Advisor, who was made available by the International Cooperation Administration, has been of invaluable help in the development of the program.

In addition, we have obtained the cooperation of CARE in this project, which has contributed 125 technical books, with a value of over $1,000.

On the 20th of October, 1958, the Mexican Institute of Rehabilitation was legally established. The services of the Institute will be at the disposition of all orthopedically handicapped.

The Institute, following the most modern techniques, will have the following program functions:

a) Physical, psychological and vocational diagnosis of each disabled.

b) Medical and surgical care, which will leave the invalid in the best condition for receiving treatment.

c) Fabrication of limbs and braces.

d) Physical therapy, as an indispensable function in preparing the invalid in the correct use of his artificial limb.

e) Specialized education services for crippled children.

f) Vocational training.

g) A psycho-social department with social services, legal advisors and rehabilitation counselors, will look for adequate employment for each patient, in accordance with the new abilities of the individual.

h) Training of technicians in the various fields of rehabilitation for Mexico's needs as well as those of other Latin American countries.

i) Public education to develop acceptance of the rehabilitated individual.

j) Establishment of an industry completely operated by rehabilitated persons, which will be a demonstration and example that the will of man, if teamed with ability, overcomes all obstacles.

Romulo O'Farrill, Sr., President of the Mexican Rehabilitation Association.

An analysis of the positions and functions to be carried out has been made. We are convinced that a good administrative organization is basic for the efficient functioning of the Institute.

Accepting special invitations from the Mexican Rehabilitation Association, we have been visited by Mr. Rollin Atwood, Chief of Latin American Operations of the International Cooperation Administration; Dr. Thomas J. Canty, Chief of the Prosthetic Research Laboratory of the Oakland Naval Hospital; Mr. Henry Viscardi, Jr., President of Abilities, Inc., Albertson, N. Y.; Dr. B. W. Hogan, Surgeon General of U. S. Navy; Dr. Frank Berry, Assistant Secretary of the Department of Defense of the United States. All of these men have given us inspiring encouragement.

The Prosthetic Research Laboratory of the Oakland Naval Hospital under the direction of Dr. Thomas J. Canty, has given us excellent cooperation in training eight Mexicans, who have specialized as technicians in the manufacture and fitting of limbs and braces.

Functioning as a part of the Institute, an industry operated totally by rehabilitated persons, will be established as a living example of the productivity of such persons. The Department of Industrial Research of the Bank of Mexico has carried out at our request a study of the type of industry which would be most suitable to establish, taking into consideration the following factors:

a) An industrial enterprise which would be economically flexible.

b) Assuring that said enterprise would principally employ materials and parts manufactured in this country.

c) Giving work to the largest possible number of rehabilitated workers.

d) Making certain that the industrial processes do not constitute dangers for such workers.

e) The investment would not have to be too large.

f) The enterprise to be established will produce articles which are now being imported in large quantity, and thereby conserve dollars.

Mr. Henry Viscardi, Jr., Director of Abilities, Inc., of Albertson, N. Y., who inspired us with this project, is an honorary member of the Mexican Rehabilitation Association. He has offered us his valuable assistance and experience to help make this industry a reality.

We must not forget the enormous social and educational importance which the acceptance of the rehabilitated individual means for everyone in Mexico. To this end, and with the kind offer of the Mexican Association of Publicity Agencies, who have designated a great publicity man and a fine friend, Mr. Everardo Camacho, as their representative, we are organizing the widest publicity campaign on record, with the collaboration of the national press, which has offered its unselfish and noble support; with the aid of the enterprises with which I am associated, such as the newspapers *Novedades* and *The News*, the *Diario de la Tarde;* and with the radio and television firms which are directed by Mr. Emilio Azcarraga and myself. We hope to make this campaign reach the heart of each and every Mexican, and with their generous and noble assistance, added to the valuable aid we are already receiving, we shall have a model rehabilitation center, one that will inspire, we hope, other Latin American countries to establish similar centers.

The Mexican Rehabilitation Association, over which I am proud to preside, has been the coordinating organ for the rehabilitation movement in the Mexican Republic. Through the board of directors and the technical council of this association, we have carried out a program of public education in the rehabilitation field, which culminated with the Second National Congress of Rehabilitation held in November, 1958.

I feel that we are in a period of much activity. Although the Institute is not yet in operation, work that will lead to the fulfillment of our goals is in an advanced stage. We are certain that through this project we are helping create a better way of life for all disabled persons in our country.

A PLASTIC HAND ORTHOSIS

By

Thorkild J. Engen†

Treatment of paralysis of the upper extremities requires orthotic devices that can provide support of weakened muscle structures and increase the function of a totally or partially immobile body member.[1] Widespread use of such devices has been limited on account, in part, of the tedious individual fabrication and fitting that is needed. This frequently is the problem in paralysis due to poliomyelitis where patterns of muscular involvement and subsequent deformity are rarely identical. A great deal of time and effort on the part of the physician, orthotist, and therapist must be expended before upper extremity orthotics can be successfully applied to the patient, including also, careful preparation of the patient and functional training in their uses. Accordingly, there is a great need to investigate the possibility of simplifying and increasing the availability of upper extremity orthotic devices. Along with this, exploration of power assistance should also be undertaken. Since the hand is the most functional element in the upper extremity, it is obvious that an orthotic development program should begin with the hand and forearm.

It has not been possible to do much toward providing increased motor function for the completely flail hand beyond application of lever systems and the use of gravity forces. Effort has been chiefly directed toward comfort and deformity prevention through rigid mechanical devices. The McKibben muscle substitute combined with functional orthotics may provide both support and motor function.[2,3] It must be borne in mind that much research and development is needed to exploit the potentials for powering the paralyzed hand and arm in a practical way.

In view of the above considerations it seemed desirable to design a hand orthosis that lends itself readily to functional use and to power assistance should it be needed. Practical design indicated the desirability of achieving the following objectives:

1. Preservation of the natural posture of the hand, from which all hand movements commence.
2. Development of a design to permit either active or passive hand and finger movements.
3. Use of an inexpensive, simple method of fabrication lending itself to quantity production in standard modules, readily adapted and modified for individual needs.

This preliminary report describes how these requirements are being investigated with a plastic hand orthosis manufactured through a split casting method.*

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* *The split casting process has been extensively used in the dental profession where molds of multiple contour are necessary.*

† Mr. Engen is Director of the Orthetic Department, Texas Institute for Rehabilitation and Research, Houston, Texas, and Clinical Instructor in Orthetics, Department of Rehabilitation, Baylor University College of Medicine.

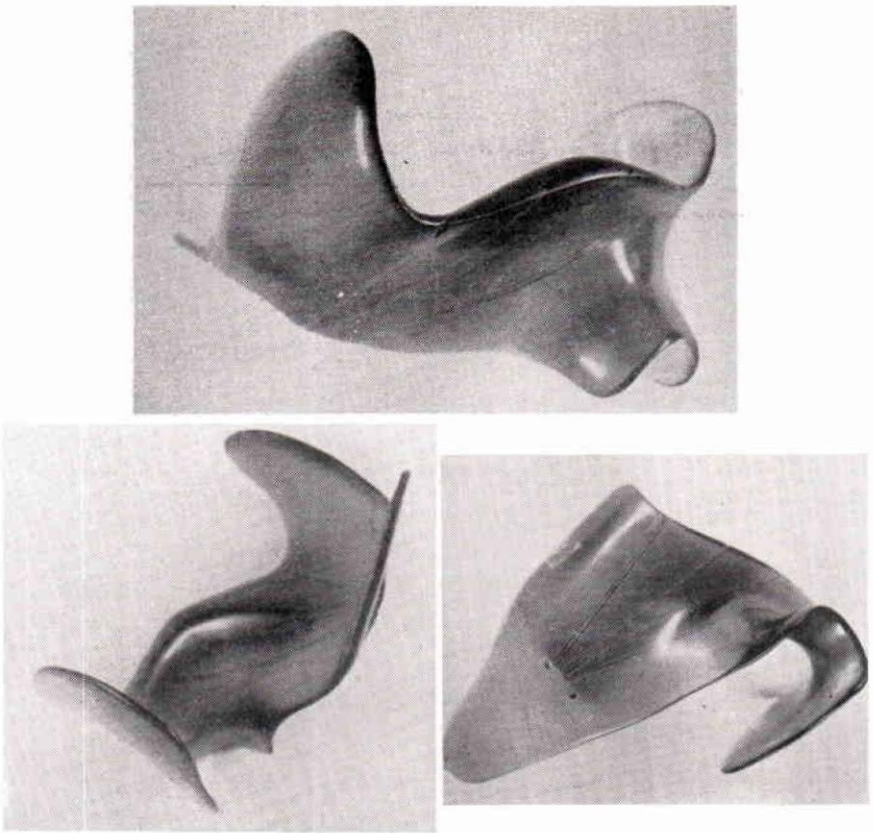

FIGURE 1, A, B and C

Figure 1, A, B and C shows the basic hand orthosis, constructed of thermo-plastic epoxy-resin. View A shows the orthosis from the front; B from the bottom (Volar); and C from the top-rear. Note the complex shape which achieves a supportive hand posture with preservation of the natural metacarpal arch and thumb position . This design maintains the entire hand in good functional position and at the same time allows adequate mobility of the digits.

Description of Hand Orthosis

It appeared to the author that the preservation of hand posture should be obtained by support rather than by suspension. Secondly, a material had to be chosen that would conform to the complex contours of the hand. The design should also permit digital movements of a practical functional range. Achievement of this should make possible a versatile hand orthosis for use with the partially or totally flail hand, as shown in Figure 1, A, B and C.

The plastic orthosis has the fundamental elements necessary for a basic hand splint emphasizing metacarpal arch support and pollisis position. The orthosis is produced of thermosetting plastics by a series of permanent molds in a variety of sizes. After setting, the orthosis is readily remolded and a custom fitting can be obtained.*

** *By applying heat to the orthosis, it becomes pliable. In this stage it can be remolded to fit the desired contour of the hand and after cooling retains its new shape.*

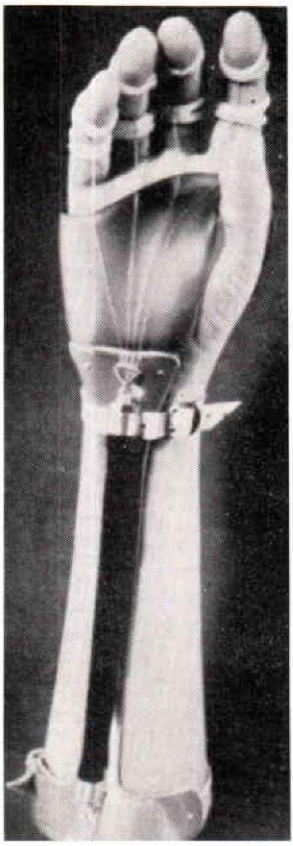

FIGURE 2. The forearm volar extension must be used with an externally powered orthosis because it serves as the proximal point of attachment or origin of the muscle substitute.

Plastic Orthosis With Power Assistance

In order to study the problems of power assistance, an anatomical hand and forearm model was made. The accompanying photographs show the general appearance and method of operation of the orthosis applied to a cosmetic glove for a prosthetic hand and forearm. The glove was filled with foam rubber in order to duplicate the behavior of a flail hand for experimental purposes.*** Flexion of the fingers is accomplished by the contraction of the McKibben muscle substitute for power assistance.

The phalangeal attachment of the tendons from the muscle substitute was made through partially split plastic polyethylene rings placed on the proximal and distal interphalangeal joints. Elastic nylon was used for tendon substitutes so that the flexed fingers could accommodate themselves intimately around an object of irregular contour.**** The "tendon" is free to slip through the middle ring and is attached to the terminal joint ring. This gives a paralyzed hand a much more natural function, minimizes mechanical aberrations, and applies the contractile forces in a natural manner. The tension generated by shortening of the muscle substitute is applied to the proximal attachment of the four tendons which pass through guides cast integrally in the plastic orthosis.

*** *This mannequin hand is only used for study and demonstration purposes. The relationship to the paralytic hand is only relative.*

**** *The elasticity of the nylon tendon substitutes combined with the proper ring attachment permits compound prehension.*

Several methods of achieving a passive finger extension in human use are being explored. Upon relaxation of the tension produced by the substitute muscle the fingers can then extend, for example, by means of rubber elastic extensors attached to the dorsal lateral surface of the finger rings.

Establishment of a mobile hand free of selective tightness is a necessary pre-orthotic physical treatment objective. The fineness of the finger movement can be easily regulated by the patient due to the rapidity of action of fill-empty-hold cycles of the electro-pneumatic control valve for the "muscle" pressuring gas shown in the illustration and described previously in this journal.[4]

The forearm volar extension must be used with an externally powered orthosis because it serves as the proximal point of attachment or origin of the muscle substitute. It is secured near the elbow by a strap. Flexor tendons pass through channels imbedded in the plastic portion of the hand orthosis so that the power distribution to the digits will be as much like natural anatomical movements as is possible and more mechanically efficient. This is shown in Figures 2 and 3, A, B and C.

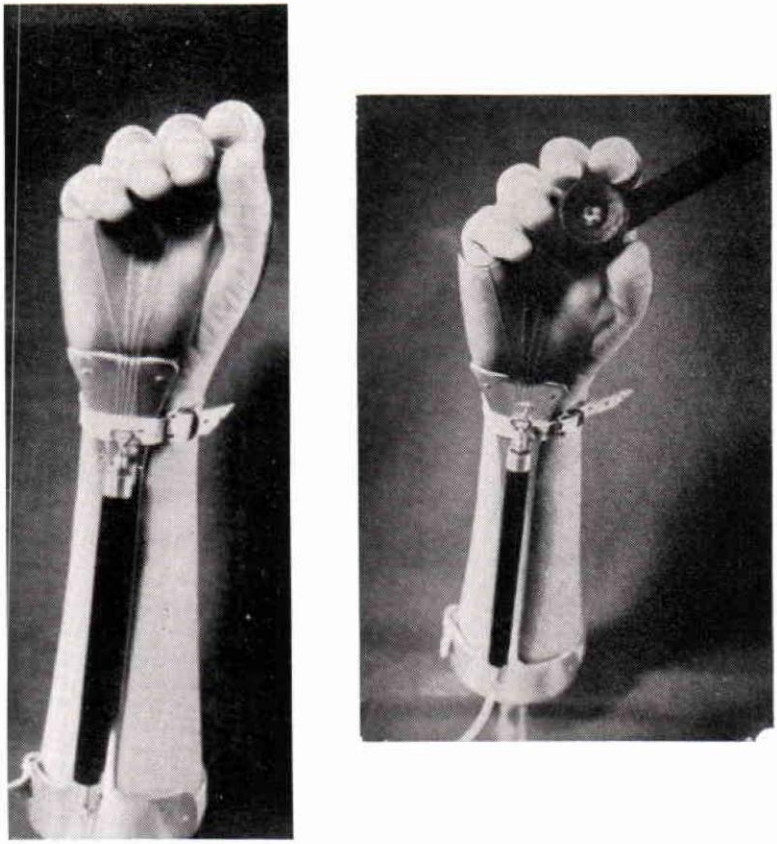

FIGURE 3, A and B

Flexor tendons pass through channels imbedded in the plastic portion of the hand orthosis so that the power distribution to the digits will be as much like natural anatomical movements as is possible and more mechanically efficient.

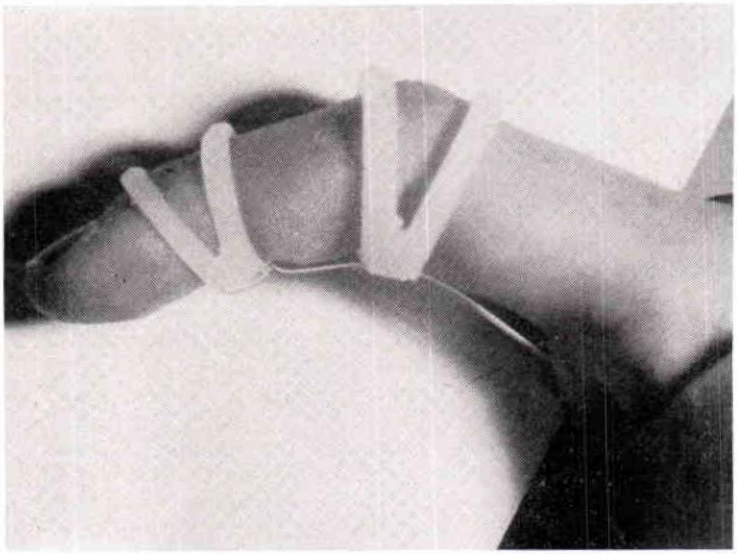

FIGURE 3—C

Wrist extension support, tendons, and the McKibben muscle substitute must be individually adapted at the time of the fitting.

The construction material chosen for the orthosis is a liquid plastic that has proper thermosetting and thermoplastic characteristics since it is composed of the following ingredients: Epon 815, Verxamids (nylons), Thiokol, and D.E.P. Catalyst. Optimal proportions of these ingredients were determined experimentally as follows:

Code 50

Epon 815	45 parts
Verxamid 14	45 parts
Thiokol L.P.-3	10 parts
D.E.P. Catalyst	8 drops

Skin tolerance to these plastic compounds was evaluated with a total of 60 plastic patches of four different combinations of the ingredients used. The patches were coded with identification numbers and were worn as bracelets continuously for a thirty-day period. At the end of this observation skin reactions were noted and the following were the results:

	No Irritation	*Irritation*
Code No. 50	15	0
Code No. 75	10	5
Code No. 75A	13	2
Code No. 65	15	0

The mixture coded No. 50 was chosen because of the low skin irritation, its strength, and the ease with which it can be remolded by heat at a temperature range of 200 to 300 degrees Fahrenheit.

The orthotist can achieve custom fitting to the individual patient's hand by applying a simple heat treatment process to the semifinished module on account of its desirable thermoplastic properties. Tendon channels, if needed, are incorporated into the orthosis at the time of casting.

SUMMARY

A preliminary report on a method of manufacture of an upper extremity orthosis is briefly described. This device is well suited to the use of power assistance for finger flexion and incorporates the McKibben muscle substitute. The device was designed primarily to provide support and function for the severely paralyzed hand. Future development will be directed toward combining the motions of finger flexion and extension as described here, with supination-pronation of the forearm and elbow flexion. The design of such a device must allow each of these movements to be made independently or in combination; must avoid complexity of manufacture or complicated operation by the patient; and must lend itself to duplication or reproduction of natural patterns of movement. Development of modular systems appears to the author to be a requisite for a practical functional hand orthosis and such devices should anticipate advances yet to be made in the synthesis of human hand motions through power assistance.

This plastic hand orthosis preserves the natural hand posture and permits digital motion modifiable for individual need, either active or passive. The simplicity of construction and adaptation, once permanent molds are made, would make this orthosis readily available.

ACKNOWLEDGMENT: *I wish to express my appreciation to William A. Spencer, M.D., Director, and Paul R. Harrington, M.D., Orthopedic Consultant at the Texas Institute for Rehabilitation and Research, for their guidance and professional advice in this development.*

Also, I appreciate the help of Prosthetic Services, San Francisco, in providing the special-made cosmetic glove.

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3. Scope (The Upjohn Co.) *3*, No. 9: 1, 1958.
4. Geddes, L. A., Moore, A. G., Spencer, W. A. and Hoff, H. E. Electropneumatic Control of the McKibben Synthetic Muscle. Orthopedic and Prosthetic Appliance Journal, *13*: 1, 33 - 36, 1959.

SELECTED CASE REPORTS FROM THE CHILD AMPUTEE PROSTHETICS PROJECT, UNIVERSITY OF CALIFORNIA, LOS ANGELES

By Robert Mazet, Jr., M.D. and Harry Campbell, C.P.

Editor's Note: The Child Amputee Prosthetics Project was an outgrowth of the research program in upper extremities prosthetics which commenced in the Engineering Department at U.C.L.A. in 1946. The desirability of including children in the investigative program became evident several years later. In 1953, the Department of Prosthetics asked Dr. Robert Mazet to institute a research program in children's prostheses at the Marion Davies Clinic. This was done in cooperation with Dr. Craig Taylor from the Department of Engineering and Dr. Milo Brooks of the Department of Pediatrics. Soon after the inauguration of the program, it became evident that some financial support was necessary. A grant from the U.S. Childrens Bureau administered through the state's Crippled Childrens Services was secured in 1955 and has supported the organization since that time. This effort has always been a multidisciplinary activity. In addition to orthopedists, engineers and pediatricians, there are, on the staff, a psychologist, a social service worker, two prosthetists and three amputee trainers. Other consultants, such as plastic surgeons, dentists, cardiologists, etc. are called in when needed.

I

UPPER EXTREMITIES ABSENT; DEFORMED LOWER EXTREMITY

A 5 year and 3 months old child with a scoliosis, bilateral absence of upper extremities, and a deformed right lower extremity with short femur, absent fibula, malformed knee joint, and equinovarus deformity of the foot, was fitted with prostheses in January 1956. (Fig. 1) The club foot had been corrected.

The initial upper extremity prostheses consisted of a pair of shoulder caps, humeral ball and socket joints (placed facing forward rather than to the sides), and humeral pylons without terminal devices. Function with these devices was limited to pushing and poking. Activation was by shoulder girdle motion. Crayons, paint brush, etc. were strapped or taped to the humeral segments. Real independent function was not possible. A month later, therefore, he was fitted with prostheses which permitted a little more function. These consisted of the same type shoulder caps, ball and socket shoulder joints, and humeral pylon. Additions were elbow joints, forearm sections, friction wrist units, a 10x hook on the right, and an infant passive hand on the left. All components possessed passive motion only (Fig. 2).

Almost as soon as he was fitted, perspiration became a problem because of his decreased surface area. Multi-hole perforation of shoulder caps appreciably alleviated this.

The social situation was rather complicated. His I.Q. was 113, and he seemed quite well adjusted to his deformities. The father was overwhelmed by the catastrophy and unable to meet it objectively. The mother showed desire for help for him.

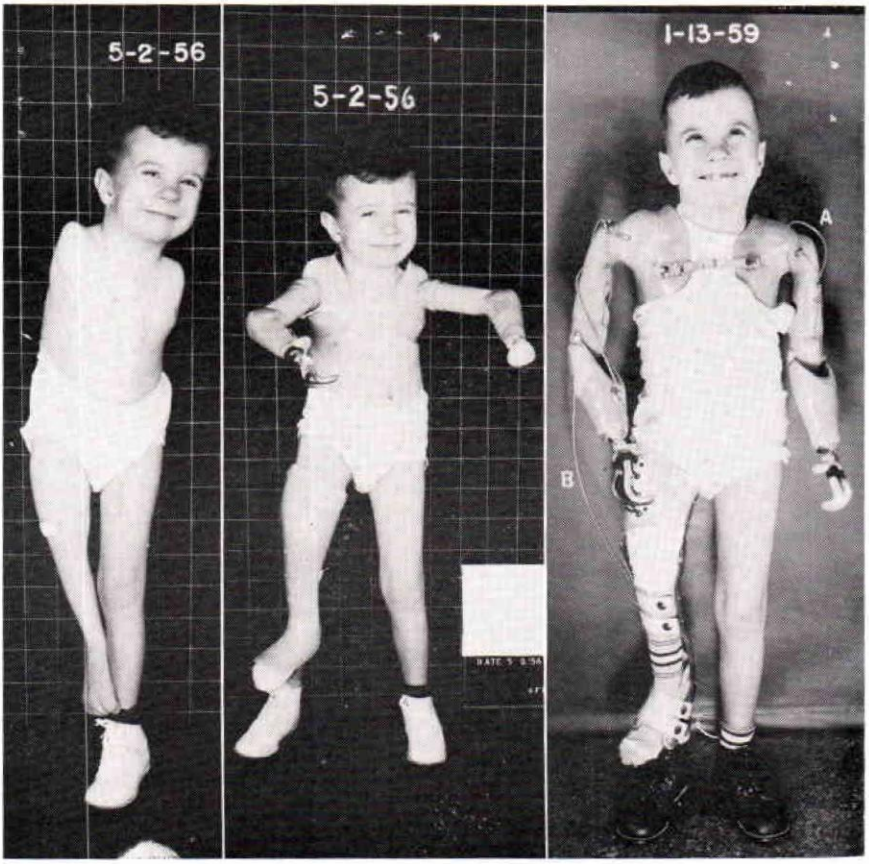

Fig. 1 (at left) Showing multiple congenital deformities. Fig. 2 (center Showing ball and socket passive shoulder, and elbow joints, also plastic LE socket and foot. Fig. 3 (at right) Left shoulder loop A activates left elbow lock. It is mouth controlled. Cable B activated by plantar flexion of right foot controls right elbow lock.

Approximately two months after the second pair of upper extremity devices were delivered, he received his lower extremity pylon. This consisted of a plastic socket and platform for the foot, with an extension and artificial foot beyond it (Fig. 2). Initially he was fearful of ambulating with the upper extremity prostheses, and would wear only upper extremity or lower extremity devices.

The school principal, nurse, local occupational therapist, local physical therapist, and his teacher were interested in his progress and visited the project during one of his training sessions. They had been much impressed by the boy's accomplishments with his feet. He could write, feed himself, and perform numerous tasks with them.

Progress was slow. He could, and did, perform creditably during training sessions. The upper extremity prostheses offered little or no active function: he was dependent on someone else for placement of objects in prostheses, and prostheses in space. This worked during training sessions at school, but there was no carry-over into the home. He did not use the

devices there. Because of limited scapular motion and inability to separate right from left action, there was frequent interference with one prosthesis by the other. He walked readily in his lower extremity pylon.

In an effort to provide more function and stimulus to use, the right artificial arm was modified. Active control of the 10x hook was instituted. It quickly became evident that a larger hook was desirable. Four months post initial fitting, a 99x hook was prescribed. Active use was still markedly inhibited by several factors: He was unable to rotate the T.D. TD opening was quite limited. No bilateral holding was possible. Positioning of forearm was difficult and awkward. There was interference in positioning of one component by another. The right shoulder cap tended to ride up and rotate. He was intrigued by his newly acquired ability to walk and bored by the lack of upper extremity function. He was easily fatigued. There was no carry-over or stimulus to upper extremity use outside training sessions. The upper extremity devices were left at home for a time; later they were taken to school and left there for some weeks. Both the boy and his mother felt that the necessity to have someone else passively adjust shoulders, position elbows, rotate forearms, etc. failed to provide sufficient function to justify wearing the prosthesis outside the training periods.

13 months after initial fittings, entirely new devices with improved functional potential were given him. Swivel, slightly canted, shoulder plates (2) were used, with positive alternating elbow locks. These were operated by lanyards which he pulled with his mouth. The infant passive hand was retained on the left, the active 99x hook on the right.

During his second year of therapy, he gained confidence in his walking ability, and showed some improvement in using the right active artificial arm. Active therapy at school continued; the school therapist had persuaded him to wear his arms 5½ hours daily, but he did not take them home.

The psychological problem here is complicated. There is a dominating father, who for many years rejected the son, while demanding that the mother protect and wait on him. The mother never forced him to do anything. He had no good friends of his age because he was not able to keep up with the other boys.

In the past year or so, the situation has improved. The boy attended summer day camp last year. He has made some friends among his contemporaries. His mother has adopted a firmer attitude, and does not permit him to impose and dictate to her as she formerly did. His father is facing reality. He is doing things with the boy, such as visits to Disneyland and overnight camping trips. 2½ years post original fitting, at age eight, he was fitted with UCLA canted shoulder plates and active controls as described below. Increased function is provided in them. He is particularly pleased by the foot control of the right elbow lock which makes the device more useful to him.

An interesting finding, which may or may not have any bearing on prosthetic use is the remarkable suppleness and utility of this boy's feet. He continues to perform many tasks, such as feeding himself with them. The right foot is as useful as the left. It is of equal length, but somewhat narrower. One can engage in considerable speculation as to the possible role his pedal ambidexterity plays in psychological acceptance and use of artificial limbs by this boy.

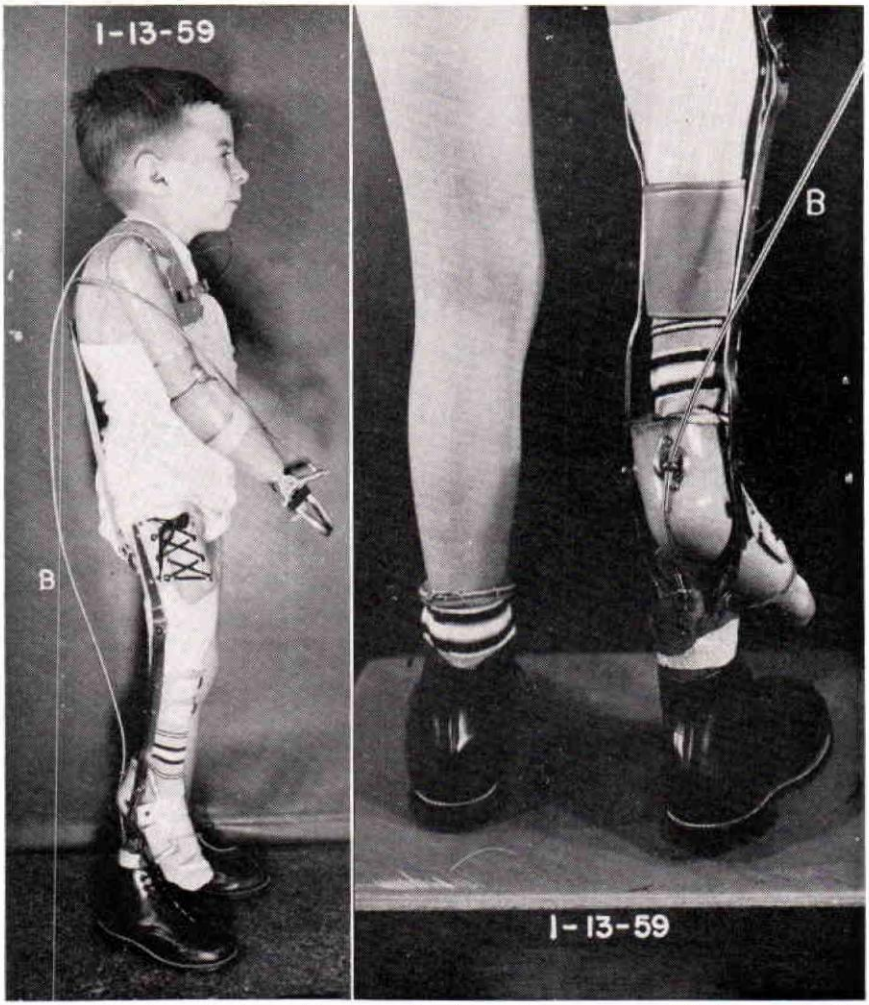

Fig. 4—Side view, showing cable B passing from plantar aspect of foot over shoulder and into arm shell.
Fig. 5—Showing cable B pasing back of and under right heel.

Evaluation in this instance is difficult. The lower extremity prostheses have been useful and used constantly. The initial upper extremity devices did furnish limited function, and certainly partially conditioned him to prosthesis wearing. They did not provide enough function to convince him that they were worth the nuisance and discomfort of wearing. When he had attained the neuromuscular coordination necessary to understand and use the fully active devices presently worn, his function improved greatly. The unstable family situation and absence of active assistance and insistance in prosthetic use at home have militated against maximum facility with the apparatus, but are now somewhat improved.

The futility of prosthetic fitting alone is redemonstrated here. The devices must provide sufficient function to make their wearing worthwhile to the patient. His family and school associates must understand the problem,

and help him to extract maximum benefit from the devices. We anticipate increased acceptance and increasingly better use of his more functional artificial extremities. Special attachments such as a swivel spoon and a pencil holder are being used with some success. A wrist flexion unit might give better function. We believe the child and his equipment have now reached a place where there is a base on which to build better use.

Obtaining adequate function from prostheses by a bilateral shoulder disarticulation amputee is always difficult. In a child, it may be impossible because biscapular abduction is insufficient to provide the excursion necessary for TD opening, and forearm lift operation. Cross control interference is a frustrating complication, which has caused abandonment of routine bilateral fitting at UCLA in these cases.

The present UE prostheses for this boy have been designed to minimize the above enumerated troubles.

These are made with the canted shoulder joints, now standard at this clinic, which provide simultaneous shoulder flexion and abduction. They have passive elbow turntables. On the left, elbow motion, wrist rotation and TD opening are also passive. Only the elbow lock is actively controlled. This is attained by means of a loop over the left shoulder (Fig. 3) which is mouth operated. He is too little for the more conventional nudge control.

The right elbow lock is controlled by plantar flexion of the foot through a cable passing behind the extremity and back, over the shoulder, then in the conventional manner in the arm shell (Fig. 3, 4, 5). The TD opening is by scapular abduction in the usual manner.

The right bilateral long leg brace with artificial foot distal to his own foot departs from the conventional in two respects. One, activation of elbow lock mechanism has been noted. The other is incorporation of a plastic ischial weight bearing ring (he bears 80% of his weight here) modeled after the type described by Russek Eschen (3).

His second pair of upper extremity prostheses (Fig. 2) consisted of shoulder caps with attached fixed plastic three-quarter spheres in shoulder joint areas. Spring loaded sockets for humeral sections allowed passive motion of prosthesis in all planes. Fixed friction joints such as this enable the TD to be placed in an area of relative usefulness. They possess three inherent defects, however. The patient is dependent on outside aid in placement. If friction is not great enough, position is not maintained. If friction is too great, the shoulder caps slide around when any appreciable load is put on the prosthesis. An added disadvantage of this particular device was the location of the plastic spheres in front of the anatomical shoulder joints. They would have been better placed more laterally. In the passive friction elbow joints, the amount of friction proved quite critical and needed frequent adjustment. Details of construction are given in Reference I.

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2. "Shoulder Plates"—See page 297 of "The Manual of Upper Extremity Prosthetics, Second Edition, published at Los Angeles by the Department of Engineering, University of California, Los Angeles, 1958.
3. Russek, Allan S., and Eschen, Fred. "Ischial Weight-Bearing Brace With Quadrilateral Wood Socket—Preliminary Report," "Orthopedic and Prosthetic Appliance Journal," September 1958, 31-35.

II

B.T.F.—BELOW ELBOW CONGENITAL AMPUTATIONS

A 23-month-old boy with very short right and short left below-elbow congenital amputations was first seen in October 1953 (Fig. 1). His development was normal in all other respects. Elbow and shoulder motions were normal. The left ulna was 2¼" and the right 1¼" in length. He was fitted with a double pivot hinge on the left, a step-up hinge on the right, and #10 hooks (Fig. 2).

Figure 1 showing bilateral short below-elbow amputations.

Figure 2 showing the prostheses with step-up hinge on the right.

Several training sessions proved him able to operate either terminal device on command, but he developed no spontaneous use pattern. The left appeared to be the dominant side. Follow-up training in his home community was given regularly, but there was no follow thru in the home, and very little home use.

About a year after he received the initial artificial arm, new ones were fabricated, with 10x hooks. Post-fitting training sessions elicited no evi-

dence of motivation to use his arms. There were repeated requests for their removal. His mother confessed that she never insisted on his wearing the devices at home. Not until the boy entered nursery school at age five did he show any interest in prosthetic use. At this time, there was temporary interest in using the arm for school tasks and eating. With this increased activity, cross control interference became a problem. He could not readily use one device while the other remained passive. Inept performance was followed by relapse into disinterest in prosthetic use. To overcome this, it was decided to harness only the shorter right stump. It was hoped that improved unilateral function would be more beneficial than uncertain bilateral function. At this time he received a 99x hook. Some renewed interest and spontaneous use resulted but this was limited and transient. The mother's attitude remained entirely passive. His school teacher stated that there were no first grade activities which necessitated use of the arms. No use was made of them at home or in school. Intermittent training in his home community continued. The only time he used the arms outside the training periods was during the week of the local Easter Seal campaign, when he and another child amputee were displayed to encourage the public to loosen their purse strings. While in the limelight, he performed adequately.

By the end of 1958, when this boy reached his seventh birthday, it was quite apparent that results in this instance were not commensurate with the expended effort. Despite demonstrated ability to use the single device when he was stimulated to do so, there had been no progress for several years. He did not evince any concept of the basic controls or functional patterns which should long since have become inherent. This boy felt no need for artificial arms. His mother denied the existence of any great handicap. We had never been able to induce the father to enter the picture. Home and school environment provided no stimulus to independence and self-reliance. The mother was informed that we would be glad to see the boy again when he decided that he wanted and needed artificial arms.

In this instance the child did not feel a need of prostheses. This was largely due to the failure of his parents to admit his disability and stimulate him to overcome it, and to their complacence in his dependence on the mother.

INDUSTRIAL ADHESIVES IN PROSTHETIC AND ORTHOTIC CONSTRUCTION

By Gennaro J. Labate, C.O.

Testing and Development Laboratory VA Prosthetics Center

During the past year the VA Prosthetics Center has been investigating various types of adhesives, especially those adhesives useful in prosthetics or orthotics. The following table is designed to be used as a quick reference by the prosthetist or orthotist for joining most materials used in limb and brace shops. The table also gives the sources of supply, cost as of March 1959, and characteristics of the adhesive tested.

In the past, the adhesive most commonly used to join *wood* were animal flake or ground glues. Today for wood, Timbond, a polyvinyl acetate, and the polyesters and epoxy resins are best. For bonding rubber, leather, fabric, etc., rubber cements are used. Stabond, a hexane toluol, and neoprene based adhesives are excellent substitutes for the rubber cements.

Although the tabulation is not complete and our investigations were not exhaustive, we can recommend that these listed adhesives are generally stronger and, in most cases, easier to apply than adhesives used formerly.

It should be recognized that adhesives are not the panacea for all fastening or bonding problems. On the contrary, adhesive bonding has its limitations just as do other methods of fastening. From a structural standpoint, a sandwich construction using adhesives as a bonding agent offers a number of advantages over riveting. For example, B/K joints can be sandwiched in a plastic B/K prosthesis shank by utilizing polyester or epoxy resins with such fillers as Solka-Floc (wood flour) or any fibrous filler. Local stress concentrations experienced around rivet holes on such joint attachments are eliminated by the relatively uniform distribution of the shear loads over the entire adhesive contact area.

The polyester and/or epoxy resin filled adhesives are being used routinely by the Limb and Brace Section, VAPC, as an adhesive to bond wood to wood, wood to metal, plastic to wood, and also for joining urethene foams to various other structural materials. However, the use of adhesives in metal to metal joining over small contact areas has not shown satisfactory results to date. A few metal to metal adhesives can be used for bonds that are subject to very low loads.

Further studies are continuing in the Testing and Development Laboratory of the VAPC to determine if adhesives can be applied more generally to replace some riveting, soldering, or welding. Interest is centered on developing adhesives that will provide metal to metal joints that will withstand high shear loads, have high peel and impact strength as well as satisfactory fatigue resistance. *See table, pages 52-53.*

Adhesive	Address & Source of Supply	Cost as of March 1959	Application
1. Epon VI	Shell Chemical Company New York, New York	2 lb. container $4.50 per lb.	Spread thin coat w/ spatula or tongue depressor.
2. Bakelite C8 (ERL-2774)	Bakelite Company Div. of Union Carbide Corp. 30 East 42nd Street New York 17, New York	$1.41 per lb. (Resin) ($1.58 per lb. (Hardener)	Spread thin coat w/ spatula or tongue depressor.
3. Bakelite C8 (ERL-2795)	Bakelite Company Div. of Union Carbide Corp. 30 East 42nd Street New York 17, New York	$1.41 per lb. (Resin) $1.58 per lb. (Hardener)	Spread thin coat w/ spatula or tongue depressor.
4. Bondmaster M620	Rubber & Asbestos Corp. 225 Belleville Avenue Bloomfield, N. J.	1 gal. (8 lbs.) $20.00	Spread thin coat w/ spatula or a tongue depressor.
5. Bond Cement 1524A—1 part 1525B—2 parts	Bond Adhesive Company Box 406 Main P.O. Jersey City 3, N. J.	¾ oz. tube $1.00—1525B ¾ oz. tube .75 1524A	Spread thin coat w/ spatula or a tongue depressor.
6. Laminac 4110	American Cyanamid Co. 30 Rockefeller Plaza New York 20, N. Y.	$9.72 per gal.	Spread thin coat w/ spatula or tongue depressor.
7. Resin Solution T-24-9	Bakelite Company 30 East 42nd Street New York 17, New York	$2.50 per gal.	Spread thin coat w/ spatula or tongue depressor.
8. Eastman 910	Armstrong Cork Co. Industrial Adhesive Sales Lancaster, Pa.	$10.00 per (1) ounce	Spread thin by drops from a polyetheylene bottle w/dispensing spout.
9. Timbond 600-5	Armour & Company Adhesives Division Meta-Lane Lodi, New Jersey	.54 per lb.	Apply a thin coat w/ brush or spatula.
10. Stabond T-161	American Latex Prod. Corp. 3341 West ElSegundo Blvd. Hawthorne, Calif.	$7.90 per gal.	Apply a thin coat w/ brush or spatula.
11. Pliobond 30	The Goodyear Tire & Rubber Co. Akron, Ohio	8 oz. container $1.10	Apply a thin coat w/ brush.
12. Barge (All purpose cement)	Barge Cement Co. 100 Jacksonville Rd. Towaco, New Jersey	$1.34 per qt.	Apply a thin coat w/ brush.
13. Cat's Paw (Super Speed)	Cat's Paw Rubber Co., Inc. Baltimore, Maryland	$1.80 per gal.	Apply a thin coat w/ brush.
14. Adrub #3214	Adhesives Products Corp. 1660 Boone Avenue Bronx 60, New York	$1.25 per gal.	Spread thin coat w/ brush.
15. 3-Ton Adhesive	H. A. Calahan, Inc. 854 Mamaraneck Ave. Mamaraneck	$3.96 for 8 oz.	Apply a thin coat w/ small brush or spatula.

Cure Time	How Cured	Base	Components	T&DL Observed Use
165°F—2 hrs. 200°F—45 min.	Contact pressure, and oven cure	Epoxy	2 parts paste	Metal to metal and all combinations wood, plastic glass, rubber, etc.
1) 5 hrs. room temp. 2) 30 to 40 min. at 300°F.	1) Air Cure 2) Oven	Epoxy	2 parts liquid	Metal to metal & bonding other rigid materials such as plastic, wood, etc.
1) 5 hrs. at room temp. 2) 300°F for 30 to 40 min.	1) Air Cure 2) Oven Cure	Epoxy	2 parts liquid	Metal to metal & other rigid materials such as plastic, wood, etc.
535°F 7 to 10 min. 500°F 12 to 15 min. 450°F 20 to 25 min. 400°F 40 to 50 min. 350°F 1½ hrs to 2 hrs. 300°F 4 hrs. to 5 hrs. 260°F 20 to 24 hrs.	Oven or hot press	Epoxy resin w/ aluminum filler	1 part paste	Metal, plastic, reinforced laminates & glass combinations.
24 hours. Full strength a few days.	Air Cured	Epoxy	2 parts liquid	Metal, glass, wood phenolic (hard) leather, fabrics and paper combinations.
Approx. 30 min. (full cure 5 to 7 hrs.)	Air Cured	Polyester	2 parts liquid 1 part paste	Metal to metal & bonding other rigid materials such as plastic, wood, etc.
Four seconds at 500°F to a few minutes at 300°F.	Oven and Pressure	Vinyl alcohol acetate resin	1 part liquid	Metal to metal
10 seconds to 8 minutes. For ultimate bond tensile strength: 48 hrs. ambient temp.	Air Cured	Cyanoacrylate Monomer	1 part liquid	Steel, aluminum, wood, glass, & neoprene combinations.
(3 to 7½ min.) gives max. strength on most woods.	Apply 20 to 35 PSI (Air Cure)	Polyvinyl Acetate Emulsion	1 part liquid	Wood to wood.
20 to 30 minutes.	Air Cured	Hexane Toluol & Ketones	1 part liquid	Neoprene, wood & belata belting combinations
1) Approx. 5 min. 2) Approx. ½ to 1 hr. 3) 20 min. at 225°F or 5 min. at 325°F.	1-Coat & wait until tacky, join & let dry, 2-Coat both surfaces & let dry. Next wet one or both surfaces w/MEK then join, press & let dry. 3-Coat both surfaces, after drying join them Hot press or oven w/ clamps.	Synthetic Rubber (BUNA) Butadiene-Styrene.	1 part liquid	Metal to metal & all combinations, rubber to plastic, wood to metal, fabrics to glass, ceramics to plastics, leather to paper.
20 to 30 minutes.	Air Cure	Neoprene Base	1 part liquid	Leather to leather, cork, rubber, glass, metal and wood combinations.
2 to 5 minutes.	Air Cured	Rubber	1 part liquid	Leather, rubber, cork combinations.
5 to 10 minutes.	Air Cured	Natural Rubber	1 part liquid	Leather, cork and rubber combination
Approx. 5 min. at 70°F.	Air Cured	(Not Known)	1 part paste 1 part liquid	Steel, aluminum, wood combinations.

ADDITIONAL HELPFUL DEVICES FROM THE P. W. HANICKE FACILITY

By Erich Hanicke, C.P. & O., Kansas City, Missouri

This is a continuation of a series of notes on new devices. Notes Nos. 1, 2, 3 and 4, appeared in the June 1959 issue of this Journal, pages 39-43.

Number 5

This illustration portrays a very special ankle mechanism. Its purpose is multifold.

No. 1. It is a flexible spring type toe lift.

No. 2. It is a flexible calcaneous brake.

No. 3. It is a forward stop (rigid to prevent calcaneus).

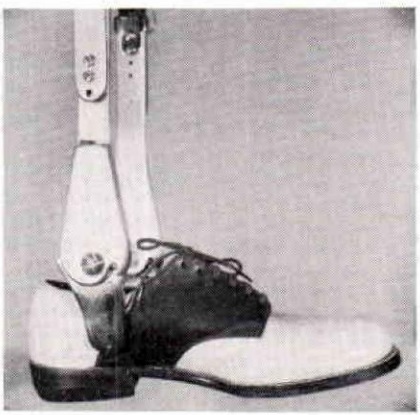
No. 4. It is a rigid back stop to prevent equinus.

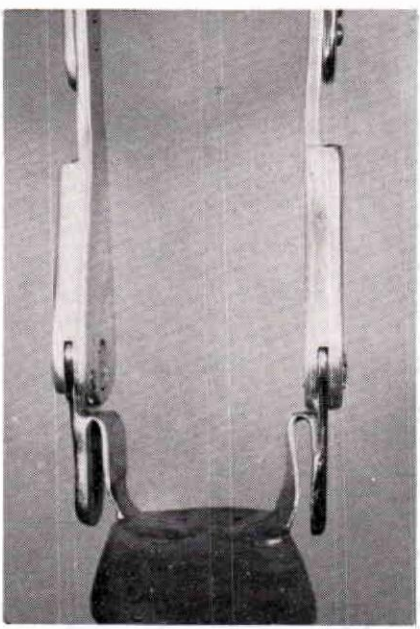
No. 5 It is a timing device to control leg and body movement following heel strike.

No. 6 It is a timing device during forward motion of leg or foot controlling push off.

It is used for flail ankle musculature. It can be compared to the heel and forward bumper mechanism of an artificial foot, except that the entire mechanism had to be built around the outside of the patient's leg and also engineered to conform to the anatomical location of the patient's ankle joint. This particular ankle mechanism has been tested and used with exceptionally gratifying results. While it may look rather large and clumsy, it will be instrumental in changing a patient's gait so completely that its rather startling appearance will be offset by the more rhythmic, smoother gait and ease of operation a patient will display.

This joint is specifically machined to obtain the proper areas for tension and leave sufficient stock of material for rigid stops. It might be compared to a double spring ankle joint. This type, however, has a much greater spring pressure or resistance





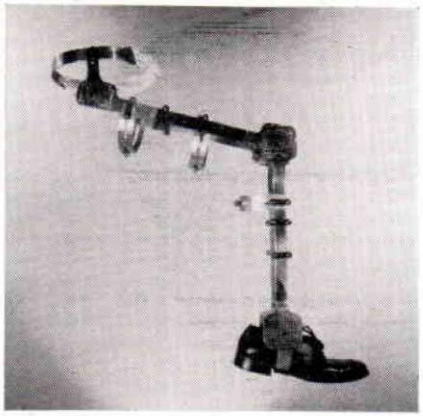
to motion. It also has larger areas posterior and anterior for a definite stop. Its use is particularly to an advantage in cases of shortening of legs due to paralysis or congenital deformity. It is used best when attached to a shoe or oxford. Occasionally it can be utilized with an inner foot plate and inner counter of leather or celastic to compensate for difference in size of feet and enable the patient to go about with mated shoes.

In conditions of a low ankle joint the stirrups can be hooked over the counter. This prevents ugly stretching of shoe and also prevents heel of foot from slipping out of shoe. At the same time, it makes it easier for the mechanic to align the joints and keep joints and stirrup areas straight and parallel. The diameter of this unit is 2″ at the center of the joint.

Number 6

This photograph illustrates a complete test brace designed for the purpose of locating ankle, knee and hip joint. The brace consists of a series of bar and plate combination members of very thin material. These members are clamped together which facilitates quick adjustments. The square sections around the area of the ankle, knee and hip are provided with very closely spaced holes, about 100 in each plate. The garter, thigh and top bands are made of thin aluminum provided with slots at medial and lateral side. These bands can be shaped readily and flattened or deepened according to requirements. The plates are held together by pointed ring screws.

The operating procedure is as follows: Measure the patient as customary. Find approximate locations of joints and record on tracing paper. Attach stirrup of test brace to shoe as usual. Assemble test brace by inserting ring screws in the holes near-



est to measurements taken. Repeat the same for knee and hip joint. Distance of joints will indicate position of various sections which are clamped together. Place entire brace on patient's leg. Use posterior and anterior webbing straps to center bars, adjust depth of garter band, thigh and hip band. When entire unit fits and meets with your expectations and to your satisfaction, you are now ready for the test. Begin by keeping knee extended. Move foot from slight dorsal to slight plantar flexion. Watch for piston action of mechanical ankle mechanism. Watch for heel slippage, tightness over instep, pressure under transverse arch. Watch for increased unwanted movement into calcaneous or equinus. Watch for pronation and supination. Do not change this brace for the present.

Place foot in neutral position with leg approximately 90 degrees to bottom of shoe. Now repeat this test at the knee. Check straps and bands above and below knee for even tension. Place finger under each component and remember the tightness of circular compression. Bend knee very gradually, watching possible movement of the various components encircling the calf and thigh. Should this combination of tensions change, it is a sign that the fulcrum is not in the proper position. Straighten leg

again. Recheck previous recordings and repeat test, flexing knee to about 90 degrees and farther back if possible. If this test shows the same interference of tensions as before, it becomes evident that knee axis is not properly located. Do not change for the present time. Now check all bands and anterior as well as posterior straps above knee and also pelvic girdle. Now test hip joint. The patient can stand up for this test. It is best to begin in such manner. Leave knee and foot in proper neutral position — knee extended. Check all points of contact and record. Now let patient bend over slowly. Watch all cuffs and pelvic girdle. It is best to observe any changes of tension without altering the brace for the present. If one finds the entire mechanism to function about 75-90 percent satisfactory, it is time to begin with the ankle joint location. This time keep knee flexed to some extent and also in 90 degrees flexion. Record present position of ring screw in ankle plates and remove. This will indicate whether screw was in proper position.

If plates should move up or down, forward or backward then it is necessary to relocate ring screws. Position of ankle joint itself without upright can be located and checked by movement of foot. Looking through holes closest to designated position of joint should show whether there is movement in various directions. Select hole in plate that appears closest to dead center of motion of ankle, insert ring screw and test again. Watch for movement of lower leg bar and garter band. After locating the mechanical ankle joint, this same procedure can be repeated for the knee joint. See that there is an even tension on straps and bands. Be sure and check position of bars. While patient is standing or lying down, bend knee carefully, watching for any interference of, or resistance to, motion at the joint area. Record present position of ring screw and remove same. Repeat motion of knee and select proper holes of both plates for the mechanical center of the knee.

As far as a perfect fit of orthopedic appliances which center about the knee is concerned, it is only important to us to find the proper fulcrum about which everything else has to rotate, without displacement of the points of anchorage of the appliance itself or interference or loss of any of the important contacts of initial pressure and counter-pressure. Repeat this same test on the hip joint. Watch for pressure of metal girdle over area of posterior superior spine, crest of ilium and anterior and superior spine. With all joints functioning as smoothly as possible, it may be an advantage to check ankle joint location especially towards anterior or posterior direction under weight bearing. This will be the most gratifying test or experiment of all because it will enable you to either make your patient walk with ease and his appliance or brace feel half its weight or ground him so that it weighs a ton in brace language and prevent the foot, especially the forefoot from leaving the ground.

Although this article may sound rather complicated and perhaps impractical, expensive and time consuming, to a good many of us who are still engaged in custom built orthopedic appliances of difficult nature, this particular mechanical aid gives us an inside view of what to expect by the time some of these rather complicated apparati are completed. It also gives us the technical foundation in a certain case should we encounter some functional difficulty and it can be recognized and eliminated more easily. While it may be assumed that most human beings are built according to standard anatomical principles — it is surprising to experience some very odd and baffling exceptions.

BELOW-KNEE PROSTHETICS RESEARCH, TRAINING AND PRACTICE

By LEROY WM. NATTRESS, JR., M.A.
Special Assistant, OALMA

Editor's Note: From June 15 to June 18, 1959, Mr. Nattress participated in the second week of the pilot course in "Below Knee Prosthetics" at the Oak Knoll Naval Hospital under the auspices of the Biomechanics Laboratory of the University of California, Berkeley.

Approximately three years ago the Prosthetics Devices Research Project (now termed the Biomechanics Laboratory) of the University of California, Berkeley, began work on the problem of fitting the below-knee amputee. This was the beginning of a new cycle of research, training and practice which has been seen in prosthetics since 1946: first with upper extremity prosthetics; more recently with above-knee prosthetics; and now with below-knee prosthetics.

RESEARCH

Background. Research seldom yields results unless some definite objectives are formulated at the start. Perhaps these objectives include existing accepted practice, perhaps they include hypotheses or maybe just "guess-timates." Regardless, these objectives are the guides for research.

In the case of below-knee prosthetics the objectives for research were established at a meeting of leading prosthetists and consultants held in April 1957. The participants in this meeting, held at the Biomechanics Laboratory, were: Dr. Miles H. Anderson, Mr. Carlton Fillauer, Mr. James Foort, Mr. John Galdik, Mr. Henry Gardner, Mr. Charles A. Hennessy, Mr. William E. Hitchcock, Mr. William H. Hoskinson, Mr. Frank Moos, Dr. Eugene F. Murphy, Mr. Chester Nelson, Mr. C. W. Radcliffe, Mr. Raymond E. Sollars and Mr. Howard Thranhardt.

During this week of discussion, demonstration and practical application, the "state of the art" of below-knee prosthetics was examined, general areas of agreement were defined, and areas of disagreement, which could not be resolved, and of question, were identified as the objectives for research.

Following this, the techniques utilized in numerous facilities were observed, evaluated, and additional facts were added to the growing body of knowledge concerning below-knee prosthetics. Among the techniques observed were those of the following facilities: The Schindler Artificial Limb and Truss Co., the Emmett Blevens Co., Fillauer Surgical Supplies, the Aunger Artificial Limb Co., and the Navy Prosthetics Research Laboratory. The work of these facilities must certainly be recognized in the yielding of what is now termed "the one best technique."

As can be seen, many different techniques have been used for the fitting of below-knee amputation stumps into weight bearing sockets. Although seemingly different, these techniques have generally resulted in what could be considered satisfactory below-knee prostheses. Time and space do not warrant a description of all of the techniques in use today or a discussion of their relative merits. Suffice it to say, the resulting prosthesis technique is not, in fact cannot, be credited to any one person or facility, though it is related to almost all of those mentioned above.

The Technique. The resulting technique is referred to as: The Patellar Tendon Bearing—Cuff Suspension Prosthesis. It is composed of the following structural elements:

"1. A closed-end plastic laminate socket with removable soft insert liner. The major weight-bearing areas are one or more of the following: The patellar tendon, the distal tibia and the fibial condyles.

"2. A Solid Ankle-Cushion Heel (SACH) foot with the socket aligned in initial flexion over the middle third of the foot.

"3. A cuff-type suspension which eliminates the need for side joints and thigh corset in a high percentage of cases.

"4. A waterproof plastic finish." [1]

The effect of this technique is reached through four progressive stages: Measuring, cast taking, fitting and alignment. Sufficient and accurate measurements are basic in the fabrication of any prosthesis. The cast taking stage consists of making a plaster wrap of the below-knee stump and, before the cast is set, applying controlled pressure to compress the soft tissue and establish weight bearing areas. The fitting stage uses the combined results of the first two stages in modifying the plaster model of the stump. From this the socket is made. The socket and a foot is then attached to a Below-Knee Adjustable Shank and the alignment stage is accomplished. The prosthesis is then finished. Though other, intermediate stages could be identified, these are the four crucial stages, the ones on which success or failure of the technique depend.

Two aspects in this technique must be recognized by the practicing prosthetist. First, and perhaps most important, the socket technique may be considered as applicable in the fitting of all types of below-knee amputations. The cast taking technique, when carefully followed, will produce an accurate model of the amputee's stump which is then modified in a systematic manner in order to obtain a functional, weight-bearing socket. The characteristics of this socket with the high anterior, medial and lateral walls, the pre-flexion of the socket, the compression of soft tissue, the relief of pressure sensitive areas, and the closed end of the socket result in a more stable, as well as more functional, prosthesis.

The second aspect is the suspension technique. While cuff suspension of this prosthesis is to be desired (the principle being that the least amount of harness or corset the better) it is fully recognized that problems will occur in the universal application of this aspect in below-knee prosthesis fitting. These problems include: (1) Insufficient stump length, (2) Knee instability, (3) Previous dependence upon side joints and corset, (4) Painful stump, and (5) Attitude of the prosthetist. This last, of course, often determines the initial or subsequent approach to the other problems and will result in any discrepancy in the application of the technique from facility to facility.

The conclusion to be drawn concerning this technique is that: (1) The Patellar Tendon Bearing socket is a technique to be generally applied; and (2) This socket may be suspended in a number of ways, the most desirable of which is by Cuff Suspension.

Experience. The consideration of this technique must not end here, for, on the experience of a number of prosthetists who have applied this

[1] *Manual of Below-Knee Prosthetics.* (Berkeley, Calif.: Biomechanics Laboratory, University of California, 1959) p. 3.

technique for upwards to a year, there are certain problems which the prosthetist in a competitive enterprise must be prepared to meet.

The most serious problem is that of shrinkage. This is probably the major problem encountered in all lower extremity fittings, especially with new amputations or in converting wearers to a different type of prosthesis. Shrinkage in the Patellar Tendon Bearing socket, if not attended to immediately, will lead to secondary problems of instability and pain with the possible result of rejection of the prosthesis by the patient and the prosthetist. While this problem may be corrected by adding liners and wearing additional stump socks, a new socket should be fabricated when the stump has reached a degree of stabilization. If this is not done, the principle of the socket will be defeated, for total contact and patellar tendon bearing will be considerably altered, if not completely lost.

Fabricating a new socket calls for repeating the cast and fitting procedures as well as the alignment procedure. From a practical point of view the only reusable section of a below-knee prosthesis, in this instance, would be the foot and part of the shank. Fabricating a new socket, therefore, requires almost the complete remaking of the prosthesis.

Other problems which may arise can be classed as: (1) Faulty modification of the stump model, (2) Secondary problems of shrinkage, and (3) Wearing-in of the prosthesis. The first of these should be observed and corrected during the alignment stage of prosthesis fabrication. The latter two may be observed and corrected through a systematic follow-up of the patient, which should be the procedure in applying any prosthesis to a patient.

TRAINING

Let us next take a look at the training that will be available in the fitting and fabricating of the Patellar Tendon Bearing-Cuff Suspension Prosthesis for the 1959-60 academic year. Since our concern is primarily with the prosthetist, we will mention only the times and locations of his courses. However, it should be noted that there are courses for physicians and therapists which will be held concurrently with the courses for prosthetists.

There will be eleven courses in Below-Knee Prosthetics for Prosthetists given as follows:

Dates	*Institution*	*Course No.*	*Tuition*
1. Nov. 30 to Dec. 18, 1959	University of California Los Angeles	X480	$150.00[2]
2. Dec. 7 to Dec. 18, 1959	New York University	7414A	$125.00
3. Jan. 4 to Jan. 15, 1960	New York University	7414B	$125.00
4. Jan. 4 to Jan. 22, 1960	University of California Los Angeles	X480	$150.00[2]
5. Feb. 8 to Feb. 19, 1960	Northwestern University	611	$125.00
6. Feb. 15 to Mar. 4, 1960	University of California Los Angeles	X480	$150.00[2]
7. Mar. 7 to Mar. 18, 1960	New York University	7414C	$125.00
8. Mar. 7 to Mar. 18, 1960	Northwestern University	611	$125.00
9. Mar. 21 to Apr. 8, 1960	University of California Los Angeles	X480	$150.00[2]
10. Mar. 28 to Apr. 8, 1960	New York University	7414D	$125.00
11. May 9 to May 20, 1960	Northwestern University	611	$125.00

[2] The course given at U.C.L.A. is a three-week course, the last week of which is devoted to refresher seminars and demonstrations relating to new developments in upper and lower extremity prosthetics.

For further information concerning these programs, trainships, living accommodations, etc. write to any of the following persons:

Dr. Miles H. Anderson, Director, Prosthetics Education Program, B4-229 Medical Center, University of California at Los Angeles, Los Angeles 24, California.

Dr. Sidney Fishman, Director, Prosthetics Education, New York University Post-Graduate Medical School, 550 First Avenue, New York 16, N. Y.

Dr. Warren J. Perry, Director of Prosthetics Education, Northwestern University Medical School, 401 East Ohio Street, Chicago 11, Illinois.

The courses in Below-Knee Prosthetics are generally opened to prosthetists who are certified or are preparing for certification. In some cases preference will be given to prosthetists who will be participating as part of a clinic team, in others preference will be given to those who have attended previous courses in upper extremity or above-knee prosthetics. Generally, however, applicants will be accepted on a first-come, first-serve basis.

Before we leave the topic of training there is one question that should be answered for it relates not only to below-knee prosthetics, but also to training in general. Is it necessary for a man to attend one of these courses to learn this new technique?

Our answer to this must be a qualified "YES." Learning implies mastery of the technique, not mere exposure to the technique. Learning also implies the discussion and supervised practice of the technique, not simply reading about it and trying it out as time permits in a facility. Our answer is qualified for only one reason, that is that there are always exceptional individuals who can master a technique without formal training. These, however, are the exceptions that prove or test the rule.

PRACTICE

The third portion of this article cannot yet be written. A report on the practical application of the Patellar Tendon Bearing-Cuff Suspension below knee prosthesis must wait until the courses have been given, the technique has been learned and prostheses have been fitted to patients. In the meantime, records must be kept by every student of this technique. These records should include descriptions of successes as well as of failures, the problems encountered in fitting and fabricating this below knee prosthesis, and the modifications in the technique which led to the final satisfaction of the patient. This information should then be fed back to the Universities and the Association so that, perhaps a year from now, this article may be completed.

NELSON GADGETS

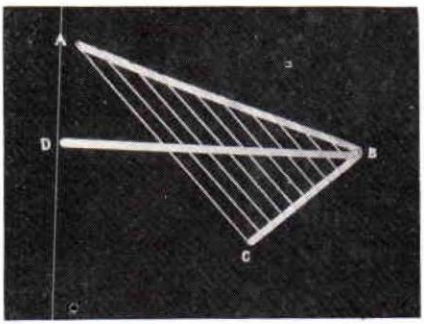
By K. B. NELSON, C.O.

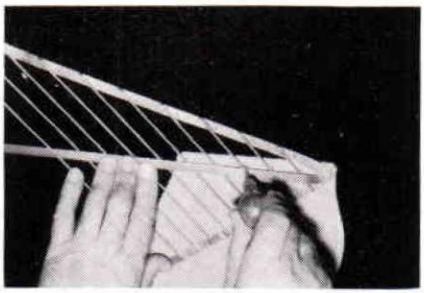
Nelson Orthopedic Company, Pittsburgh, Pa.

We are going to run a series of short articles under the above title for any of our readers who may be "gadget-minded." Most of the gadgets we will discuss are tools used as time savers; others will be appliances. A few of these appliances are covered by our patents, but you may find them interesting. There are others that you may want to make for your own use, since they have proved themselves through long use in our shops.

Gadget No. 1 — SPACER

The spacer is used to make evenly spaced marks for holes, especially for leather work. In marking a corset or laced cuff for eyelets, proceed as follows: Place awl through hole at B and into material for first hole. Move ruler D to line where holes are wanted. Now swing the frame so that the proper number of holes are chosen, then mark each hole with awl at wide angle formed by upper edge of ruler D and each upright. When you have acquired some skill in using the spacer, you will find the time it takes to mark any lacer is practically nil, compared with old methods.





Bar A-B-C is 3/8-inch x 1/16-inch steel, heated and bent to desired angle at B. Uprights are 1/16-inch drill rod, soldered on to base B-C at 90-degree angle 3/4-inch apart, also soldered onto top bar A-B, all uprights being parallel. The last upright at A-C is bent up so ruler D moves under it.

Ruler D is 3/8-inch x 1/16-inch steel bent at B to bring the hole at B in line with upper edge. Ruler D is attached at B to move freely against frame with tubular rivet, which is drilled through to admit awl when in use. Ruler D is raised at B to lie flat over the uprights but under the last upright at A-C. We find it helpful to number the uprights from right to left on Bar A-B, the shortest being No. 2.

The spacer may be made any size. The wider the angle is at B, the longer the Bar A-B must be and the greater the difference will be between the shortest and longest spacing. We find a good size to be: Bar A-B—15 3/4 inches; A-C 13 3/4 inches; Ruler D—15 1/2 inches; B-C 8 inches.

The Caldwell Os Calcis Brace

By Ray E. King, M.D.

Fractures of the os calcis frequently require prolonged periods of non-weight bearing until sufficient callus has formed to prevent further crushing or deformity of the fractured bone. A brace was recently developed by the late Dr. Gene Caldwell, with the cooperation of Snells Limb and Brace Co. of Shreveport, La., which permits early ambulation following os calcis fractures. (Fig. 1 and 2) This brace consists of a moulded leather calf lacer attached to double upright supports, an adjustable walking bar and a shoe with the heel and counter removed.

In designing this brace it was necessary to have a moulded calf lacer instead of bands about the upper and lower calf to place the posterior calf muscles at rest and reduce tension on the achilles tendon. The foot is also placed in a moderate equinus position, which further reduces pull on the posterior aspect of the os calcis. A comfortable position can be secured by the adjustable walking bar. In making this brace, it is essential that weight bearing fall anterior to the calcaneo-cuboid joint so that no weight bearing is borne on the os calcis. The double uprights and walking bar are placed at the level of the cuboid and on weight bearing no strain is placed on the os calcis.

Approximately 100 of these os calcis braces have been used during the past 5 years. Following reduction of the fracture and as soon as soft tissue reaction has subsided, weight bearing is permitted. The fractured os calcis is protected until healing is complete, when the brace is discarded and weight bearing in a shoe is permitted. This brace has been especially ad-

(Continued, bottom page 63)

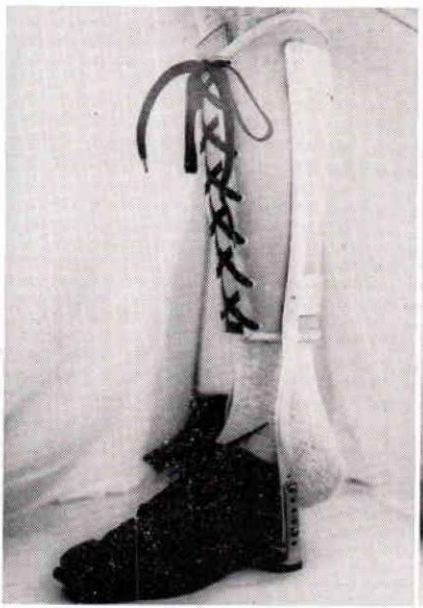


Fig. 1

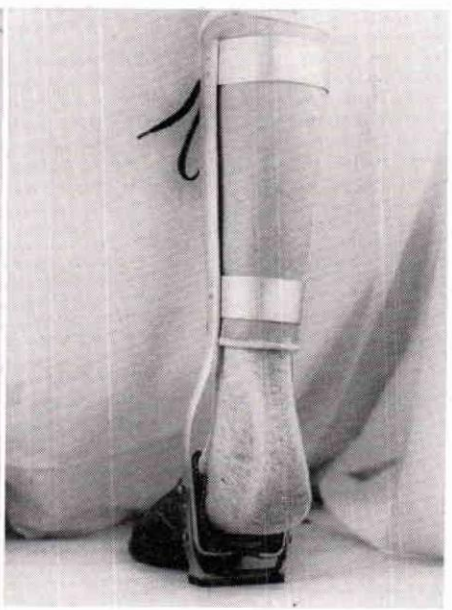
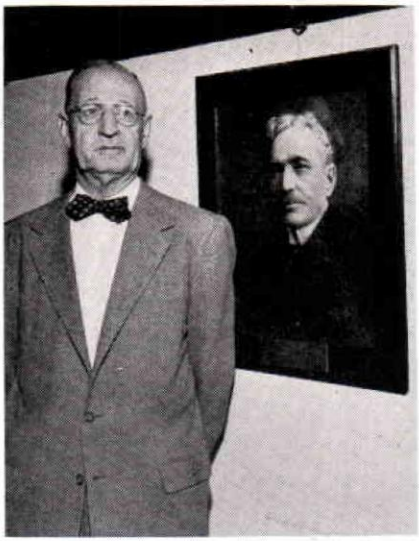


Fig. 2

BLAINE KORRADY RETIRES—
ENDS OUTSTANDING CAREER

As the Journal goes to press, word comes of the purchase of the J. F. Rowley Company, Certified Facility at Chicago, Illinois, by Mr. Walter Schoene, head of the Bardach- Schoene Company. The Rowley facility had been managed for many years by Mr. J. Blaine Korrady, one of America's pioneer prosthetists and a founding-member of the American Board for Certification. Mr. Korrady is shown in the picture with a photograph of Mr. J. F. Rowley. An article by Jack Heltsley about this significant change will appear in the December Journal.

The Rowley Company will continue under operation at the same location and under the same name.



SUPPLY DISPLAYS AT THE NATIONAL ASSEMBLY

(Note: Description of other Exhibits will be found on pages 105-108.)

BENNINGTON STUMP SOCK CORPORATION—BOOTH NO. 10

Will display their world known Bessco Amputee Stump Socks. Featured will be a new Shrink resistant Amputee Stump Sock. A display of our new nylon stockinette will also be shown.

K & KPROSTHETIC SUPPLIES, INC.—BOOTH NO. 11

Will feature a full line of knee assemblies, foot assemblies and other component parts for the Prosthetic Profession, among the many products shown will be those of the most famous manufacturers in Europe—as Otto Bock, Kraemer, Hucklenbroick, Lang.

We are featuring the only factory-made children's knee assembly.

CALDWELL OS CALCIS BRACE

(Continued from page 62)

vantageous in cases of bilateral fracture of the os calcis permitting full weight bearing approximately 2 weeks after reduction of the fractures. The brace is comfortable to wear if made properly and early ambulation has been found to be a definite advantage, reducing the convalescence period following fractures of the os calcis and allowing the patient to resume his regular occupation at an earlier date.

COSMESIS COMES OF AGE

Realastic restorations for not just a few

— BUT FOR ALL WHO HAVE A NEED

PRODUCTION ITEMS NOW AVAILABLE IN:

4 sizes for children and infants

4 sizes for older children and teen-agers

6 sizes for women

6 sizes for men

Supplied in all the shades of the REALASTIC abridged E-Issue Color Guide.

WHAT DOES THIS MEAN?

Now, a prosthetist can order what he needs instead of what the laboratory thinks he should have, for any given case.

A saving of approximately 50% is possible through prefabricating the products and supplying items from stock. Still more savings are possible from multiple buying.

FASTEST POSSIBLE SERVICE

Greatest perfection because products can be inspected and the culls eliminated before stocking.

Rationalization of the service and the most complete coverage of sizes and types.

New products can be established from the same processes until it will be possible to meet the cosmesis needs of all who have suffered amputation or atrophy.

HOW WILL IT WORK?

Prosthetic Services has prepared an interim catalog dealing with all mold sizes and prosthetic components developed so far. The exact measurements of all the gloves are listed in the various categories. Instructions for ordering, order blanks and a complete price list are included.

You will find many innovations—many more have been worked out for the future.

Prosthetic Services of San Francisco wishes to acknowledge its great debt to Army Prosthetic Research Laboratory for its support and technical assistance in this program. The phases involving mold production, glove coloring, and automatic fabrication are a direct outcome of APRL development.

A NEW DEVELOPMENT OF PREFABRICATED

Realastic® GLOVES

AND PROSTHETIC COMPONENTS

for CHILDREN • TEEN-AGERS
WOMEN • MEN

○

for all types
FOREARM PROSTHESES

○

MECHANICAL HANDS

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PASSIVE HANDS

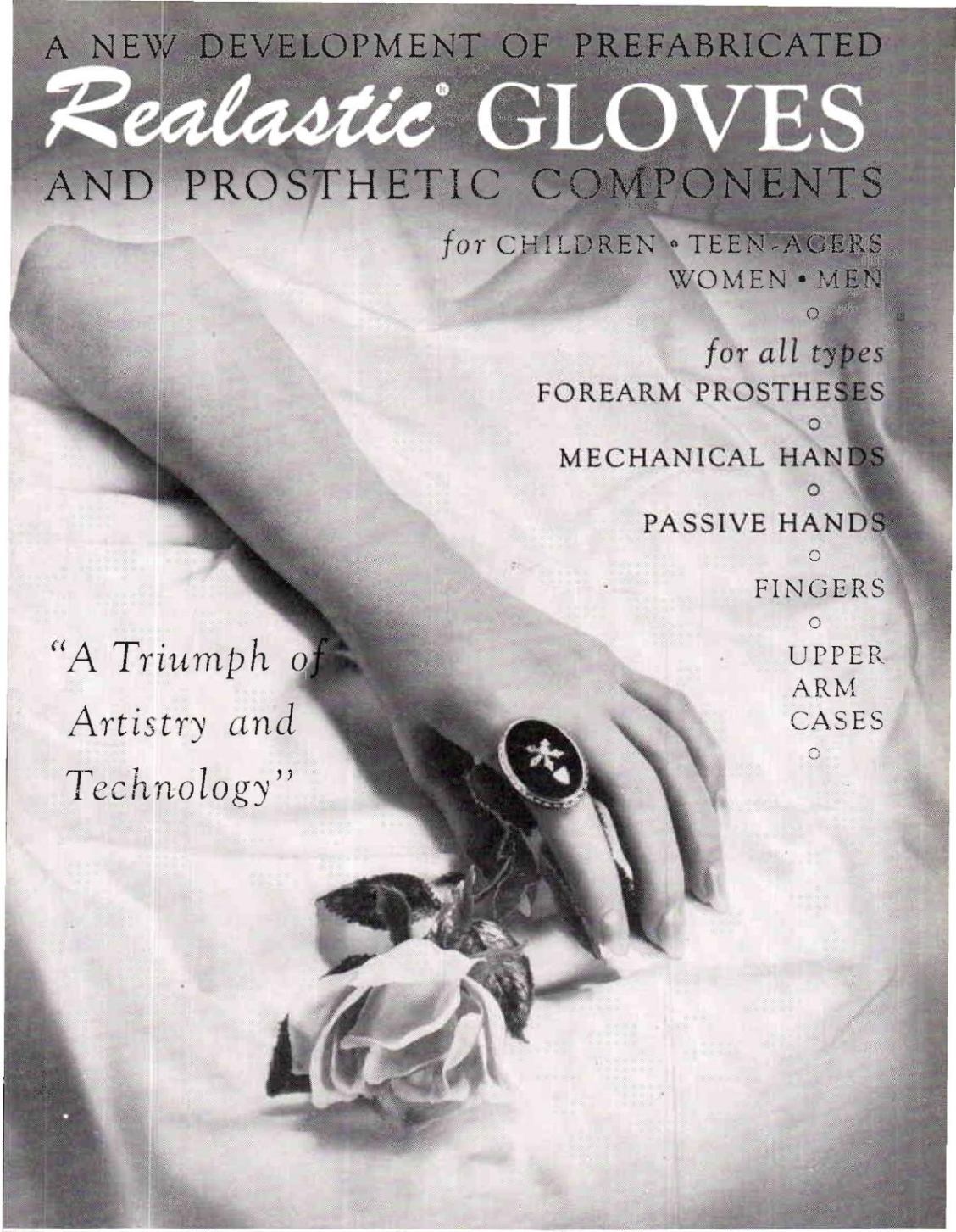
○

FINGERS

○

UPPER ARM CASES

○



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MAKERS OF *Realastic*® RESTORATIONS

Orthopedic-Prosthetic Idea Exchange

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 subject of prosthetics appears to be receiving ever increasing attention from physicians in general and especially from the orthopedic surgeons, as witnessed by several fine articles in a recent issue of the *Journal of Bone and Joint Surgery* concerning bilateral Canadian Hip Disarticulation Prostheses, lengthening of a short humerus stump by bone grafting to better utilize an above elbow prosthesis, and other subjects. In addition, the National Research Council is planning a yearly forum or symposium discussion for orthopaedic surgeons interested in prosthetics in conjunction with the annual meeting of the American Academy of Orthopaedic Surgeons. This should provide an excellent stimulus for interchanging ideas in this field, which is incidentally the principal goal of this column.

The prosthetist and orthotist members of the Washington Clinic team have proven themselves vital components of the group approach to prosthetic problems. Not uncommonly one of our prosthetists introduces an idea originally derived in his civilian practice which is of great aid in solving a vexing problem with one of our amputee veterans. These are the bits of information we would like to have for this column so that they can be widely disseminated and perhaps ease the burden of some unhappy amputee.

SACH Foot Experience

We are learning many things about the SACH foot as the number of veterans utilizing this apparatus mounts into the several hundreds. One amputee reported difficulty in dancing, stating he lacked torsion and twisting motions which were present in his old wood foot with a single axis ankle assembly—he really must have had a loose ankle joint to permit that much torsion! Another below knee amputee complained of difficulty in pressing down on the accelerator pedal of his automobile, requiring excessive thigh and knee activity for long drives because of the lack of an articulated ankle joint. This appears to be a valid objection, but of limited significance. Bilateral amputees, especially above knee types, note loss of balance and a rocking action in standing with two SACH feet. However, the great majority are very happy with their "new feet" and here in Washington it is the consensus that this is the most widely accepted and enthusiastically received prosthetic modification which has resulted from the accelerated research program launched after World War II. Many of the handicaps originally attached to the SACH foot have proven false, such as prohibition of the use of certain shoe styles—moccasins and high top shoes in men, pumps in women; we have several amputees doing surprisingly well with such unorthodox foot wear.

Molded Shoes

The use of molded shoes has become very popular in the past three years, but some of the claims made for them by one very large distributor are so fantastic that the Federal Trade Commission has begun action to curb such misleading advertising. Your editor recently testified at such a hearing, and was called upon to state his opinion if special molded shoes could cure stomach ulcers, pelvic and menopausal disturbances in the female, colitis, arthritis, and many other diseases! Inasmuch as such shoes are often a valuable aid and provide remarkable comfort to the individual requiring this particular type of shoe, isn't it a pity that the manufacturers don't stick to bonafide claims instead of making such absurd and unfounded statements?

This clinic has had several experiences recently with failure of biceps cineplasties, involving two specific cases in which the amputee stopped the use of his prosthesis immediately upon leaving the jurisdiction of the service hospital. In both instances they were having difficulty with their biceps tunnel with constant irritation from the use of their cineplasty prosthesis. Neither could be converted back to the cineplasty type of prosthesis after having successfully used the standard type of below-elbow appliance; one amputee was able to demonstrate the use of the standard type above his head in the same manner as with a cineplasty prosthesis. The question of closure of the biceps tunnel was raised because of difficulty in maintaining good skin hygiene within the tunnel, and its tendency to partially close and also with resultant accumulation of secretions, dirt, etc., and secondary dermatitis. We have had four or five such instances in the past 5 years in which the cineplasty prosthesis was discarded shortly after discharge from military service. We would like to hear comments on this subject from other sources as it is our impression that this type of amputation and prosthesis is not as successful as originally reported.

Several of our amputees prefer the Northrop two-load hook instead of the APRL hook stating that it is worked with the same motions as the Dorrance hook but with approximately 50 per cent less work and resultant decreased fatigue. However, it cannot be used for heavy work because of the weak housing. Some amputees also prefer the smaller overall size of the Northrop two-load hook as compared to the APRL hook.

We have recently been using *Prantal* cream to control perspiration problems of amputation stumps, following up the work of Dr. Frederick Vultee of Richmond, Va. who reported successful control with the use of 2 per cent Prantal powder or Prantal cream. This is a difficult problem and it is suggested that other clinics participate in this study for a better overall evaluation.

Let Us Hear From You

Please let us hear from the readers of this journal and let us have your comments on any of the phases of prosthetics in which you may be interested. Without your participation we are not achieving the interchange of ideas that was contemplated when this column was begun. Take a second, jot down your idea and send it along, and we will be happy to see that it gets proper distribution.

Everett J. Gordon, M. D.

PREPARATION FOR A CAREER IN ORTHOTICS AND PROSTHETICS; I.C.S. COURSES NOW READY

by LeRoy Wm. Nattress, Jr., M.A.
Special Assistant, O.A.L.M.A.

In the last issue of this *Journal*, a program of education for prosthetists and orthotists was considered. (Orthopedic and Prosthetic Appliance Journal, June, 1959, p. 60-64). In that article the operation of a correspondence program of education was reviewed from the student's point of view. It is now our privilege to announce the curriculum to be offered through this program.

But first, some introductory remarks. To conduct a correspondence education program totally within the framework of the Association would require more administrative and instructional staff than could be made available. Therefore, the Association sought to locate an institution of good repute that could conduct a program which met our specifications. This eventually led to the decision to place this program under the administrative direction of the International Correspondence Schools, (I.C.S.), Scranton 15, Pennsylvania.[1] This means that while your Association is sponsoring this program, all administrative and instructional responsibilities will be assumed by I.C.S.

The curriculum to be outlined is drawn from other curricula currently available through I.C.S. Thus it must be termed a program in basic education for *it is meant to precede or augment training in prosthetics and orthotics.* One added factor is the division of courses that has been made which will enable the men who are working with tools and materials to take one program, while those who are responsible for the operation of the facility have a different, though overlapping, program. Courses specifically in prosthetics and orthotics will be added to this curriculum if the acceptance of the correspondence method warrants.

The courses given through I.C.S. are accredited through the National Home Study Council. This does not generally mean that credits toward a college degree can be earned by participating in this program. However, the matter of credit is often local in nature and should be discussed with the representative of I.C.S. and the college or university from which the degree is desired. This also applies to the question of high school credit.

The courses included in this program have been chosen by leaders in both prosthetics and orthotics who reviewed all of the available courses which were even remotely related to these fields. The curriculum has been approved by I.C.S. and is sponsored by the Orthopedic Appliance and Limb Manufacturers Association (OALMA). Persons completing the entire curriculum for their division, or its equivalent, will be awarded a certificate of completion by I.C.S.

[1] We are deeply indebted to Mr. William P. Wright, Washington Representative for I.C.S., who has given a great deal of his time and effort to the perfection of this program.

Division I. CURRICULUM FOR PROSTHETISTS AND ORTHOTISTS[2]

Practical Arithmetic 6386 A—F 6 Units

Number systems and the use of numbers; The arithmetic functions; Fractions; Square roots; Significant figures; Reciprocals; Averages; Measurement; Ratios; and Proportions. (Since the first three units of this course are considered elementary, the student may be excused from them by obtaining a passing grade on an equivalent examination.)

Formulas 6388 1 Unit

Symbols; Arithmetic signs; Equations; Unknowns; Substitution in formulas; and Transformation of formulas.

Practical Geometry and Trigonometry 5567 1 Unit

Points, lines and angles; Plane and solid figures; Area and volume; Trigonometric tables; Solution of right and oblique triangles; and Introduction to sines, cosines, tangents and cotangents.

Useful English—Part 3 6121 C 1 Unit

Speaking and writing correct modern English; Analysis of the errors which occur most frequently in English. This unit enables the student to concentrate on his own particular usage problems without wasting time on points of English usage already mastered.

Elements of Mechanics 5537 A—B 2 Units

Composition of matter; Weight and mass; Work and energy; Motion; Composition and resolution of concurrent forces; Resultant of parallel forces; Center of gravity; Centrifugal force; Power; Basic machines; Gearing; Cams; and Pendulum.

Bench Work 5568 A—B 2 Units

The work bench; Hand tools; Soldering, brazing and wiping; Welding; Riveting; and Tolerances.

Measuring Instruments 5809 A 1 Unit

Kinds of measurements; Scales and tapes; Calipers; Micrometers; Metal gages; Transferring distances; Measurements of height and depth; Spirit levels; Straight-edge and squares; Measurement of angles; Indicators; Gage blocks; Sine bar; and Fundamentals of trigonometry. nometry.

Grinding Equipment 5347 1 Unit

Grinding wheels; Abrasive materials; Wheel bonds; Wheel grades; Grain and structure of wheels; Hand grinders; Swing-frame grinders; Portable air and electric grinders; Disc grinders; Industrial grinders; Centerless grinding; and Roll grinding.

Drilling—Part 2 2219 B 1 Unit

Drilling tools; Twist drills; Special-purpose drills; Shankless drills; Three- and four-fluted drills; Multiple-cut drills; Angular hole tools; Work-holding methods; Angle plates; Cutting speeds and feeds; Drill jigs and fixtures; Countersinks; Counterbores; Reamers; and Taps.

Fundamentals of Welding 6271 1 Unit

The eight groups of welding; The thirty-seven processes of welding; Types of joints; Welding symbols; and Positions for welding.

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[2] The summaries of each course are to give the student an idea of the material covered in that course. They are not meant to be a recitation of all the material covered in a particular course. These summaries are based on *I.C.S. Vocational Guidance Manual*, 1959.

Soldering, Brazing and Wiping 5388 1 Unit
Processes of joining metals; Operation and object of tinning; Soldering seams and joints; Soldering aluminum; Blow pipe soldering; Method of Brazing; Wiping joints; and Lead burning.

Elementary Chemistry 5367 1 Unit
Elements; Compounds; Solutions and their ionization; Non-Metalic elements and their compounds; and Chemical Equations.

Basic Organic Chemistry 5657 A—B 2 Units
A study of the compounds of carbon including both aliphatic and aromatic derivatives.

Plastics 5654 A—C 3 Units
Classification of plastic resins; Derivation, properties and uses of plastic resins; Thermosetting resins; and Thermoplastic resins.

Reinforced Plastics 6414 1 Unit
Types and forms of reinforcements used; Types of resins used; Processing and designing thin-walled reinforced plastics; Processing and uses of reinforced molding compounds; Finishing; and Repairing operations.

Properties of Materials 5887 1 Unit
Effects of forces on materials; Stress and deformation; Elastic failure; Cohesive properties of solids; Heat and cold treatment; Modulus of elasticity; Temperature stresses; Structural members; Tension members; Shear; Connection of steel members; Compound stress; Properties of metals; and Non-ferrous metals and alloys.

Psychology, Applied 5570 A—H 8 Units
Personality development and adjustment; Prediction of behavior of individuals and groups; influencing behavior of individuals and groups; Principles of research in applied psychology.

Physiology and Health 2936 A—L 12 Units
Problems of healthful living; Cells of the body; Tissues as building materials; Organs formed from tissues; The skeletal system; The muscular system; Nutrition; Circulation; Respiration, The nervous system; Heredity and health; Health problems of the machine age.

Total 46 Units

Division II. CURRICULUM FOR OWNERS AND MANAGERS [2]

Practical Arithmetic 6386 A—F 6 Units
Number systems and the use of numbers; The arithmetic functions; Fractions; Square roots; Significant figures; Reciprocals; Averages; Measurement; Ratios; and Proportions. (Since the first three units of this course are considered elementary, the student may be excused from them by obtaining a passing grade on an equivalent examination.)

Formulas 6388 1 Unit
Symbols; Arithmetic signs; Equations; Unknowns; Substitution in formulas; and Transformation of formulas.

Practical Geometry and Trigonometry 5567 1 Unit
Points, lines and angles; Plane and solid figures; Area and volume; Trigonometric tables; Solution of right and oblique triangles; and Introduction to sines, cosines, tangents and cotangents.

Useful English 6121 A—E 5 Units
The significance of words; Dictionary use; Connotation and denotation of words; Synonyms and antonyms; Parts of speech; Sentences; Speaking and writing correct English; Spelling; and Paragraphs.

Business English 6321 A—C 3 Units
Vocabulary building guides; Grammatical principles; Relationship of words, phrases and clauses; Capitalization; Abbreviations; Figures; Punctuation; Diction; Style; Public speaking; Parliamentary practices, and Business correspondence.

Elements of Mechanics 5537 A—B 2 Units
Composition of matter; Weight and mass; Work and energy; Motion; Composition and resolution of concurrent forces; Resultant of parrallel forces; Center of gravity; Centrifugal force; Power; Basic machines; Gearing; Cams; and Pendulum.

Plastics 5654 A 1 Unit
Classification of plastic resins; Plastic terms; and Derivation, properties and uses of all plastic resins in common use today.

Properties of Materials 5887 1 Unit
Effects of forces on materials; Stress and deformation; Elastic failure; Cohesive properties of solids; Heat and cold treatment; Modulus of elasticity; Temperature stresses; Structural members; Tension members; Shear; Connection of steel members; Compound stress; Properties of metals; and Non-ferrous metals and alloys.

Principles of Accounting 6022 A—F 6 Units
Nature of accounting; Simple form of journal; Procedure involved in making merchandise sales; Nature of negotiable instruments; Deferred and accrued items on financial statements; and Balance sheets.

Economics of Business 6050 1 Unit
Principles of utility, increasing costs, and marginal utility; Factors of production; Land and rent; Labor; Capital and interest; Management and profit; Exchange; Business cycle; Supply and demand; Imperfect competition; Taxes; Consumption; and Governmental influences on business.

Forms of Business Organization 6184 1 Unit
Individual proprietorships; Partnerships; Joint ventures; Corporations; Kinds of stock; Characteristics of cooperatives; and International organization.

Starting the Store 5786 1 Unit
Requirements for success in operating a store; Types of retail stores; Financing; Establishing a new business; Buying into an established business; Determining the value of an established business; Selecting a location; Business background of the community or area; Lease agreements; Transportation facilities; Arranging the store; and Problems of the beginning retailer.

The Financing of Business 6185 1 Unit
Place of finance in business; Capital of single proprietorships or partnerships; Corporate securities; Capitalization; Determining capital; Financial plan; Marketing the securities; Rights financing; Circulating capital; Business and the commercial bank; Credits and collections; Management of income; Expansion and combination; Integration; Failure; Receiverships; and Reorganization.

Commercial Law 5924 A—B 2 Units
Contracts; Agency; Negotiable instruments; Real property; Partnerships; and Corporations.

Psychology, Applied 5570 A—H 8 Units
Personality development and adjustment; Prediction of behavior of individuals and groups; Influencing behavior of individuals and groups; and Principles of research in applied psychology.

Physiology and Health 2936 A—L 12 Units

Problems of healthful living; Cells of the body; Tissues as building materials; Organs formed from tissues; The skeletal system; The muscular system; Nutrition; Circulation; Respiration; The nervous system; Heredity and health; Health problems of the machine age.

Total 52 Units

HOW TO ENROLL

To enroll in courses in either division, contact the local representative of I.C.S., who is listed in the telephone directory, or write to:

International Correspondence Schools
Scranton 15, Pennsylvania

Those eligible for this program are persons actively engaged in the practice of prosthetics or orthotics.

WHAT DOES IT COST?

The total cost of these programs, based on a fee of $50.00 for admissions and a fee per unit of $5.25, would be:

Division I: Prosthetists and Orthotists Curriculum

Admission Fee	$ 50.00
46 Units at $5.25	241.50
Total	$291.50

Division II: Owners and Managers Curriculum

Admission Fee	$ 50.00
52 Units at $5.25	273.00
Total	$323.00

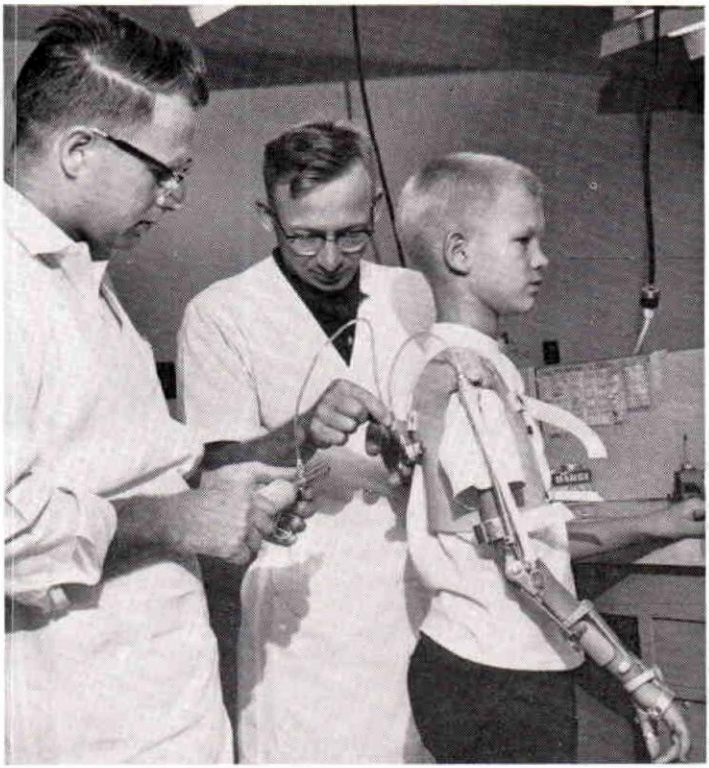
Fees are receivable upon enrollment. However, a payment plan is available through International Correspondence Schools. In addition, the Association has entered into a Cooperative Training Arrangement with I.C.S. which will permit members of the OALMA and their EMPLOYEES to discount all fees by 10% at time of enrollment.

When enrolling in one of the Divisions the student's past education and training will be evaluated by the I.C.S. Representative. Based on these the student may be able to enter the program at a more advanced level, thus reducing the total number of units to be taken to complete the entire curriculum of that Division.

Finally, some students may not wish to enter or complete the entire curriculum of a Division as it is recommended. Others may wish to specialize more in one area than another and, thus, enroll in courses which are not listed in either Division. These students may enroll in a "Selected Units" curriculum which will be worked out to meet their specific needs with the local representative.

The needs for a curriculum to prepare men for the fields of prosthetics and orthotics and the needs to keep these men and the remainder of the field abreast with good practice and technical developments are widely felt. The curricula outlined in this article have been devised as a beginning step by the Association in meeting these needs.

RANCHO COURSE IN U/E BRACING



PRACTICAL INSTRUCTION AT RANCHO LOS AMIGOS—Orthotic Instructor Richard Young checks a fitting by Jack Anderson on the patient, Gary Eilert. Gary is being fitted with a plastic shoulder cap, ratchet shoulder joint, locking elbow joint with elbow flexion by an artificial muscle, long opponens hand splint with a swivel thumb attachment. The muscle is activated by chest expansion.

For the second year, Rancho Los Amigos offers an unusual opportunity to learn functional bracing while earning. The persons selected will receive a $2,000 scholarship at Rancho Los Amigos, Hondo, California. This institution, which is an Associate Member of OALMA, will be glad to hear from OALMA members who have trainees qualified for this position and from other interested applicants. Applications should be mailed to: Roy Snelson, Chief Orthotist, and Assistant Program Director, Rancho Los Amigos Hospital, Hondo, California.

Prerequisite

The trainees must have a high school diploma and be willing to spend eighteen months of concentrated effort to complete the course of Upper Extremity Orthetics. The annual salary will be $2,000.00 Room and board may be obtained on the grounds for about $60.00 a month.

Faculty and Related Personnel

Dr. Vernon L. Nickel, Chief Orthopedist of Rancho Los Amigos, serves as Program Director and will be in general charge of the institution. Assisting him will be Roy Snelson, C.O., Chief Orthotist and Associate Director, and Richard Young, Orthotic Instructor.

Among the consultants who will assist in the training are: Dr. Jacquelin Perry, orthopedic surgeon (who appeared on the program of the 1957 Assembly), Lois Barber, O.T.R., Miss Hazel Adkins, R.P.T.; Russell Forney, M.S., Counseling Psychologist; Miss Viola Robins, R.P.T.; Janet Stone, O.T.R.; Albert D. Wing, B. E., Research Engineer, Miss Elizabeth Yerxa, O.T.R.

Curriculum and Facilities

Students have the advantage of living and receiving their training at Rancho Los Amigos Hospital, which has been designated by the National Foundation of Infantile Paralysis as a Respiratory Center. The orthotic department of Rancho is new and excellently equipped. The Institution is located on a college-like campus in Los Angeles County, California.

The curriculum is based on a forty-hour week. In the beginning the students will be spending more time in the class room than in the laboratory. As the student advances more time will be devoted to the making and fitting of ortheses and less time in the lecture room.

A typical day in the beginning session will start at 8:00 A.M. and finish at 4:30 p.m. The first two hours will be spent in the classroom and the subjects covered will be gross anatomy and osteology, followed by a fifteen-minute break. Following the break, class is resumed and in the remaining hour and forty-five minutes, subjects of tools and instruments will be covered such as the ABC's of hand tools, shop mathematics and measuring devices. Following the one-half hour lunch period, class will be resumed and the subject of metallurgy will be discussed for one hour. This ends the lecture time for the day, and the balance of the afternoon will be spent in the laboratory applying theory learned to making assistive devices such as swivel spork, pencil holder, razor holder, comb holder, etc.

NORTHWESTERN UNIVERSITY ANNOUNCES CHANGE IN SCHEDULE OF B/K COURSES

Northwestern University announces a change in the dates of its classes in Below Knee Prosthetics, as given below. These are the classes which were announced in the June issue of the *Journal*:

The Northwestern classes in Below Knee Prosthetics will now meet on the dates given below:

February 8-19	611	B/K Prosthetics for Prosthetists
February 15-19	612	B/K Prosthetics for Therapists
February 15-19	613	B/K Prosthetics for Physicians and Surgeons
March 7-18	611	B/K Prosthetics for Prosthetists
March 14-18	612	B/K Prosthetics for Therapists
March 14-18	613	B/K Prosthetics for Physicians and Surgeons
May 9-20	611	B/K Prosthetics for Prosthetists
May 16-20	612	B/K Prosthetics for Therapists
May 16-20	613	B/K Prosthetics for Physicians and Surgeons

STUDY OF KNEE UNITS

William McIlmurray and Henry Gardner, Veterans Administration

Prosthetics Center, New York

In the December 1957 issue of the Orthopedic and Prosthetic Appliance Journal, we outlined the VA Prosthetic Center's plans to study and classify prosthetic knee units available commercially. Since that time, the following eleven (11) units have been submitted, primarily as a result of the article:

1. C. H. Davies Company—Davies Metal A/K Knee
2. Fillauer Surgical Supplies—Vari-gait—V100
3. Henzel Artificial Limb Corp.—Polymatic Knee
4. K & K Prosthetic Supplies Inc.—Adult Knee Assembly, No. 8200C
5. K & K Prosthetic Supplies Inc.—Lang Knee
6. Kingsley Manufacturing Co.—Kingsley Western Knee
7. The Knit-Rite Company—Knit-Rite Knee and Shin Assembly
8. John J. McCann Company—A/K Wood Set-Up with Aluminum Knee Control
9. Otto Bock Orthopedic Industry Inc.—Otto Bock Safety Knee
10. U.S. Manufacturing Company—A/K Knee Shin Assembly
11. U.S. Manufacturing Company—Hydra-Cadence Unit

For the first phase of the study, a catalog-type format has been developed to describe the knee units. Drafts of descriptive material and drawings of two units submitted for evaluation are presented here (Numbers 2 and 9 in above list). These drafts have been submitted to the respective suppliers for their comments and approval prior to this publication. VAPC intends to publish material such as this from time to time.

The second phase of the study will involve fittings to amputees in an attempt to determine advantages and limitations of each knee unit under actual practical conditions. Ranges of motion and the nature of swing and stance phase controls will be determined, and data from these tests will be published with the consent of the manufacturer at some future date as addenda to the first phase of the evaluation.

The functional code shown in the classification was developed jointly by the VAPC and the University of California, Berkeley and described in the report, *A Functional Classification of Lower Extremity Prosthetic Components As Proposed By The VAPC & UC-B*, dated October 1, 1958 by F. A. Witteck, VA Prosthetics Center. We wish to extend our thanks to Mr. A. Bennett Wilson, Secretary, OALMA Committee on Advances in Prosthetics who assisted in setting up the enclosed format.

We again urge manufacturers, wholesalers, and distributors, of A/K prosthetic knee set-ups who have not done so already to include their devices in the VAPC study by sending a sample of each device to the Chief. VA Prosthetic Center, 252 Seventh Avenue, New York 1, New York. Also any comments that will help make this type of presentation more useful to clinic teams will be appreciated.

THE VARI-GAIT–V100 KNEE UNIT

Nomenclature: Vari-Gait—V100
Functional Code: S-4-RB-RFE
Source of Supply: Fillauer Surgical Supplies (German Import)
930 East Third Street, Chattanooga 1, Tenn.

General Description: Basically willow wood construction, 18-½" overall length.

Functional Description:

1. *Swing Phase:*
   a. *Swing Control (friction):* Adjustment screw *E* (Figure 1) forces brake shoe lining *C* to engage fibre braking surface *B* of knee. The eccentric contour of the knee provides variable mechanical friction through the swing phase.
   b. & c. *Extnsion Bias and Resistance to Flexion (excessive heel rise):* Wire yoke (stick type) linkage engages two (2) rubber bumpers; bumper *H* resists excessive flexion and aids extension bias bumper *G*.
   d. *Terminal Deceleration or Impact Control:* Elastic terminal deceleration strap *I* is attached to wire yoke *F* damping full knee extension. Terminal deceleration is also provided by eccentric contour of fibre braking surface *B*. Rubber bumper *J* engages metal knee stop providing a cushion against terminal impact.

2. *Stance Phase:*
   a. *Weight Bearing Brake:* Dual compression springs *A* permit knee assembly to drop engaging fibre braking surface of knee *B* with brake shoe *C* of shank. Brake adjustment bolt *D* has dual eccentric surfaces acting against compression spring *A* controlling space between *B* and *C*.

Description of Sub-Assemblies:

1. *Knee Section:*
   a. Width (Bolt): Various sizes, depending on calf measurement.
   b. Length: 5" from top to knee center.
   c. External Contour and Top Diameter: Partially shaped, top diameter 6".
   d. Internal Contour: 3" depth, 3" diameter.
   e. Bushing: Phenolic bushing (2 halves) in a two-piece plastic housing.
   f. Friction:
      1. Swing Phase: Adjustment for terminal deceleration.
      2. Stance Phase: Contoured fibre knee surface mates with balata belt brake shoe to provide weight bearing brake.

   Remarks: Three-piece laminated willow wood knee section.

2. *Shank Section:*
   a. Length: 14" from base to knee center.
   b. External Contour & Base Diameter: Partially shaped, 3¼" x 2¾" oval shape.
   c. Internal Contour: Hollow (finished).

   Remarks: Transverse hardwood dowel serves as platform for extension bias mechanism. Transverse metal rod serves as anchorage point for elastic strap.

3. *Side Straps:*
   a. Material: Flat Bar — Carbon Steel
   b. Bar Size & Shape: 5" long modified flat "T" bar.
   c. Joint Head Size: 29/32 diameter x ¼" head.

   Remarks: Joint heads plated — Permanently attached.

4. *Knee Control Assembly:*
   a. Knee Bolt: Slotted carbon steel expansion bolt ⅝" o.d., external thread (for side strap). Internal thread left hand for lock screw (bolt). Internal thread for expansion cap screw (friction).
   b. Bearing and/or Housing: Full plastic bearing (two-piece) with (plastic) swing lever and carbon steel bolt, mounted in phenolic bearing. Plastic axis bearing, spring loaded.

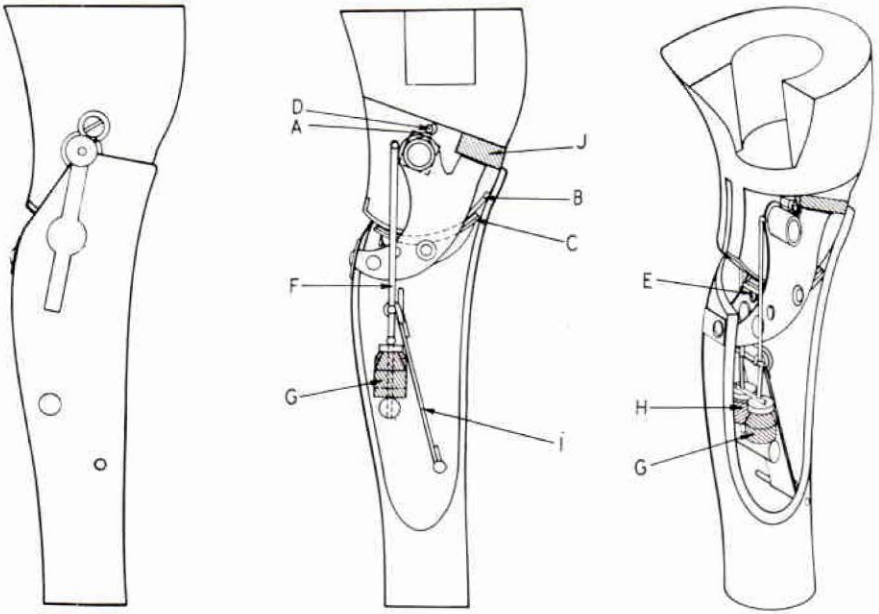


Fig. 1—Schematic Drawings of the Vari-Gait V100 Knee.

c. Linkage Mechanisms: Plastic covered carbon steel linkage with plastic yoke to compress extension bias spring; a 3/16" carbon steel linkage (bearing) bolt is secured by two round nuts. Plastic covered carbon steel guide bolt with threaded end to provide spring adjustment.

d. Elastic Resistors: Extension bias control mechanism having a compression spring with plastic T bar. Rubber cushion rings for plastic (axis bearing) mountings.

e. Hydraulic: None

5. *Knee Stop Control and/or Terminal Deceleration*

a. Stick: None

b. Rubber or felt: Rubber inserts in knee and shank sections.

c. Straps or Cord: None

d. Metal Knee Control: None
Remarks: Lower shank section rubber stop engages knee section rubber stop to cushion terminal impact.

Special Considerations:

1. *Physical Dimensions:*

a. Supplied in rights and lefts, can be ordered in knee width size 3½ in. and calf sizes 30, 32, 34, 36, 38, 40 centimeters.

b. Components and parts are dimensioned in metric system.

2. *Functional Controls:*

All controls provided are contained within the unit.

3. *Adaptability:*

a. This unit can be used in conjunction with most foot-ankle units currently available.

b. Will accommodate A/K stumps to within approximately 2" of knee center.

c. Can be used with A/K adjustable leg and alignment duplication jig.

THE OTTO BOCK SAFETY KNEE UNIT

Nomenclature: Otto Bock Safety Knee
Functional Code: S-4-RFB-RFE
Source of Supply: Otto Bock Orthopedic Industry, Inc. (German Import)
219 Fourteenth Ave. N., Minneapolis 11, Minn.
General Description: Basically willow wood construction, 18" overall length.
Functional Description:

1. *Swing Phase:*
   a. *Swing Control (friction):* Slotted bolt *F* (Figure 2) expanded in plastic knee bolt bushing by internal cap screw provieds adjustable mechanical friction which is constant through the swing phase.
   b. *Extension Bias:* Plastic yoke (stick type) *G* engages plastic spring compressor *H*. Compression of spring *I* provides extension bias.
   c. *Resistance to Flexion (Excessive heel rise):* Combination of paragraphs graphs *a* and *b* provide resistance to flexion.
   d. *Terminal Deceleration or Impact Control:* Rubber bumpers *J* and *K* provide cushion against terminal impact.
2. *Stance Phase:*
   a. *Weight Bearing Brake:* Compression of spring "A" permits knee assembly to drop, engaging braking groove *B* (in knee section) with braking segment *C* of shank. Pivot bolt *D* permits vertical movement of (floating) knee section; adjustment pin *E* governs space between *B* and *C*.

Description of Sub-Assemblies:

1. *Knee Section:*
   a. Width (Bolt): 3½"
   b. Length: Approximately 5" from top to knee center.
   c. External Contour and Top Diameter: Partially shaped, top diameter 6".
   d. Internal Contour: 3" depth, 2½" diameter.
   e. Bushing: Plastic knee bushing (2 piece).
   f. Friction:
      1. Swing Phase: Internal type of Knee Bolt Expansion.
      2. Stance Phase: Female braking groove (hardwood) mates with hardwood male member (plastic lined).

   Remarks:
2. *Shank Section:*
   a. Length: 13" from base to knee center.
   b. External Contour: Partially shaped, 3¼" x 3" oval base. Available in calf circumference of 30, 32, 34, 36, 38, 40 centimeters.
   c. Internal Contour: Hollow (finished).

   Remarks: Male component of hardwood braking segment engages with female component of knee segment to provide weight bearing brake.
3. *Side Straps:*
   a. Material: Flat Bar — Carbon Steel
   b. Bar Size & Shape: 5" long modified "T" bar.
   c. Joint Head Size: 31/32" o.d., 7/32" thick.

   Remarks: Joint heads plated — Permanently attached.
4. *Knee Control Assembly:*
   a. Knee Bolt: Carbon steel, hollow bolt, ⅝" o.d., external thread on medial side, internal thread on lateral side for lock screw.
   b. Bearing and/or Housing: Two section plastic knee bolt bearings (floating, spring loaded) functioning within two-piece plastic bushings.
   c. Linkage Mechanisms: Carbon steel 5/32" o.d. wire frame forms two guide rod ends. Two rubber bumpers are installed on guide rod ends to provide extension bias and knee flexion control.
   d. Elastic Resistors: An elastic strap is attached to the wire frame to permit terminal deceleration. Two springs located in the plastic bushings are adjusted by a cam rod to control the amount of knee bolt excursion. Weight applied to knee section depresses springs & allows contoured fibre surface to engage brake shoe to provide weight-bearing brake.

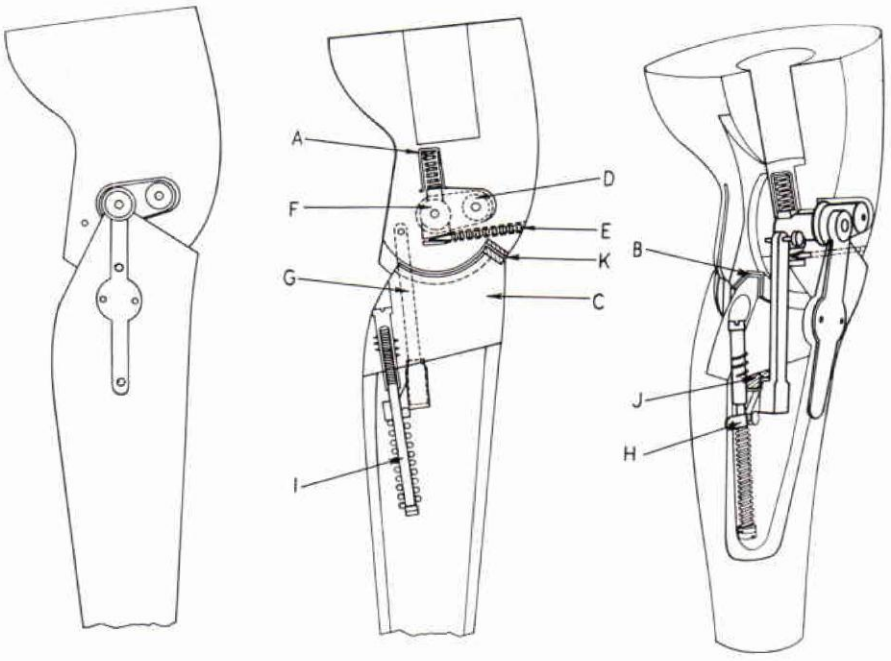


Fig. 2—Schematic Drawings of the Otto Bock Safety Knee.

e. Hydraulic: None

Remarks: Cam rod has a graduated screw adjustment indicator (for springs).

5. *Knee Stop Control and/or Terminal Deceleration*

a. Stick: None

b. Rubber or Felt: Rubber on knee section engages with metal knee stop control.

c. Straps or Cord: None

d. Metal Knee Control: Carbon steel sheet metal provides pivoted attachment for brake shoe.
Remarks: Brake shoe has screw type adjustment to control terminal deceleration.

Special Considerations:

1. *Physical Dimensions:*

a. Supplied in rights and lefts, can be ordered in various knee widths (width determined by circumferential calf measurements).

b. Parts and components are dimensioned in metric system.

2. *Functional Controls:*
All controls provided are contained within the unit.

3. *Adaptability:*

a. This unit can be used in conjunction with most foot-ankle units currently available.

b. Will accommodate A/K stumps to within approximately 2″ of knee center.

c. Can be used with A/K adjustable leg and alignment duplication jig.

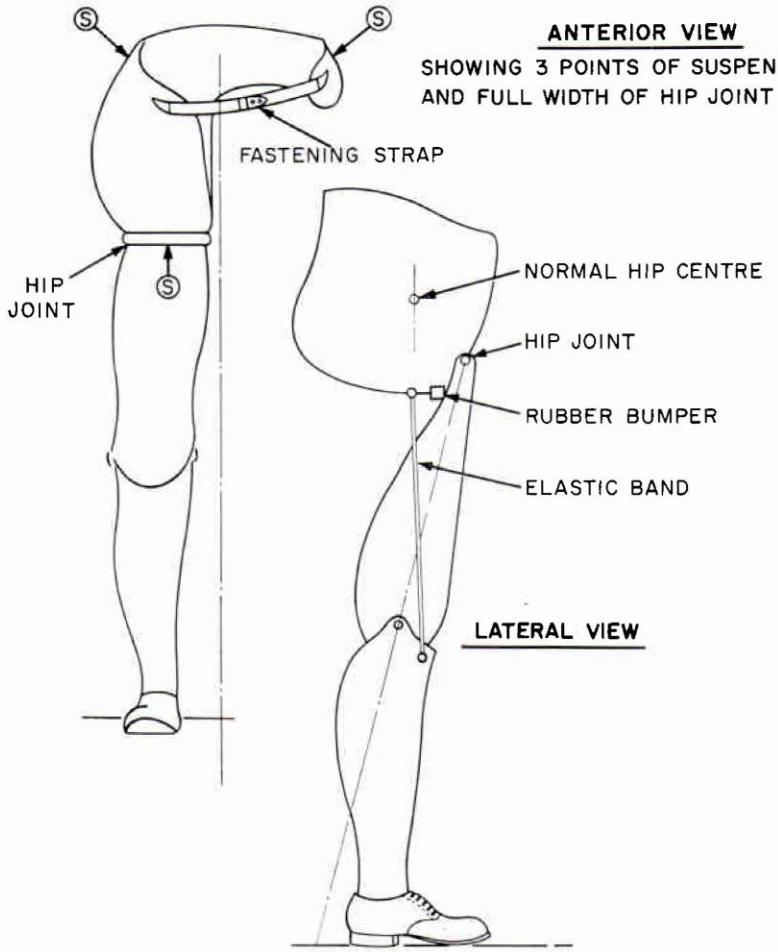
The Use of a Bilateral Canadian-Type Hip-Disarticulation Prosthesis for Congenital Absence of Both Lower Extremities

A Case Report

By Cline D. Hensley, Jr., M.D., Wichita, Kansas

Reprinted by permission from "The Journal of Bone and Joint Surgery," Vol. 41-A, No. 3, pp. 417-421, April 1959.

Rehabilitation of the amputee after hip disarticulation has long been delayed by inadequate prosthetic appliances. Until recent improvements, the



FUNCTIONAL FEATURES OF CANADIAN HIP DISARTICULATION PROSTHESIS

Fig. 1

A line projected through the centers of the hip and knee joints passes posterior to the heel. Modified version of drawing appearing on page 4 of The Canadian Type Hip Disarticulation Prosthesis by James Foort and C. W. Radcliffe. Prosthetic Devices Research Project, Institute of Engineering Research, Series II, Issue 28. Berkeley, The University of California, 1956.

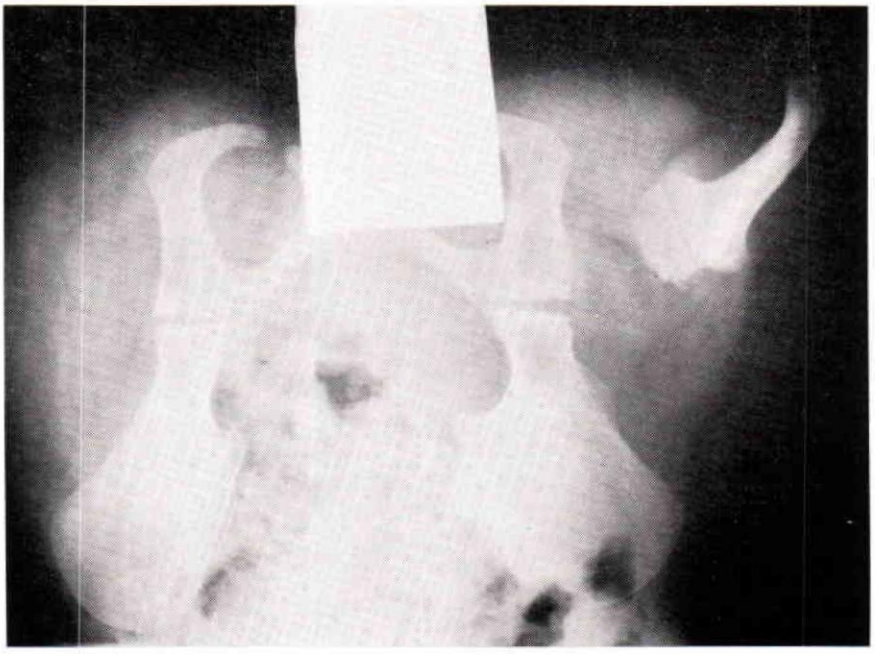
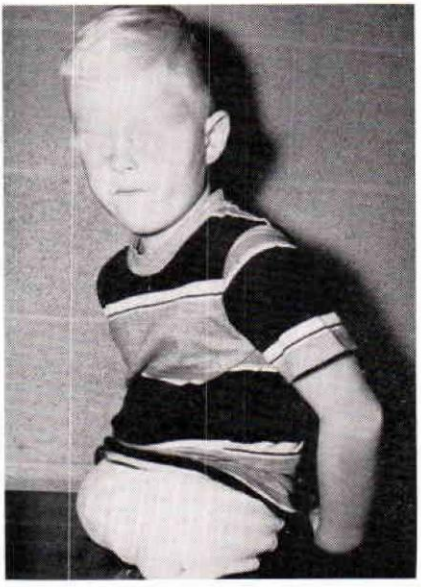


Fig. 2
Anteroposterior view of the pelvis.



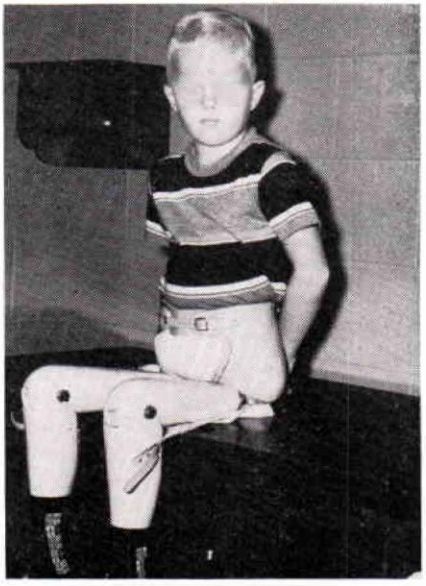


Fig. 3: Five-year-old boy with congenital absence of both lower extremities shown without the prosthesis.

Fig. 4: View of the prosthesis with the patient sitting.

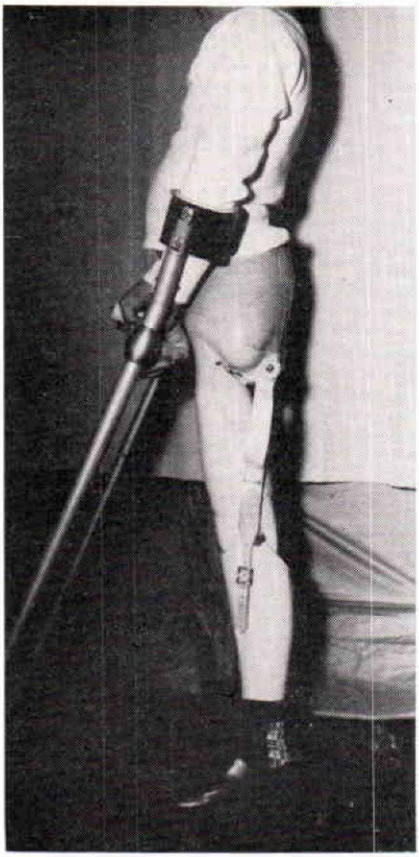


Fig. 5

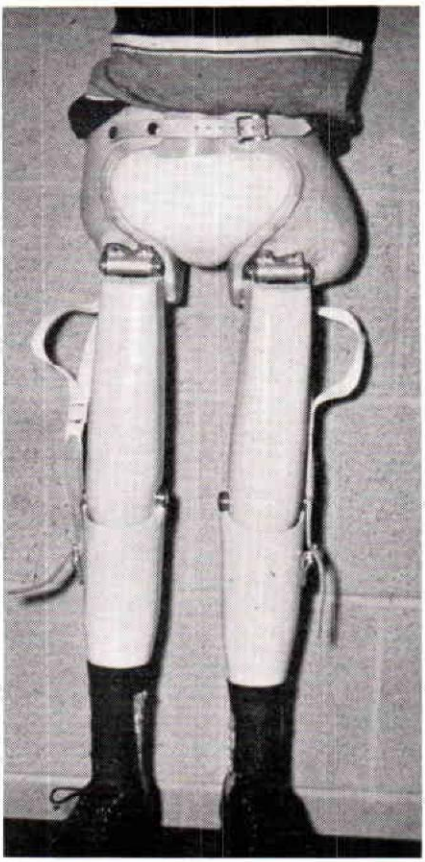


Fig. 6

Fig. 5: Lateral view of the patient standing wearing the prosthesis. There is forward placement of the hip and posterior placement of the knee.
Fig. 6: Front view of the prosthesis with the patient standing.

prosthetist's armamentarium was limited to the tilting table or the saucer socket prosthesis. Both of these devices required the use of a pelvic belt and manually controlled hip lock. It was difficult or impossible to achieve an acceptable gait with either of these prostheses, and motions of sitting and standing were hampered because of the necessity to engage and release the hip lock.

These difficulties are, of course, increased in the case of the amputee with bilateral hip disarticulation. These factors prevented the successful application of a prosthesis to the patient reported here until the advent of the Canadian-type hip-disarticulation prosthesis.

The Canadian prosthesis was developed and reported by McLaurin in 1954. The Prosthetic Devices Research Project at the University of California in Berkeley popularized this prosthesis in the United States. Briefly, the prosthesis was designed to stabilize the hip and knee by alignment of the weight-bearing line posterior to the prosthetic hip joint and anterior to the knee

axis with the patient standing (Fig. 1). Foort and Radcliffe gave a detailed account of the prosthesis; specific information concerning evolution, construction, and experience with the prosthesis is available. Successful demonstrations at the University of California at Los Angeles prompted the use of the Canadian prosthesis in the patient reported.

K. R. S. was seen in the Amputee Clinic sponsored by the Kansas Crippled Children's Commission in December 1956. The child's age at that time was four years and nine months. He had congenital absence of both lower extremities and congenital absence of one finger of the right hand. He had excellent control of both upper extremities and good function of the right hand in spite of the relatively minor congenital deformity of the hand. Normal alignment and control of the trunk was present. A short, deformed atavistic femur was present on the left with dislocation of the head out of the acetabulum to a position against the upper portion of the ilium (Fig. 2). On the contralateral side no femur was present.

The child had been fitted elsewhere with a pair of shortened prosthetic appliances designed to provide balance and some elevation of the trunk from the floor. In September 1956, these appliances had been lengthened and a foot and ankle assembly had been added. The mother stated that the result was unsatisfactory because the child was unable to maintain his balance, and discomfort resulted from contact between the projecting stub of the femur and the prosthesis on that side. The child was unable to stand or walk with the prostheses because of discomfort and subsequently they were discarded.

In January 1957, the construction of the bilateral Canadian-type hip-disarticulation prosthesis was undertaken by the prosthetist, Mr. F. L. Lake, in cooperation with the author. Fabrication and fitting of the socket was done according to the method described by Foort and Radcliffe. The length of the prosthetic limbs was determined by reference to height charts of normal children, and the ratio of the thigh to the leg was derived by measuring other children in the amputee program. The two sides of the socket were connected by a flexible leather hinge posteriorly and by a strap and buckle anteriorly. A check socket was used in the original fitting of the prosthesis. The final socket had an initial satisfactory fit and did not require alteration in nine months of follow-up study. The actual construction of the prosthesis was delayed some months while an effort was made to learn of any previous experiences with the Canadian-type hip-disarticulation prosthesis for bilateral amputees.

In September 1957, the prosthesis was delivered and training of the child in the use of the appliance began. Out-patient training was conducted in the Physical Therapy Department of St. Joseph Hospital, Wichita. Originally, the training periods were daily; within one month they were reduced to three times a week; and after two months they were discontinued. The child was taught to walk with Canadian crutches which could be easily disengaged in the event he fell. He was also instructed to use a walker.

In December 1957, the child went to school for the first time and was able to attend on a half-day basis for the remainder of the school year. At the time of writing, he wore the prosthesis for three-hour intervals for a total of six to eight hours during each day. He walked with a four-point gait with crutches or a walker. He accomplished this by lifting the trunk slightly with the hands and by a combination of flexion and internal rotation of the pelvis to initiate the swing phase of gait. His gait was cosmetically acceptable, but slow. The child could also walk well with a swing-through gait using the walker. He was able to walk approximately one-half block with crutches,

but he exerted more effort than was necessary with the walker. He could walk approximately one block with the walker before requiring rest. He was unable to climb stairs or step off curbs and did not play actively wearing the prosthesis.

Nine months after the delivery of the prosthetic appliance, the child was able to put the legs on after breakfast and wear them throughout the morning. He rested without the legs during lunch hour and during a period in the afternoon. The prosthesis was again fitted late in the afternoon and for the evening meal. The child's mother stated that he was becoming more proficient in the use of the prosthesis, and it is the opinion of the prosthetic team that no undesirable habits have appeared thus far in the relatively short follow-up period. The child has not complained of pain and has had no evidence of skin irritation at the point of contact between the prosthesis and the stump. No shoulder harness or other harness above the waist was required. He was able to sit in a balanced position and, without assistance, could sit down from a standing position. He was also able to stand up in the walker from a sitting position without assistance. The child was also able to stand alone and balance without supporting himself with crutches. In school, he has been able to stand up from a sitting position in a kindergarten chair by holding on to a table or other object.

The basic design of the prosthesis is that described by Foort and Radcliffe with modifications required because of the presence of bilateral deformity. Although the follow-up time has been short, the use of this device has, in my opinion, enabled this child to attain a degree of independence which has previously been impossible. It is expected that the present socket will require revision within the year because of growth of the child. The construction and fitting of the prosthesis did not entail as many difficulties as were anticipated. In gait-training, an effort was made to encourage the child in the use of a four-point gait with the walker.

Note: The author is indebted to Mr. F. L. Lake, C.P.O., of the Hanger Artificial Limb Company for the technical design and fabrication of the prosthesis used in this instance. Suggestions from Mr. John Bray, prosthetics instructor at the University of California at Los Angeles, were also utilized in the final design of the prosthesis. Training was supervised by Miss Naomi Wesson, Physical Therapy Department, St. Joseph Hospital, Wichita.

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Postscript:

FITTING BI-LATERAL CANADIAN HIP-DISARTICULATION PROSTHESES

By F. L. LAKE, C.P.O.

This boy was nearly 5 years old when we first examined him in a Prosthetic Clinic. He had been previously fitted with pylon type prostheses, (no knee joints) but due to excessive weight, and loose fitting sockets, he was unable to stand or walk with any degree of comfort, and required help at all times.

Canadian type limbs were prescribed by the clinic, in January, 1957. Before proceeding with the fabrication of the prostheses, we had some very valuable advice on socket design from John Bray, Prosthetic Instructor at U. C. L. A.

Fitting was a very slow process. The patient had built up a strong antagonism due to the discomfort experienced on the old limbs, and this had to be overcome gradually.

This was a clinic team project. The results show how much more can be accomplished by the close cooperation of the team. Most of the credit should go to Dr. Hensley, Miss Naomi Wesson, RPT., and to Herman Ellis, of my staff.

COURSE IN REHABILITATION CARE OF THE CHRONICALLY ILL PATIENT

A one-week course for physicians, devoted to the rehabilitation care of the chronically ill patient, will be held November 16-20, 1959 under the auspices of the Department of Physical Medicine and Rehabilitation, New York Medical College—Metropolitan Hospital Center. The course will offer a review of the principles and techniques in the medical care of the chronically ill to meet the needs of the clinician, medical administrator and Public Health physician. Course content will include: Physiology and Pathology of Chronic Diseases, Nutrition and Dental Care, Management of Bedridden and Incontinent Patients, Home Care Programming, Community Needs and Resources, Public Health Aspects, Self-Care Activities, Prosthetic Devices and Psychological and Social Aspects.

The tuition fee is $100.00. Traineeships for tuition, maintenance and travel are available through funds provided by the U. S. Office of Vocational Rehabilitation. Applications for the course and traineeships can be obtained directly from Dr. Jerome S. Tobis, Chairman, Department of Physical Medicine and Rehabilitation, New York Medical College, 1 East 105th Street, New York 29, New York.

THE JOE KADLEC STORY

By Paul Leimkuehler, C.P., Cleveland, Ohio

The story of Joe Kadlec of Cleveland is important to the limb and brace profession, illustrating as it does the progress that has been made in our field over a period of twelve years. Joe, a double A/K amputee, tried twice unsuccessfully to wear two above knee prostheses. Refusing to give up, he tried a third time. The third try was successful.

Joe's bout with artificial limbs began on February 16, 1929. He was thirteen years old then. Involved in an automobile accident which pinned him against a building, the amputation of his left leg was necessary. For some time afterwards, he wore the above-knee, shoulder-strap type of prosthesis successfully, without the use of a cane. Then, on December 17, 1945, his right leg was amputated above the knee, due to poor circulation and swelling of the right leg.

Joe had an 11-inch long stump on the right side and a 9-inch long stump on the left side and was fitted with two above-knee pelvic belt type of prosthetic appliances, incorporating pelvic joints that had 4-way motion. Joe tried for about six months during late 1946 and early 1947 to wear these limbs with the aid of crutches. He finally gave up the effort.

The Ohio State Bureau of Rehabilitation came into the picture in November 1949. After an analysis, I decided that the double action pelvic joints

After three tries, Joe Kadlec successfully fitted and confident, is ready to meet the public, Joe owes success in this third attempt to three factors: Adequate training, financial aid, and the addition of new knees to his old prosheses.

were causing considerable trouble, the bands were flexible enough so that they would not stay the proper shape to fit his pelvis. Two new pelvic joints and metal bands were installed. For a period of a few months, Joe tried again to use these artificial limbs. He reported that they were only slightly better than before and wore them only on special occasions, perhaps three to six times a year. Otherwise, he walked on his hands, doing auto repair work around his home, and managing a variety of odd jobs in his home. This was the picture between 1949 and 1956.

Fortunately, Joe belongs to a Slovak Organization, which noticing that he wasn't using his prosthetic appliances, referred him once again to the Bureau of Vocational Rehabilitation. This time, the Bureau was able to send Joe to the Amputee Clinic at University Hospital for analysis.

The clinic decided that the Bock-type friction locking knees might prove helpful to Joe Kadlec. The clinic wrote the prescription, the Bureau of Vocational Rehabilitation issuing authorization to cover the costs.

The Amputee Clinic also decided that Joe should have supervised training in the use of his appliances; and this was provided by the Vocational Guidance and Rehabilitation Services, formerly known as the Cleveland Rehabilitation Center.

In November 1956, Joe received the original prostheses with the new Bock knees installed, in the unfinished condition. They were lined up properly and fastened together, but not rawhided or painted, since we expected to be dealing in corrections. During the 40-hours of training he received in the use of these appliances, he was taught how to get up from the floor, how to walk up and down stairs and ramps, how to fall properly, and how to master all types of activities in daily routines that are dependent upon legwork.

Joe reports that he learned how to master activities he thought impossible for any amputee. Three minor adjustments were carried out during 1957; and, finally, in May 1958, he brought the limbs in for finishing.

Since then, he has used the limbs almost everyday, although he does not wear them continuously each day. He finds that it is still easier to do motor work on cars without the limbs. Whenever he leaves his home—morning, afternoon, or evening—he wears his artificial limbs. He reports that he has been wearing them more and more as time passes, and considers the possibility of wearing them full time now that they are finished.

Joe feels that the Bock knees have answered his major problem. He is also enthusiastic about the special training he received in the use of these appliances. He says that he can now stand up and relax and put on a jacket, without the fear of falling he knew when wearing the standard, single-bolt knees. With the Bock knees, he reports he can put his weight on the sockets, relaxing without fear of the knees buckling. Prior to receiving the Bock knees, he would be soaked in perspiration by the time he had put on his prostheses and continued dressing. Now he manages these activities in a relaxed manner that offsets nervous strain.

Today, at 43 years of age, Joe Kadlec weighs 114 pounds. Weightwise, he doesn't have the disadvantage of many amputees. During the past years, he has attended sports events at Cleveland Stadium and the Public Auditorium. The stadium has ramps with 20 degree angles; at the auditorium, the ramps are about 15 degrees. He goes to theatres, walks on rough terrain and city streets, and has done three miles of walking about Brookside Park Zoo in

Cleveland. He has traveled to Pennsylvania; recently, he served as Best Man at a wedding.

While he can walk about his house without a cane, he prefers two canes when walking out of doors.

I would like to point out that Joe realizes that his first two failures with A/K limbs were not due to any feeling that it was impossible to use such limbs successfully; in fact, a close friend of his has been walking on two above-knee limbs with shoulder-strap control for the past 30 years.

Joe Kadlec's case required that special help that is becoming more and more the heart of our profession. In spite of the fact that Joe had been unsuccessful in wearing two above knee prostheses over a twelve year period, the combination of the Bock knees, the analysis and decisions of the Amputee Clinic at University Hospital, the financial assistance of the BVR, and the special training at Vocational Guidance and Rehabilitation Services all assisted in overcoming his problem. Beyond that, there had to be hope and faith on Joe's part, and patience and determination to try a third time. In our profession, these are the basic ingredients of success.

PENNSYLVANIA DEDICATES NEW REHABILITATION CENTER

Reported by K. B. NELSON

On April 16, 1959 the Eight Million Dollar Rehabilitation center was dedicated with speakers and tours all day. The ceremonies were attended by Pennsylvania State Officials and important guests in the field of rehabilitation both state and national. The general public was also well represented.

The center is a beautiful sprawling building located just outside of Johnstown, Pennsylvania. It is fabulous in planning and decor with a capacity of 350 beds. The rehabilitation area is constructed without steps both in and out of doors for crutch and wheelchair patients. It has bright and cheerful wards and private rooms as well as relaxation and entertainment areas. Facilities for medical treatment and counseling, mental and physical therapy, and the training in most trades and everyday living for men and women are ample and modern.

This building is proclaimed to be the best of its kind in this country and after a tour of it, one certainly can believe it. The center is operated by the Pennsylvania Bureau of Vocational Rehabilitation under Federal and State laws and is a part of the Commonwealth's Department of Labor and Industry. The Bureau is governed by a ten-member board headed by William L. Blatt, Jr., Secretary of Labor and Industry. Charles L. Eby is Director of the Bureau.

OALMA AND CERTIFICATION DISPLAY AT CONGRESS OF PHYSICAL MEDICINE

At the OALMA Booth—Dr. Philip A. Klieger, Medical Consultant to OVR, Dr. Frederick J. Kottke, who is President of the Congress of Physical Medicine and A. P. Gruman, Past President of OALMA.

Mr. Gruman is showing the doctors the OALMA Survey of Prosthetic Clinics.

OALMA and the Certification Board were prominently represented at the American Congress of Physical Medicine and Rehabilitation during its 1959 session at the Hotel Leamington in Minneapolis August 30 to September 4.

Dr. Frederick J. Kottke was elected President of the Congress, and will preside at its 1960 session in Washington, D. C. Dr. Kottke is Head of the Department of Physical Medicine and Rehabilitation at the University of Minnesota.

Other officers named by the Congress are: Doctors Donald J. Erickson, Rochester, Minn.; Jerome S. Tobis, New York; Louis B. Newman, Chicago; Charles D. Shields, Washington, D. C; and William Erdmann, Philadelphia, Pa., vice presidents; Frances Baker, San Mateo, Calif., secretary, and Frank H. Krusen, Rochester, Minn., treasurer.

The American Academy of Physical Medicine and Rehabilitation, which meets in conjunction with the Congress, has picked Dr. Clarence W. Dail of Los Angeles as President, and Dr. Fay Piaskoski as President-elect. The Secretary is Dr. Harriet Gillette of the University of Florida, Gainesville. (Dr. Gillette will be remembered as a program participant in the 1958 OALMA Assembly).

The educational displays were a feature of the 1959 session of the Congress of Physical Medicine and Rehabilitation. Here we see C. E. Medcalf, C.O., Dr. Harold W. Glattly, Richard Bidwell, C.O. and P., and Dr. Walter J. Zeiter, Executive Director of the Congress of Physical Medicine.

The technical papers presented included one by Dr. Vernon L. Nickel on the "Artificial Muscle." (Dr. Nickel of Rancho Los Amigos Hospital is also a member of the American Board for Certification.) Describing this external device attached to the arm, wrist and fingers, Dr. Nickel said, "We can substitute in this way for the human pinch muscles. The ability to pinch or grasp is a very important ability. And we can substitute for the muscles that bend the elbow. There are other possible uses, but we have much work ahead.

"I want to emphasize when I say we can substitute for the normal muscle, I do not mean we can replace it. No one can. We can give a person the very simplest, elementary pinch motion, and that's all.

"But we can sometimes give him something where he had nothing."

Exhibits

Among the technical exhibits of interest were those of Pope Brace Division, where Clyde Peach reported special interest in the Newington Brace and in the Milwaukee Brace; the Otto Bock Orthopedic Industry where Lorrin Madsen was kept busy describing the Otto Bock Alignment Devices and the S. H. Camp Company where Bob Miller was in charge.

Scientific Exhibits

Among the scientific exhibits of interest to orthotists and prosthetists were:

"Clinical Prosthetics," a display arranged by William M. Bernstock and Dr. Harold W. Glattly, and based on the work of the Committee on Prosthetics Education and Information and the Veterans Administration Research Program. OALMA Members who assisted in this display included Past President A. P. Gruman, Past President Lucius Trautman and Robert Gruman of the Winkley organization.

"Prosthetics-Orthopedic Clinic Teams in the United States," an exhibit of OALMA and the American Board for Certification, arranged by Lester A. Smith, Assistant Director of the two organizations. Richard Bidwell of Milwaukee and Mr. C. E. Medcalf of Minneapolis, John De Bender of Chicago and Oscar Chelberg were on duty at the display booth.

Film On A Bilateral Upper Extremity Amputee

Dr. Bror S. Troedsson presented an interesting color film, "Total Rehabilitation of a Bilateral Upper Extremity Amputee." This is the case of a farmer injured in a tractor accident, leaving him with a right shoulder disarticulation and a high upper left extremity amputation. Scenes of the film include the arrival at the hospital; rehabilitation planning; prosthesis, examination and prescribing; pre-prostheses, physical therapy and occupational therapy; visit to prosthetist; pre-prosthetic self-help devices; delivery and operation of prostheses; prostheses training; automobile driving devices, and successful completion of rehabilitation. Chester Nelson of Ray Trautman and Son, is the prosthetist in the film. It is dignified presentation which should help arouse support for rehabilitation programs.

REVIEWS

VOCATIONAL REHABILITATION FOR THE PHYSICALLY HANDICAPPED

by: Louise M. Neuschutz—Published by Charles C. Thomas, Springfield, Ill., 1959. 136 pages, illustrated. Price: $5.75.

Reviewed by Robert R. Plattner, C.O., Peoria, Ill.

A new approach to an old problem is brought out in this book on the physically handicapped. Formerly a field that was limited because of lack of knowledge on the part of the public at large, and employers, with regard to types of handicaps and possibilities of placement, the tremendous possibilities of the handicapped and older persons are forcefully brought to the attention of the reader.

As is pointed out in the foreword by Dr. Phelps, the importance of this book cannot be over-emphasized, because of the many new and expanded agencies in the field of vocational rehabilitation, from the medical viewpoint, the employer, and vocational guidance agencies.

Of particular interest to the Orthotist and Prosthetist will be the section of the book pertaining to the orthopedically handicapped and the cerebral palsied. The author gives an interesting factual account of specific problems as well as solutions in both fields. She shows a very sensible approach to the problems by pointing out the frustration that might arise by trying to accomplish the impossible. Yet she gives an encouraging and interesting outlook on the overall field of rehabilitation.

UNUSUAL AMPUTEES AND PROSTHESES DISCUSSED AS ORTHOPEDIC SURGEONS MEET

By F. L. Lake, C.P.O.

Unusual amputees and unusual prostheses—with patients to illustrate—was a subject creating much interest at the annual meeting of the Russell Hibbs Society of Orthopedic Surgeons in Oklahoma City, May 29-30, 1959, at the University of Oklahoma School of Medicine.

The Society is composed of 35 orthopedic surgeons from various sections of the United States, interested in the many phases of research in all types of orthopedics.

At the session on prosthetic appliances, the following patients were shown:

1. Boy, age 22 months, congenital absence of left leg below knee, congenital deformity of right leg. He was fitted with a BK wood limb, with plastic thigh corset, on the left, and the right deformed limb was fitted with a Canadian Symes limb. SACH feet were used on both.

2. Boy, age 14 years, knee disarticulation, fitted with a molded plastic, end-bearing socket, quadrilateral shape with ischial weight-bearing seat. Socket made rigid in posterior area, with the anterior area flexible with laced front. SACH foot was used.

3. Boy, 11 years old, congenital shoulder disarticulation. Fitted with a plastic arm, with shoulder abduction hinge socket made to extend across the back, below the 7th cervical vertebrae, over the opposite shoulder and clavicle, giving greater stability.

4. Boy, age 3 years, bi-lateral congenital absence of both forearms, and congenital deformities in both lower extremities. He was fitted with AE arms, locking elbows, friction wrists, and wafer hooks. Right leg was fitted as a below-knee, with molded plastic socket, locking knee joints, with the side straps extending to the ankle joint, molded weight bearing thigh corset, wood foot. Left leg fitted with a special prosthesis, wood foot with angle joint, side straps extending from the ankle joint to upper thigh, no knee joints, molded plastic socket covering deformed foot, knee, and thigh. The patient walks, stands, and has good use of both arms.

5. Bilateral BK amputee, middle aged. Wearing limbs similar to those being developed at the University of California at Berkley; molded plastic, total contact sockets, extending well over the patella, and the condyles of the femur; shins are wood, plastic covered, with SACH feet. Left stump is 8½"; right stump is 4" in length.

A great deal of interest was created by our demonstration, and it was apparent, by the questions asked, that the medical profession as a whole has had very few opportunities to see the new and unusual in prosthetic appliances.

Several of the doctors were especially interested in the new type below-knee prostheses, and wanted to know where they could learn more about them. We explained that all prostheses demonstrated were the result of our basic training at the U.C.L.A. Prosthetic Schools, and the research was done by our Clinic Team.

Korean Amputee Rehabilitation Under the Church World Service

The Reverend Reuben A. Torrey, Jr., D. D.
Director

Editor's Note: This article describes the Prosthetic Center in South Korea. John Steensma, formerly Instructor with the Michigan Crippled Children's Commission has recently arrived in Korea to be Director of the Center. Mr. Steensma will be remembered as the author of "A Guide for Parents of Child Amputees".

In the autumn of 1952 the program for rehabilitating amputees in Korea was begun by the Korea Church World Service as a post-war measure. Government statistics indicated that there were 15,000 veteran amputees and from 20 to 30,000 civilian amputees. Nothing was being done to provide these civilians with artificial limbs. They were hidden away in their homes, ashamed to appear in public and looked upon as under a curse. Those without homes, a large percentage refugees from North Korea, were drifting from place to place begging. Everywhere they were a social and economic problem. Many were facing slow death from malnutrition and disease due to exposure. Their number included many children as well as men and women.

To help meet the problem of caring for these tragic victims of shelling, bombing, land mines, hand grenades etc. the Korean Amputee Rehabilitation program was set up. Its purpose was not to provide permanent care for these handicapped people but to develop centers where they could receive artificial limbs, training in their use, vocational training when needed and such training as would help them to become reintegrated into society and normal productive living. To do this satisfactorily we believe the Christian approach and environment is essential. There is usually a basic emotional and psychological problem to be resolved before the amputee is able to resume normal living. This is best met thru a vital Christian faith.

There are four centers, in cities approximately 100 miles apart. Three are in mission hospitals. Necessary revisions and surgical care are provided in these centers. All the expense, above what the patient may be able to pay personally, is provided from the program's funds. Limb shops in each of these Centers, staffed with men trained by the program, make arms and legs for the amputees. At two of these Centers the program maintains a hostel for housing the amputees being trained in the use of their new limbs. In these hostels a religious program is carried on to minister to the spiritual needs of the patients both during hospitalization and walking training.

The fourth and largest Center is at the geographic center of South Korea. It is located two miles outside of the city of Taejon on a hill in the midst of a 150 acre track of land and is one department of The Union Christian Service Center. The U.C.S.C. is a Christian service project in which the Northern and Southern Presbyterian Missions of America, The Methodist Mission, The United Church of Canada, The Salvation Army of Great Britain, The Church World Service and local official agencies cooperate. Other departments are a demonstration farm, soil conservation and erosion control, a dairy, a Rural Leaders Training Institute, a Tuberculosis Rest Center, a Salvation Army Boys' Home for orphans and a Baby Fold to care for abandoned infants. These are located on what was six years ago barren eroding hills and gullies but is now a delightful wilderness of young trees surrounding the terraced rice paddies and farm plots.

The amputee center has some twenty simple Korean type buildings scattered among the young pine and locust trees. In the midst of these, at the highest point, stands the Chapel with its scaffold tower in which swings a large sweet toned bell purchased one Christmas by the amputees to express their gratitude. Each day following the early morning service the seats are moved to one side to prepare space and the apparatus for walking training. Then follow the hours of torturous but joyous effort to master the techniques of walking on artificial legs, practicing writing, eating, opening locks etc. using hooks for hands. Faces that were dark with despair, young people who thought only of how to end life, glow with new hope and determination to master their handicap and begin normal living again.

In the limb shop various types of arms and legs are made to suit the individual needs. To enable the workers to continue making limbs for amputees thru the years to come no matter what may happen in Korea and whether or not this program is continued in the future, techniques have been developed using entirely materials that can be found in Korea. In our own machine shop the trainees turn out all metal parts required, including joints, hooks etc.

With the exception of two or three persons the entire staff and teaching force is composed of amputees who came for help and have remained to share their skills with other amputees. This in itself has great value in building the morale of the trainees. Most of the new arrivals are down cast and hopeless. Many have sought to end their suffering by suicide. Soon their gloom vanishes, their facial expressions change. Visitors comment on the joyous atmosphere and one wrote back that the happiest people he saw in all of Korea were those he met at the Taejon Vocational Training Center.

The Vocational Training Center is equipped to accommodate 110 trainees. The period required for training in the use of new limbs is from two weeks to two months depending on the nature of the amputation and ability of the individual. For vocational training and preparation for going out to take one's place in competitive society requires, on an average, at least two years. Experience has shown that the psychological rehabilitation as well as training in skills, requires time.

Six limb shops have been opened manned by amputees trained in our centers. Thru these more than 2,600 limbs have been made and issued with careful training in their use. More than 1,680 persons have been given varying degrees and kinds of training in the centers. Of these about one fourth have been children. Many have been orphans. At present 14 children and young people are being cared for and helped to continue their education, attending schools within reach of the Taejon Center. Others are being given hand work and simple vocational training in the Center. Graduates from the training center have become self supporting as hospital technicians, merchants, watch repairers, tin workers, tailors, farmers, chicken and pig raisers, nurses and workers in orphanages, laborers, and other activities. Many have gone out to earn their livelihood in ways quite different from their training. The result of their training was to build in them self confidence and the will to make something of themselves.

During the early years of the program the majority of amputees helped were war casualties. Now about one fourth are the result of the war but the volume of new cases keeps the numbers coming for help at the same level.

For years this will be true because of the numerous train and bus casualties, especially among school children. Industrial accidents, disease, uncared for infections, snake bites, frost bites and a large number of other causes make the incidence of amputation exceedingly high in Korea.

What is the outlook for the future? This program has now become well established. It is known and respected throughout Korea. The need for such help to amputees is as great today as it was six years ago. The volume of cases applying for its services is as great as in the past. These victims of misfortune have not only become handicapped but in most cases if the amputation was not the indirect result of poverty it has brought poverty and ostracism. Consequently a high percentage must be helped as charity cases.

As this is being written two new cases have arrived which are typical of those continually coming. One is a fine looking bright farmer's son, 18 years old. Five years ago he and his school mates were removing a bomb from the road side. It exploded and blew off both of his legs. Ever since he has sat in his home with nothing to do but read. Then a few months ago he saw an article in the newspaper reporting on our program. He wrote to the Seoul Center, was received there to get legs and walking training. Now he has come for vocational training at the Taejon Center. The second boy was an orphan "shoe shine boy" plying his trade around the railway station. As he ducked under a train it started to move and his leg was severed above the knee. In an orphanage where he was placed a missionary found him suffering deep depression. He, too, was referred to the Seoul Center, where he received a leg and walking training. Now he is entering the Taejon Center for training in tailoring.

Scattered over South Korea are boys and girls as well as men and women in similar circumstance who are only now learning of this door of hope and new life. The funds received through Church World Service and many individual direct personal gifts and from other sources are scarcely sufficient due to rising costs. At the present time we are faced with serious financial problems. Unless additional funds become available it will be necessary to give up important parts of the program, limit the numbers cared for in the hospital centers and reduce the numbers in the Vocational Training Center. In the past only hopeless cases and those who were confirmed beggars have been turned away. If additional funds are not made available soon it will be necessary to turn away many needy and worthy young people who come to us as their only hope. Recent newspaper publicity reports, unsolicited, have spread the news of these centers resulting in an increase of applicants.

The new Director, Mr. John Steensma, has recently arrived from America and will be assuming responsibility in the autumn of 1959 after a period of language study. He is a double arm amputee himself, performing all normal activities even to driving an automobile using hooks for hands. An amputee from eighteen years of age and with twelve years of experience in the field of rehabilitation of the handicapped, he should bring new stimulus and advance to the Korea program. It will be a tragedy to retreat rather than advance in this undertaking. It is helping to solve basic spiritual, economic and social problems of post war Korean life.

Code of Ethics for the Artificial Limb and Brace Profession

The Federal Trade Commission has approved fair trade practices for the field of artificial limbs and for orthopedic appliances. Both codes have been adopted by the American Board for Certification as a guide for the Certified Prosthetist and Orthotist. The full text of the Codes may be obtained from the Board's Headquarters. The following digest is printed for ready reference.

It is an unfair trade practice:

(1) To deceive purchasers or prospective purchasers as to any of the qualities of a prosthetic or orthopedic appliance, or to mislead purchasers or prospective purchasers in respect to the service of such appliances.

(2) To infer an artificial limb is equivalent or nearly equivalent to the human limb. complies with any government specifications, or has the approval of a government agency unless such be wholly true or non-deceptive.

(3) To fail to disclose to a purchaser, prior to his purchase of a prosthetic appliance, that the degree of usefulness and benefit will be substantially dependent upon many factors, such as the character of the amputation, condition of the stump, state of health, and diligence in accustoming oneself to its use.

(4) To promise that any product will be made to fit unless such promise is made in good faith and industry member is possessed of the ability to fulfill such guarantee. A prosthetic device or an orthopedic appliance is not to be considered as fitting unless properly shaped for the body member to which it is applied, and in proper alignment and conformity with the physique of the person to wear such a product, and affords the optimum of comfort and use on the part of the wearer.

(5) To deceive anyone as to his authority to represent and make commitments in behalf of a member unless such be fully true.

(6) To use any testimonial or use any picture which is misleading or deceptive in any respect.

(7) To demonstrate any appliance in a manner having the tendency or effect of creating a false impression as to the actual benefits that may be reasonably expected from it.

(8) To use any guarantee which is false or misleading.

(9) To represent that any appliance conforms to a standard when such is not the fact.

(10) To publish any false statements as to financial conditions relative to contracts for purchase of appliances.

(11) To engage in any defamation of competitors or in any way to disparage competitors' products, prices, or services.

(12) To use the term "free" to describe or refer to any product which is not actually given to the purchaser without cost.

(13) To *wilfully* entice away employees of competitors, with the purpose of injuring, destroying or preventing competition.

(14) To take part in any concerted action with other members to wilfully fix prices.

(15) To promote the sale of any appliance to any person who can not be expected to obtain reasonable benefit from such appliance.

(16) To refrain from giving every assistance to doctors before and after amputation or crippling condition, or to fail to do everything possible to promote mutual trust and confidence between members and the medical profession.

(17) To undertake to supply an artificial limb by mail-order specifications without personal fitting thereof unless conditions are such which make an exception desirable, and in any case, no misrepresentation shall be made as to fit.

(18) To unduly exploit features of appliances less important than proper fit and alignment.

(19) To fail to recognize that the interest of the amputee and the handicapped is the first concern and therefore any failure to make available to all of its members and the general public any improved technique that may be used as to making, fitting, aligning or servicing products shall be an unfair trade practice.

(20) To pay anything of value to any doctor for the purpose of obtaining a referral of a patient by the doctor.

Further, the limb and brace profession desires to be an active and cooperative factor in all progressive developments of improved techniques that will contribute to the welfare and comfort of all who use its services.

TO ALL CERTIFIED ORTHOTISTS AND PROSTHETISTS

from

Roy M. Hoover, M.D.

President of the American

Board for Certification

In a short time I will conclude four years as a director of the American Board for Certification. During this time I have had the privilege of witnessing a marked growth in the Certification movement. This growth is of particular note when one stops to think that Certification is a voluntary, standards-raising movement. This should be a point of pride to each Certified man and facility. This in turn, should lead to redoubled efforts in the up-grading of the standards of our profession.

Certification at present has meaning in each local area by the service given by Certified men and facilities. The physician is primarily interested in this —*the service to his patient.* If Certified men and facilities do not give this service the physician has no choice but to seek service elsewhere, perhaps from uncertified men. The physician's concern is his patient, not Certification. When Certification stands for superior service it cannot but succeed.

The Certification movement is now at a point of decision. The answer to what the movement will be ten, twenty, or fifty years from now is up to each Certified facility.

THE BOOK OF RULES OF THE AMERICAN BOARD FOR CERTIFICATION

In the semi-annual meeting of the American Board for Certification the Directors reviewed all former actions of the Board in an effort to draw together a *Book of Rules.* This book is now being published and will be distributed to all Certifees and Certified Facilities before the Dallas Assembly. This Book of Rules is intended to serve as a guide to the requirements for Certification as well as to the procedures of the Board and the conduct of Certified Individuals and Facilities. All persons related to the fields of Prosthetics and Orthotics should become well acquainted with this book.

THE HANDICAPPED ARE HER PERSONAL INTEREST

Editor's Note: The New York Herald Tribune, one of the country's leading newspapers, recently published this sketch of Mrs. Mary Dorsch, C.P., president of the Dorsch-United Limb Company Facility in New York. We thought our readers would enjoy this well-written and perceptive sketch of the very personable and efficient Mrs. Dorsch.

In filling out any sort of application, in answer to the question, "handicapped?" Mary Sullivan Dorsch always puts "no."

This is despite the fact that she has been an amputee since 1935. "I don't consider myself handicapped by it at all," says Mrs. Dorsch. "I can do anything any one else can do—drive, swim, dance, ride a bicycle, ice skate."

Mrs. Dorsch's positive attitude toward her own handicap is one of the reasons for her success in her business, which is manufacturing and fitting prostheses for others similarly afflicted. She is the only woman licensed prosthetist and orthotist in the country. She finds time as well to be with her family, and to travel to professional meetings.

Her firm makes, to order, prostheses of all types, and she gives patients basic instruction in how to use them. A great part of her work is informal psychological counseling.

Mrs. Dorsch, a striking blonde whose youthful appearance makes the fact that she has daughters seventeen and thirteen almost unbelievable, started her business, after an apprenticeship, in 1939. Today, besides putting in a full day consulting with private patients, she gives fifteen hours a week of her time to amputee clinics serving as prosthetic consultant. She works with the New York State educational department, division of vocational rehabilitation.

"I often wonder," she said recently, "what I would be doing now if I hadn't lost my leg. I'm very happy with this work. My patients have confidence in me because they know I've gone through the same experience. I know what they can and can't do."

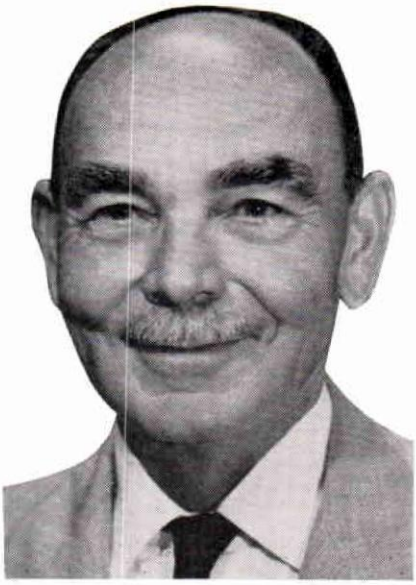
Mrs. Dorsch does a great deal of work with women and children. Children, she says, have relatively few emotional problems — "they're wonderful to work with, and usually delighted with the new limb and proud when they have learned to use it."

With women and young girls, of course, the emotional impact of an amputation is severe. "Because of my own experience," says Mrs. Dorsch, "I can help them readjust. Young girls especially are anxious about how to dress, how to cope with dates and marriage. I advise them to dress as they have always dressed. Some doctors will recommend sensible, flat shoes, but I tell them to go out and buy a fancy pair, to make themselves feel good."

Mrs. Dorsch says she has had great success introducing two patients of the same age, who can discuss their mutual problem and give each other moral support.

As a psychological counselor, Mrs. Dorsch is often called in by doctors to talk to pre-amputation patients about her own experience. "It's not an easy thing to talk someone into an amputation, but since I know how much happier and freer they can be after the operation, I feel it's a worth-while effort."

"I have had to learn," she said, "to control my own emotions. My patients can't complain too much to me; I try to discourage them from using amputation as a crutch, and to build a positive attitude. I don't give sympathy, but I do give understanding."



GREETINGS

from

OALMA President

Karl Buschenfeldt

Dear members:

In a few short weeks we will be holding our National Assembly at Dallas. It hardly seems possible that a year has gone by since we met at Miami Beach.

In scores of ways this year has been an exciting one for OALMA—and an interesting one for me. To tell them all would take many pages. But in this page and the next I'd like to talk with you about some of the highlights.

We Are Growing

First and foremost—OALMA is growing. And OALMA member firms are growing. It was evident in many ways. Let me mention just one example—the grant of money received by OALMA from the U. S. Office of Vocational Rehabilitation. This was a clear indication that the efforts of OALMA members to serve the handicapped were appreciated and that the Federal Government had confidence in our ability to accept the important assignment which it presented to us.

Our Regional Meetings serve an important need. Every Region had a meeting and at every meeting members, doctors and rehabilitation workers were on hand, anxious to improve our service to the handicapped.

Our Journal is growing in circulation and in size. Thirty-five hundred copies of each issue are now printed—an all-time high. Subscriptions are received from all over the world. *The Almanac*, the Journal's smaller brother, is a vigorous and healthy youngster. Its news columns help keep us better informed and tell the story of how we are working together.

National Assembly

Our National Assembly at Dallas will cap the climax of the year. Noted authorities will be on hand to take part in our sessions. Many of our members also are going on to Mexico City to have a joint session with the Mexican Rehabilitation Associations.

Our Hard Working Officers

I don't want to close without paying tribute to my fellow officers. They are a hard-working group whose efforts have sparked all our activities the past year. Our two Vice Presidents, Paul Leimkuehler and Ralph Storrs have given effective service. They have been particularly helpful at several Regional Meetings. Our Treasurer, M. P. Cestaro, as always, has been an efficient and conscientious custodian of OALMA's funds.

Special credit is due our eleven Regional Directors. They have been a source of strength to our National Officers and to our headquarters staff. And the Regional Meetings have benefitted from their hard work. Every member of OALMA owes and is indebted to these eleven Regional Directors:

Joseph Martino of Region I; Fred J. Eschen—Region II; Basil Peters—Region III; George H. Lambert, Sr.—Region IV; Charles W. Rosenquist—Region V; Richard G. Bidwell—Region VI; Ted W. Smith—Region VII; David C. McGraw—Region VIII; Fred Quisenberry—Region IX; Herbert J. Hart—Region X; William E. Brownfield—Region XI.

METALS AND ENGINEERING IN BONE AND JOINT SURGERY, C. O. Bechtol, M.D., A. B. Ferguson, Jr., M.D. and P. G. Laing, M.B., B.S., F.R.C.S., Williams and Wilkins, 186 pgs.

Published in Baltimore, Md., by Williams & Wilkins Company, 1959, 186 pages, illustrations. $8.00.

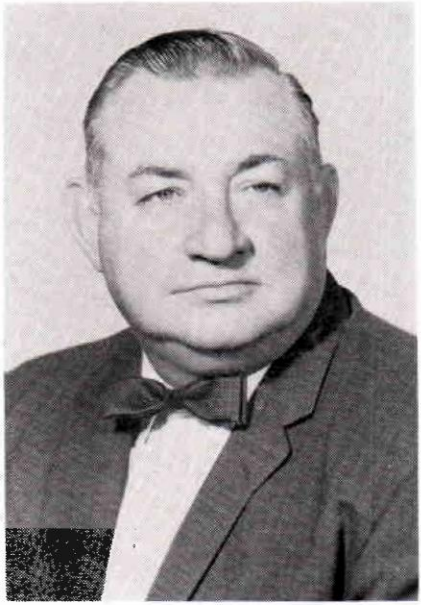
Although metals have been used for reinforcing bones since the early 19th century, this book represents the first attempt to set forth the basic engineering and biological principles which affect the outcome of these operations.

Prosthetists' and orthotists' chief interest in "Metals and Engineering in Bone and Joint Surgery" will be in the recognition that many of the problems of the surgeon using metals in reinforcing bone structure are common to problems found in constructing braces and limbs. In each case the goal is to devise a structure that provides optimum ratios between strength, weight, and bulk. The need for good workmanship on the part of both the manufacturer and the surgeon to avoid nicks and notches that lessen the fatigue life of metals is emphasized. The discussion on causes of corrosion and its effect on strength and length of life should also be of interest to prosthetists and orthotists.

While the engineering treatment of points brought out in this volume is not particularly deep (the authors refer the serious student to appropriate engineering texts), it is gratifying that steps are being taken to apply systematically engineering principles to the difficult problem of body implants. Every surgeon contemplating operations involving metallic reinforcements should by all means read this book.—*A. Bennett Wilson, Jr.*

CROSS COUNTRY REPORT

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



KEN McCONNELL
To Head Isle Company
Department

Kenneth F. McConnell, Certified Orthotist, has been appointed manager of the Orthopedic Appliance Department of the W. E. Isle and Knit-Rite Companies, in Kansas City.

Mr. McConnell has had more than a quarter century experience in this field. Except for three years' service in World War II with the 77th Evacuation Hospital Unit, he spent all this time with the Isle Company.

Mr. McConnell has worked closely with a number of orthopedic surgeons in measuring and fitting appliances to their patients, and he brings this wealth of experience to bear when handling the orders sent in for orthopedic appliances by Knit-Rite dealers.

A big, good-natured Irishman, his ready chuckle and infectious good will, along with his skill, have won for him a host of friends. He served this past year as President of the OALMA Council for Region VII, and headed the Committee which planned the Regional Meeting at Kansas City, in June. The Journal joins his many friends in extending congratulations and good wishes to Mr. McConnell as he takes up the duties of his new position.

As the Journal goes to press, word comes that the **Hans W. Christoph Company** of Philadelphia of 1927 Delancey Street has been elected to membership in OALMA. The firm, which operates a certified facility, is headed by Hans F. Christoph, son of the founder. Its scope includes artificial limbs, braces, surgical supplies, canes and crutches.

Vice President Ralph Storrs, in announcing membership, reported that work is in progress on a new OALMA Membership Roster, which will appear at the time of the National Assembly.

GRADUATES OF THE ICD COURSE

CONGRATULATIONS

Receiving congratulations from Willis C. Gorthy, Director of the Institute For The Crippled and Disabled in New York City, far right, and Charles R. Goldstine, Director of the Institute's prosthetic and orthotic laboratories, second from right, are seven graduates of a nine-month training program for prosthetic and orthotic technicians. Left to right are: Harry Kunze of Groningen, Holland; Juan Monros of Avinyo, Prov. Barcelona, Spain; Kenneth Lablanc of Pittsfield, Massachusetts; David Wanner of Pittsburgh, Robert Palumbo of Johnstown and Frank Pisarcik of Salina, Pennsylvania and Benjamin Leano of Mandaluyong, Rizal, Philippines. The course, conducted at the institute, included academic instruction and practical experience in limb and brace making. Much of the training was with patients, under the supervision of certified prosthetists and orthotists. Clinical field trips were made to hospitals and other institutions providing services to the disabled in which prosthetic and orthotic devices are utilized. Course graduates are now serving the needs of the disabled in many foreign countries, including Holland, Thailand, South Korea, Israel, Spain, Argentina and the Philippines.

All changes of address of OALMA members, Certified Personnel, and Journal subscribers should be reported to: OALMA, 919 18th St., N.W., Washington 6, D. C.

A TEXAS PROSTHETICS CLINIC TEAM

Shown above is a picture of the Prosthetics Clinic Team at Houston, Texas, which was included in the OALMA Exhibit shown at the Congress of Physical Medicine and Rehabilitation. The Congress held in Minneapolis had a display arranged by Les Smith of Washington Headquarters showing prosthetics clinic teams report and other certification literature.

In the picture above we see left to right: Clive Weaver, C. O. of the V. A. Hospital in Houston, Dr. Lewis A. Leavitt, Chief of Physical Medicine and Rehabilitation, Mrs. Louise Kane, P. T., Richard Terry, C. P., of the Texas Artificial Limb Company and James McFarlen, C. P. from J. E. Hanger at Dallas, the patient, A. L. Muilenburg, C. P. of Houston, Miss Hope Keeney, O. T. and Dr. Richard W. Leong, Chief of the Orthopedic Section at the V.A. Hospital.

The Clinic meets on the first and third Wednesday of each month at the V.A. Hospital in Houston.

NEW PRODUCT—SCHUCO OFFERS TAPE REMOVER

A highly efficient adhesive tape remover has been developed by the laboratories of Schuco Industries. Entirely non-flammable, the product is non-toxic and contains a skin emollient. This preparation is especially useful for application on aged persons who tend to have brittle and parched skin areas. The new "SCHUCO AD-HESE-AWAY" does not contain carbon tetrachloride or such solvents as alcohol or acetone.

AD-HESE-AWAY is distributed by Schueler & Company, 75 Cliff Street, New York, 38, N. Y.

To the Ladies:
YOUR PROGRAM AT THE DALLAS NATIONAL ASSEMBLY

Mrs. Bobbye McGraw
President

Mrs. Margaret Peters
Vice President

Mrs. Gertrude Buschenfeldt
Second Vice President

Mrs. Pearl Leavy
Secretary

Mrs. Marie Storrs
Treasurer

I hope all of you are planning to attend our National Assembly in Dallas and also go on to Mexico City and Acapulco. Plans have been made to make your stay in Dallas an enjoyable one and the trip to Mexico sounds marvelous.

As a rule Dallas has rather cool weather the last of October so warm clothing will be in order. I would suggest wool suits and a top coat for dresses. And please remember to bring comfortable walking shoes. You will receive a more detailed letter concerning proper clothing for the Mexico trip.

Come on down to "Big D" October 18, prepared to get acquainted with the West and have the time of your life. We'll see y'all then.

Sincerely,
Bobbye McGraw

LADIES' AUXILIARY

Sunday, October 18
Registration all day—The Ballroom of the Hotel Adolphus
O.A.L.M.A. Reception in the Century Room of the Adolphus
Monday, October 19
8:00—President's Breakfast—Everyone invited.
10:00—Brief Auxiliary Business in French Room.
11:30—Bank Tour (Republic Bank)
Lunch
5:00—Tour Decorative Galleries
8:30—Western Wing-Ding in Regency Room
Tuesday, October 20
11:00—Lunch at Neiman Marcus Department Store
Wednesday, October 21
8:00—Auxiliary Breakfast and business meeting in Press Room.
Lunch—*Fitche's Tea Room*
3:30—Coffee hour at Everett's Jewelry
7:30—OALMA Reception and Banquet.

SUPPLY DISPLAYS AT THE NATIONAL ASSEMBLY

(Consult final printed program for notes on additional displays.)

HERSCO ARCH PRODUCTS CORP.—BOOTH NO. 1

Booth No. 1 will be occupied by Hersco Arch Products Corp. of New York. The latest developments of their laboratory will be featured for your inspection. On display will be many types of Flexible Arch Supports, including Amputation Fillers, numerous Stainless Steel Supports, as well as Dural Foot Appliances specially treated against corrosion, Moulded Leather and Rubber Shells of all description, Rubber Scaphoids and Longitudinals, Metatarsal Pads, Air-foam, Foam on sheeting, Ortho-Cork. In fact the most complete line of Arch Supports and Orthopedic Corrections that enabled Hersco to satisfactorily serve the Orthopedic and Prosthetic Profession for nearly three decades. Leo Waller will be on hand, and will demonstrate the Hersco Presto-Cast.

FLORIDA BRACE CORPORATION—BOOTH NO. 2

Will exhibit The Jewett Hyperextension Back Brace—Standard Model for compression fractures, Osteoporosis, Kyphosis, Epiphysitis, Marie Struempels Disease, and other cases requiring positive hyperextension; and The Spinal Fusion Model for post fusions. They will also exhibit The Extension-Flexion Cervical Collar, The Myo Cervical Collar, and waterproof Freijka Pillow Liners.

SOUTHERN PROSTHETIC SUPPLY CO AND MINNEAPOLIS ARTIFICIAL LIMB CO.—BOOTH NO. 3

"EVERYTHING FOR THE PROSTHETIC MANUFACTURER" will be the theme of this exhibition, with the Deep South (Atlanta) and the Midwest (Minneapolis) displaying their complete line of prosthetic supplies. These two companies distribute in the Eastern United States for most prosthetic component manufacturers—Hosmer, Kingsley, U.S. Manufacturing. Didier, Bock, and Dorrance. They also manufacture their own products: Sach Feet, Wood Blocks, Knee Shins, and the Trautman Carving Machine and Specialties. Southern Prosthetic Supply Co. and Minneapolis Artificial Limb Co. will be featuring PLASTIC LAMINATION materials at the 1959 OALMA Convention.

ORTHOPEDIC EQUIPMENT COMPANY AND MIRACLE ARTIFICIAL ARM DIVISION—BOOTH NO. 4

On display in BOOTH 4 will be the new-type traction apparatus, which fits on practically any type bed on the market today, various models of cervical collars, home traction assemblies, canes, crutches, anterior and posterior splints, exercise equipment, brace bending irons, cast cutters, the Kuhlmann Cervical Traction Apparatus, Hyperextension Braces, Williams Braces, and various styles of patient helpers. From the MIRACLE ARTIFICIAL ARM DIVISION of this company, there will be items of interest to all OALMA members, including the nationally known MIRACLE HAND, together with below-elbow and above-elbow set-ups. Fully illustrated catalogs will be available at this booth and your ideas and suggestions will be welcomed.

PROSTHETIC SERVICES—BOOTH NO. 8

Prosthetic Services will be featuring its new production REALASTIC gloves and prosthetic components. Representative samples of gloves—4 children's sizes, 4 teenager sizes, 6 women's sizes and 6 men's sizes—will be displayed. There also will be gloves for the major mechanical hands of the world. Prosthetic components include many interesting innovations. Del and Bebe Anderson, who will be demonstrating these items, urge you

to get your abridged catalog or shade guide at this booth if you have not already received one by mail.

TRUFORM ANATOMICAL SUPPORTS—BOOTH 9

In Booth 9, I. M. Pease, Ray and Alice Crowell will be pointing out the fine quality and workmanship of TRUFORM's orthopedic supports, braces, hose, traction and full line of men's and women's surgical garments. In announcing their full participation in this year's OALMA's Convention, Alice Crowell writes: "We appreciate the advice and suggestions of our dealers against the background of the casual camaraderie of an OALMA meeting."

EVEREST AND JENNINGS, INC.—BOOTHS 34 AND 35

Edward C. Smith and Jim Aylor will be in attendance at the Everest and Jennings Booth, where you can pick up your free notebook and pencil for your tour of this year's exhibitions. The Mono Drive Chair and Mono Drive Attachment will be featured by Everest and Jennings, Inc. This new power attachment can be easily attached to most Everest & Jennings chairs presently in use. It enhances the patient's ability to move about freely.

SIERRA ENGINEERING CO.—BOOTHS 20 AND 21

New developments in constant friction wrist units of several different types in small, medium and large sizes will be on display. Internal features of three sizes of advanced positive locking elbows can be inspected on cutaway production units. Visitors to Sierra's exhibit can learn details of the new complete plastic arm service, under the supervision of a Certified Prosthetist. Sierra personnel also will be exhibiting their well-known wrist flexion units, driving rings, bowling attachments, APRL hands and hooks and 2-load hooks, as well as new and improved cables and fittings.

MARKELL SHOE CO.—BOOTH NO. 12

The Tarso Supinator, Tarso Medius and Tarso Pronator shoes will be displayed. The Tarso line comprises the principal types of children's corrective shoes in use today—an out-flare Tarso Pronator shoe now available with and without lateral wedges and long counters—an in-flare shoe for the pronated foot, Tarso Supinator—and the Tarso Medius straight last. During the past year, the Tarso Medius with added support has been introduced and is available from stock along with the Tarso Medius regular construction. MARKELL SHOE CO. will welcome your visit to this booth, where you pick up a catalog and discuss the growing and profitable field of children's corrective shoes that can be added to your prescription business.

APEX BOOT HEALTH PRODUCTS CO.—BOOTH NO. 23

Apex Foot Health Products Company will be welcoming OALMA members at their Booth 23, presenting its complete line of arch supports and orthopedic shoe products, and featuring their Hallux Valgus bunion splints. Also on display here will be Cast-O-Foam, an accurate, inexpensive and quick method for foot measurements. Charles Schwartz will be in charge of the APEX booth.

S. H. CAMP AND COMPANY—BOOTH NO. 25

S. H. Camp & Company, in cooperation with a leading knitting full-fashioned hosiery company, has just completed a new elastic stocking for medical use. Most important of all, this new full-fashioned hosiery supports each area of the leg *with precision*—that is, with the proper amount of ten-

sion intended for each specific area. Secondly, an outstanding lightness and sheerness has been achieved plus the proper medical requirements. These stockings are attractively priced and prepackaged for counter selling. In order to do a good selling job with these stockings, it is important that you talk with the attendants at the S. H. CAMP & CO. BOOTH. A special promotion program has been developed for this product. Other products will also be on display.

KINGSLEY MFG. CO.—BOOTH NO. 42

Ken Kingsley will be on hand to greet you. You will want to see the latest developments in SACH feet and the APRL gloves now made by the Clark Process. There will also be on display several new items.

THE KNIT-RITE COMPANY—BOOTHS NO. 6 AND 7

Ted Smith and Lee Fawver invite you to visit with them at the Knit-Rite display. They want to tell you more about the many new products Knit-Rite offers this year . . . the new lower price on plastic lamination supplies, the assortment of small tools, Kingsley's new neuter SACH feet and those with reverse bolts, the new Otto Bock products. Meet Kenneth McConnell, manager of the orthopedic appliance department, talk with him about Knit-Rite Spinal Braces, Myo Collars and Davol Colostomy and urinal appliances. Knit-Rite Stump Socks and Underhose will be featured too!

OTTO BOCK—BOOTHS NO. 26 AND 27

OTTO BOCK ORTHOPEDIC INDUSTRY, Inc., one of the large producers of foam plastic, will introduce its latest development,—a light weight, easily worked, plastic pre-formed SACH type foot. In addition, the OTTO BOCK line of conventional, lock-type and safety knees, feet, five types of below knee joints, quadrilateral and B.K. socket blocks, brace joints, trouser protectors and many other items will be displayed. A new line of canes and crutch grips functionally designed to position the hand for comfortable weight bearing will also be shown, along with a new "non-slip" material to be used to line bathtubs, bathroom floors and other slippery areas. Max Nader, president of OTTO BOCK, will be on hand to greet the many friends, assisted by Harry Fahrenholz and Lorrin Madsen, C.P. & O.

THE JOHN J. McCANN COMPANY—BOOTH NO. 18

The John J. McCann Co., suppliers to the Prosthetic Profession since 1907, will be on hand with their usual line of Comfort Stump Socks, Simplex Joints, ankle joints, metal legs, set ups and supplies.

Looking forward to seeing all our friends will be John A. McCann, assisted by his son, Thomas B. McCann.

ERIE CITY, KENDRICK & KEYSTONE—BOOTHS 38 AND 39

Booths 38 & 39 will find our old friend Charles L. Yancey in charge of exhibits for:

ERIE CITY MFG. CO., 1030 W. 12th St., Erie, Pa., manufacturers of the famous "Arrow" wheel chairs, commodes and walkers.

The James R. Kendrick Co., 6139 Germantown Ave., Philadelphia, Pa., who for more than a hundred years has been supplying our profession with Kenlastic supports, elastic hosiery and trusses.

Keystone Cane & Crutch Co., Norristown, Pa., embracing an extensive line of invalid supplies, crutches and canes of all descriptions, stump sock drying frames, bed trays, back rests, rubber crutch pads and tips.

FILLAUER SURGICAL SUPPLIES, INC.—BOOTH NO. 19

FILLAUER displays their specialty items which cover both the orthopedic, as well as the Prosthetic Field.

You will see a new line of Aluminum Leg Brace Parts with Stainless Steel Box Joints and Stainless Steel Lock Rings. Also, a new group of items being introduced are forged Stainless Caliper Bars. The bars will be heat treated, and bright polished for maximum quality and economy to the Shop. New brace uses for Nyloplex Plastic Material will be demonstrated.

Other new items include the Vari Gait Knee Shank Assemblies, Vari Gait Valves, and Feet.

As a Kingsley distributor, we will show the newest SACH Feet stock items, with ankle blocks for use with setups.

Streamlined imported BK and KB Joints, Leather Stampings, and an entirely new AK Socket Measuring Device will be demonstrated.

The new Fillauer Night Splint, with interchangeable Denis Browne Plate, and Sabel Pre-Walker Shoes with Roto-Lok Disc, will be displayed.

Carlton Fillauer and Dick Lehneis will be on hand to greet you!

I. SABEL, INC.—BOOTH NO. 31

I. SABEL, INC., will have on display for your inspection their complete line of Orthopedic Shoes. These shoes represent over 35 years of constant research and development, and should prove very helpful in your establishment. Today, the brace maker is finding shoes a more important factor in his business than ever before. The I. SABEL SHOE, stocked in proper sizes, can prove very successful in the brace shop.

We have prepared a small booklet telling why brace shops should carry these special shoes.

Stop by our booth and pick up one of these booklets, or let us send you one. We are here to answer your questions and to solve your shoe problems. The new revolutionary "Roto-Lok" convertible shoe will be on display. Be sure you see it.

POPE BRACE DIVISION—BOOTH NO. 22

The Pope Brace Division will feature a wide range of prefabricated orthopedic appliances, including the new type Newington Cerebral Palsy Brace, special lower extension toe life and limited motion ankle joints, thrust bearing hip joints and drop ring braces, various special attachments and small tools designed to function specifically to the advantage of the orthotist. Your attention is invited.

D. W. DORRANCE CO., INC. AND A. J. HOSMER CORPORATION—BOOTHS NO. 36 AND 37

Jerry Leavy and Noel and Agnes Brown will be at the Dorrance Hosmer exhibit ready to greet you, and discuss any prosthetic problems with you. The Hosmer Corp. will have a very full display of upper extremity prosthesis. Many new and interesting items will be displayed. In the Dorrance exhibit will be the latest additions to the Dorrance terminal devices".

AMERICAN WHEEL CHAIR—BOOTH 17

American Wheel Chair Division will have on display representative models of its complete line of quality wheel chairs, walkers, get-about chairs, and commodes. The AMERICAN line includes wheel chairs with removable arms, interchangeable footrests and legrests, reclining backs, headrests, arm slings—and new developments in rehabilitation equipment. On hand to greet you will be Marvin E. Graber.

MEDICAL AND SURGICAL NURSING, II

By Amy Frances Brown, R. N., M. S. in N., Ph.D.

Published by W. B. Saunders Company, Philadelphia and London, 1959, 850 pages, Illus.

Reviewed by A. P. Gruman, C. P., Minneapolis, Minnesota.

This volume covers the content of what is sometimes referred to as medical and surgical nursing specialties. It is a companion volume to Brown — "Medical Nursing" and eventually will become Volume II in a series of two books on integrated medical and surgical nursing. The two books will present a complete picture of total nursing care for all types and conditions of illness—both in regard to general nursing principles and procedures, as well as specific and detailed information.

Descriptions of several methods of traction are given, with suggestions as to the best way to handle traction patients in the bed.

Brief descriptions and illustrations of standard orthopedic braces include instructions for applications and removal of these appliances. A too brief comment on upper and lower extremity prostheses conclude the chapter.

The prosthetist and orthotist would welcome a more complete discussion of their problems, with special attention to the important part that can be played by the nurse in the interval between surgery or primary treatment and the calling in of the prosthetist or orthotist. An entire book could easily be devoted to this comprehensive subject, and it is to be hoped that such a book may sometime be written by Dr. Brown, or some person similarly interested in the nurse's viewpoint.

Dr. Brown's chapter on *Orthopedic Nursing* has primarily to do with the variety of mechanical aids available for care and rehabilitation of patients requiring basic physical therapy at the hands of the nurse.

Orthopedic beds and the use of supports of various sorts for standard hospital beds are discussed at length. Crutch walking, with "swing to" and "swing thru" gaits, is explained and illustrated. Application and care, as well as removal, of plaster casts receives extensive treatment.

The various special orthopedic instruments used in orthopedic surgery are described and illustrated. Surgical procedure is briefly commented on, to give the nurse some generalized information in this area.

Dr. Brown's discussion of amputations is good, but incomplete. She does the prosthetist a favor in her statement that the old adage "save all you can" is no longer the accepted procedure. (Some enthusiasts of prosthetic accomplishments in the past decade have recommended going back to that discarded method, to the great embarrasment of the prosthetists involved).

Post-operative treatment of amputees is briefly mentioned, but the prosthetist reading this book would like to have this section considerably enlarged upon, for in the great majority of cases, the nurse must also play the part of the physical therapist, whose responsibility it should be to take over after primary healing has been accomplished. In too many cases, the therapist is not available, or, if available, is not called in.

In Memoriam

LOUIS H. BARGHAUSEN

The ranks of American prosthetists lost a real pioneer when Louis H. Barghausen passed away earlier this year at the age of 80.

He was born January 24, 1879 and retained his interest in prosthetics almost until the time he died at the age of 80.

Mr. Barghausen was one of the active members of the Association of Limb Manufacturers almost from the date of its founding, and attended many of the early meetings. During his 57 years in the field of prosthetics he took out many patents, some of which are still in force.

Certainly, one of his major contributions to our field was in the training and inspiration he gave his four sons, who are still very active in the field. Louis B. Barghausen is Manager of the J. E. Hanger Company at Columbus, Ohio. Herman, John and Karl Barghausen are all officers of the Pittsburgh, Pennsylvania—J. E. Hanger Company office. They also supervise a recently opened branch at Johnstown, Pennsylvania.

Mrs. Goldena Snell, beloved wife of James D. Snell of Shreveport, Louisiana, died August 20, in Nashville, Tennessee, following an operation. The burial was August 29. Mrs. Snell was a member of the Ladies Auxiliary of OALMA and had attended several National Assemblies.

Arthur Steindler, noted orthopedic surgeon, died at his home in Iowa City, Iowa, July 21, at the age of 81. He became a member of the Academy of Orthopaedic Surgeons in 1934. He was Professor Emeritus of Orthopedic Surgery at the University of Iowa Medical School and an Honorary Fellow of the Royal College of Surgeons.

STERILE
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The only antibiotic spray bandage

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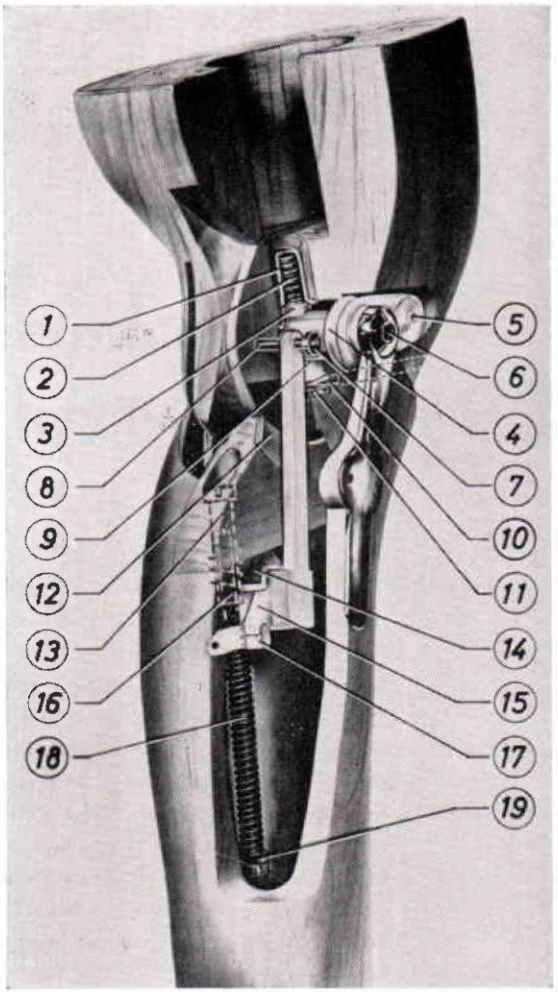
SUPPLIER'S INDEX—September 1959



1. Compressor spring housing. 2. Compressor spring. 3. Compressor block. 4. Rubber ring. 5. Inside Knee-Bolt Bushing with swing lever and swing bolt of Plastic material. 6. Knee Bolt with friction brake. 7. Round Nut M4x10 for forward bolt. 8. Forward Bolt without nut. 9. Shocks Absorber of Plastic Material. 10. Brace Distance Regulator Screw with nut. 11. Brake Distance Regulator Platform. 12. Braking Segment of Plastic material. 13. Guiding Tube of Steel with wooden thread. 14. Stop Rubber for forward bow. 15. Forward Bow of plastic material with container for stop rubber. 16. Guiding Bolt of Steel covered with Plastic Material. 17. Glide Piece of Plastic Material. 18. Compressor Spring. 19. Nut M6.

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AT NO INCREASE IN COST!

In swing phase provides controlled heel rise . . . gives smooth, automatic forward shin action . . . and eliminates terminal jar as shin reaches full extension.

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The Otto Bock Safety Knee permits the amputee to walk with a natural gait . . . with less effort . . . and with assurance of maximum stability.

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Transverse and lateral
ANKLE MOTION
For the AMPUTEE . . .

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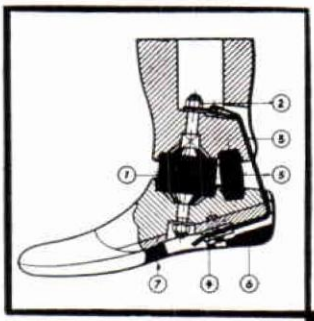

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prevents skin abrasion caused by twisting the stump in the socket.

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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.

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DETACHABLE — DENIS BROWNE

*Fits any shoe

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*All sizes — 6" to 30"

*Attractively finished in color

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Manufacturers of Orthopedic Supplies ESTABLISHED 1914
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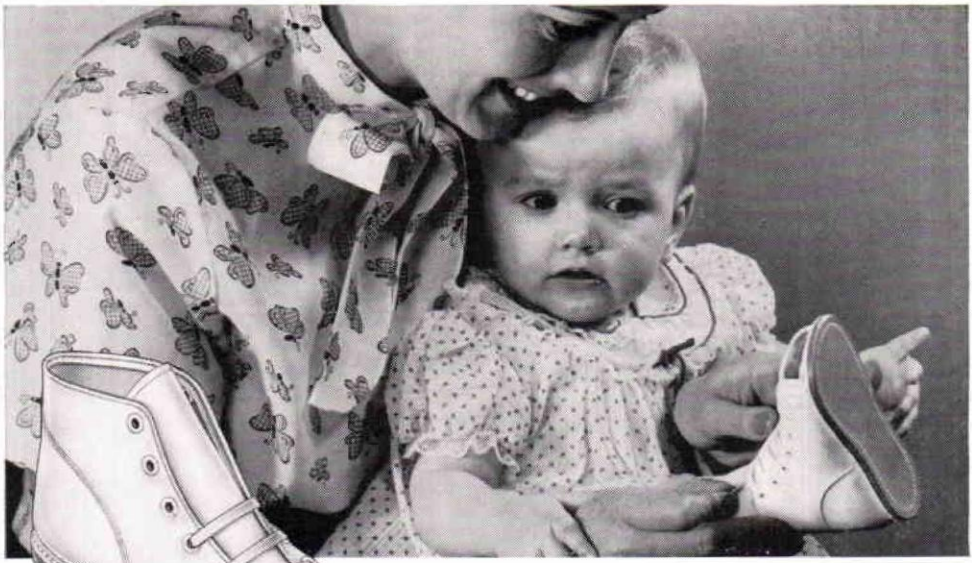

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Doctors Prescribe CHESBROUGH Orthopedic Pre-Walkers

No. 1400 OPEN TOE
Straight-line symmetrical last, firm heel, no back seam. Adaptable to Denis Browne Splints.

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Lace-to-toe design permits snug, gentle fit. Perfectly smooth inside.

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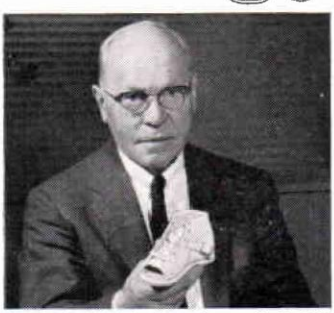

Louis C. Weld, President of G. W. Chesbrough Co. . . . "My own personal experience led to the development of the new Chesbrough Shoe."

This is the reason Chesbrough Orthopedic Shoes have had such spectacular success in three short years. Orthopedic surgeons in 45 states and many foreign countries are now prescribing them. This large referral business continues to grow and we invite you to share in it.

Any parent whose child requires orthopedic correction will tell you the expense is great, as frequent purchase of new shoes is required.

This problem was brought home to Chesbrough's president, Louis C. Weld, three years ago, when a child in his own family needed such a shoe. Recognizing the need for orthopedic shoes at an economical price, Chesbrough put their 60 years of shoemaking experience to work and Chesbrough Corrective Pre-Walker Shoes were born.

Here is a shoe of highest-quality workmanship and fine leathers, made to sell at a moderate price.

All shoes in unlined white elk, sizes 000 to 4, narrow and wide. Available in full pairs, split pairs or single shoes (no extra charge for half pairs).

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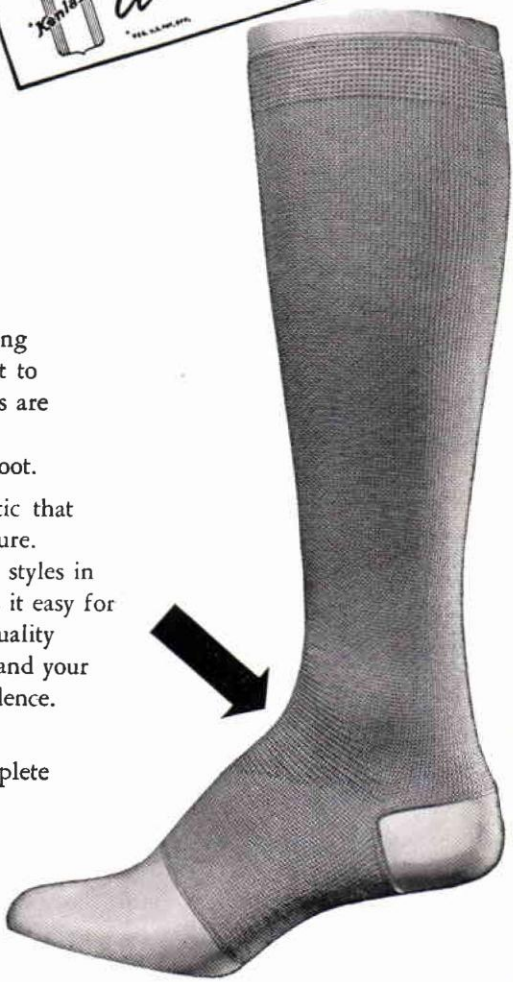
Kenlastic is genuine knitted surgical elastic that wears longer, assures proper, uniform pressure. There's a variety of weights, strengths and styles in mercerized yarn, rayon or nylon that makes it easy for you to satisfy customers' needs. There's a quality look and feel that you can sell with pride, and your customers will wear with greater self-confidence.

And, Kenlastic Seamless, One-Way Stretch Stockings are just one product from a complete line of surgical appliances and garments that's been famous for quality and service for over 100 years.



Kenlastic Stockings are available in 4 weights — Delite, Feather, Medium and Heavy; and in garter, knee and thigh lengths.

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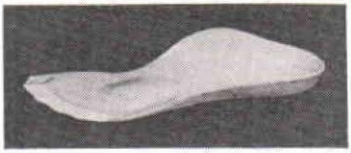

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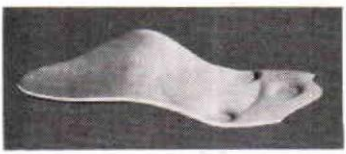
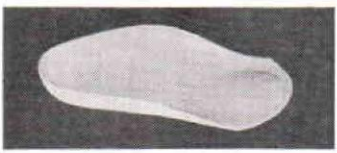
Certainly no one type of foot appliance is fitted for all foot conditions; that is the reason why we offer you a great variety of appliances.

Cork—Rubber—Celastic Supports and Inlays. Levy Mould and Forefoot Balancer—Artificial Toes and Forefoot Amputees and short Limp Extension. Orthopedic work is our specialty.

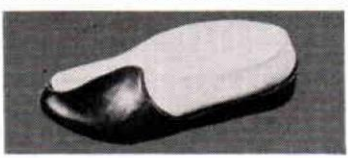
All Inlays are made with Oak sole leather base—and in many types blue tempered steel springs are added. Also every type of stainless steel brace all hand hammered to your cast.





Our newest Levy Latex Mould to cushion the foot suited for such cases as Arthritis, Diabetic, Ulcers, Burns, Scar tissues, and Verruca. A plaster of paris cast is essential for this type. All Inlays are hand made to your prescription.

"WE DO NOT CARRY ANY KIND OF STOCK SUPPORTS"



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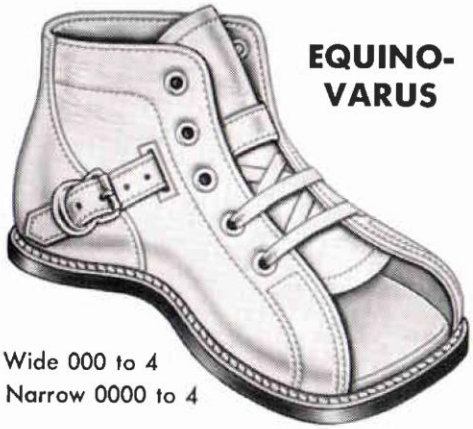
PROGRESSIVE LEADERSHIP
...IN BASIC FOOTWEAR



EQUINO-VARUS

Wide 000 to 4
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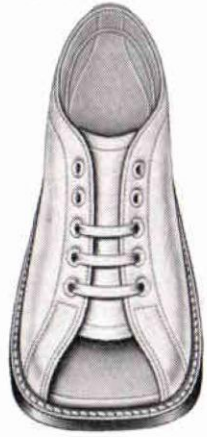
The foot is enveloped in a smooth seamless upper. The shoe keeps the foot in the exact position the physician has obtained. Open toe permits free circulation. Steel plate between inner and outersole permits application of corrective force at point desired.



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Meets the need of a matching shoe where only one foot requires the Equino-Varus shoe. Made on straight last.

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Roto-Lok disc inserted in bottom of shoe... allows more accurate setting, is located in proper spot, reduces overall cost of shoe and brace. Interchangeable with Fillauer Night Split.

Both carried in stock.

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