DECEMBER, 1959

ORTHOPEDIC & PROSTHETIC APPLIANCE JOURNAL

The Journal of the Limb and Brace Profession

Paul E. Leimkuehler, C.P., President, 1959-60, of the American Orthotics and Prosthetics Association.

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

ORTHOTICS AND PROSTHETICS CALENDAR FOR 1960—
WHAT • WHEN • WHERE

(Notice of events to be listed here should be sent to the Editor of the Journal)

JANUARY

23-28 Academy of Orthopaedic Surgeons—Meeting
Palmer House, Chicago, Illinois

APRIL

1-2-3 AOPA Region V—Ohio, Michigan, West Virginia—Meeting
Deshler-Hilton, Columbus, Ohio

22-24 Meeting—Pennsylvania Society of Orthotics and Prosthetics
Williamsport, Pennsylvania

29-30 AOPA Region IV—Southeastern States—Meeting. Adjourns May 1
Conquistador Motel, Pensacola, Florida

MAY

13-14 AOPA Region II—New York and New Jersey and Metropolitan Association—Technical Session
Biltmore Hotel, New York, New York

14-15 AOPA Region VIII
Lake Murray Lodge, Oklahoma

JUNE

1 Deadline date for receipt of applications for the 1960 Certification Examinations

17-18 AOPA Region VII (the Middle West) Meeting
Stanley Hotel, Estes Park, Colorado

AUGUST

21-28 International Congress of Physical Medicine and Rehabilitation
Mayflower Hotel, Washington, D. C.

28 World Congress for Welfare of Crippled Children and Adults —Adjourns September 2
Waldorf Astoria Hotel, New York, New York

SEPTEMBER

2-6 National Assembly of the American Orthotics and Prosthetics Association (AOPA)
Waldorf Astoria Hotel, New York, New York

4-10 International Society for Orthopedic Surgery and Traumatology (SICOT)—Meeting
Hotel Astor, New York, New York

OCTOBER

10-12 National Rehabilitation Association—National Meeting
Biltmore Hotel, Oklahoma City, Oklahoma

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Orthopedic and Prosthetic

Appliance Journal

(Title registered U. S. Patent Office)

VOLUME 13 • DECEMBER, 1959 • NUMBER 4, SECTION 1

This issue appears in two sections. Section 2 is devoted to an Index for the year 1958.

Second class postage paid at Washington, D. C.

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The *Orthopedic and Prosthetic Appliance Journal* is issued four times a year—in March, June, September and December. The 1960 subscription price payable in advance is four dollars a year, for delivery anywhere in the Western Hemisphere. The subscription rate elsewhere is five dollars a year. Single copies are one dollar each.

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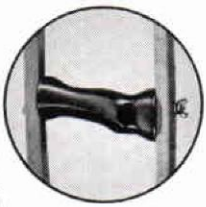

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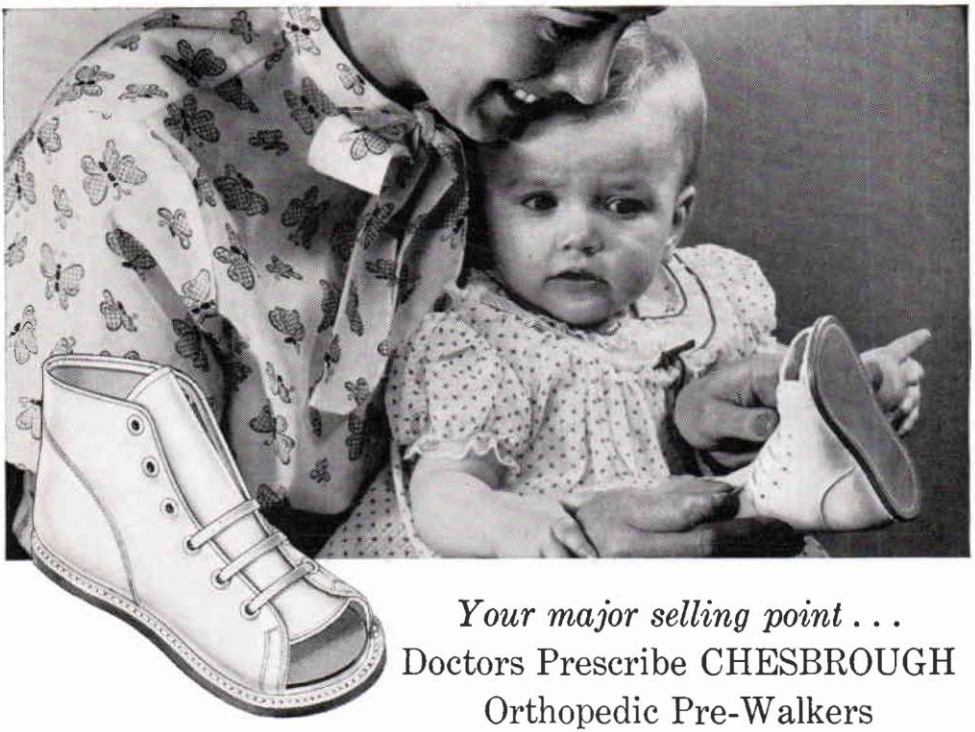

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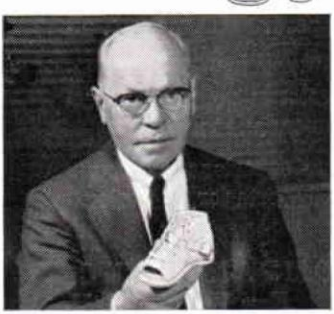

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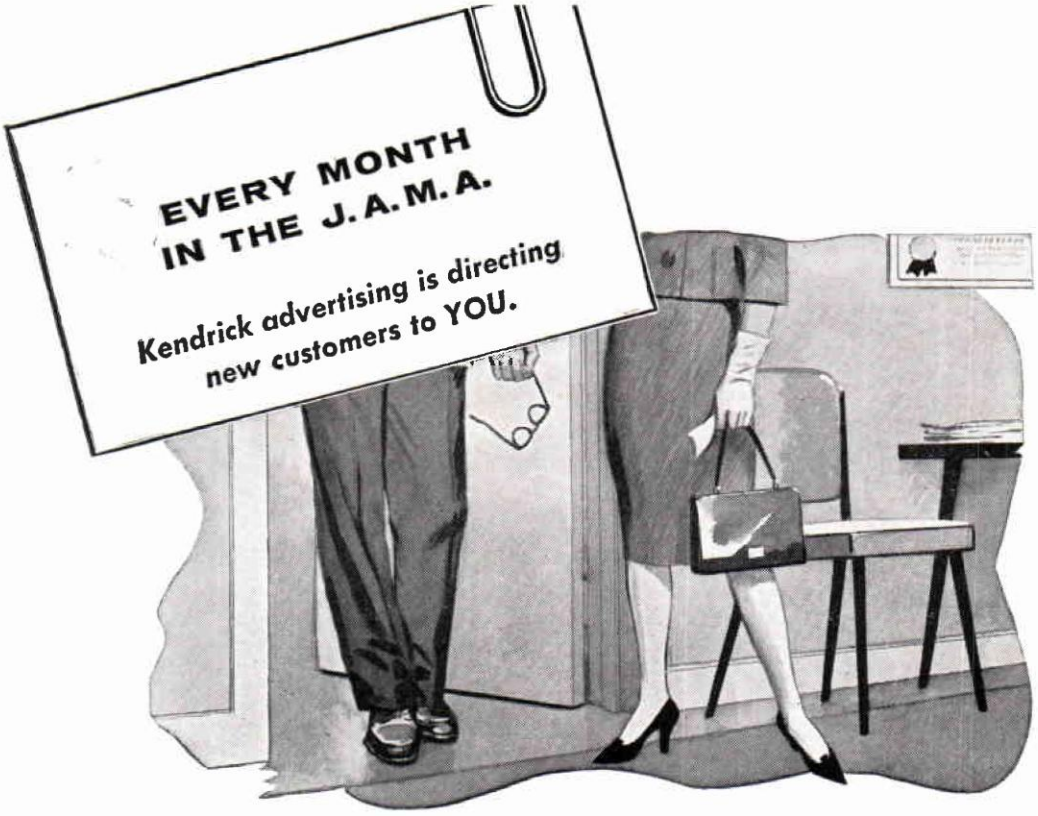

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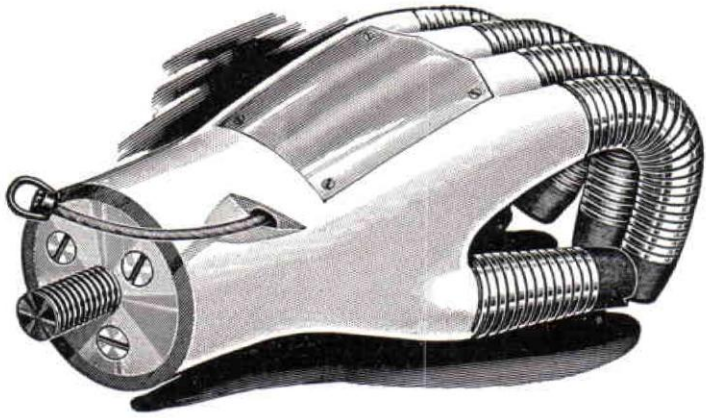

WITH improved finger lineup, enabling the thumb to grasp between 1st and 2nd fingers.

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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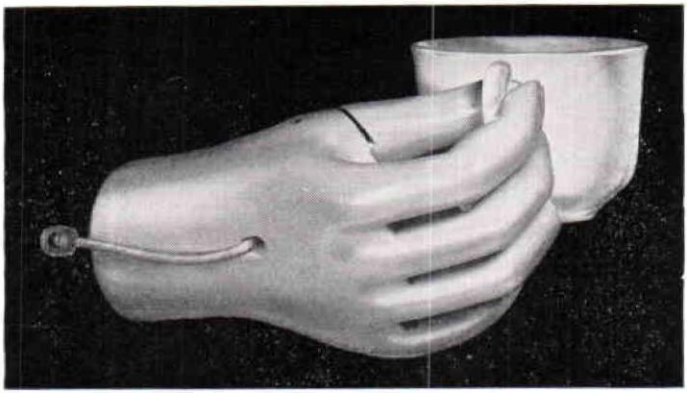

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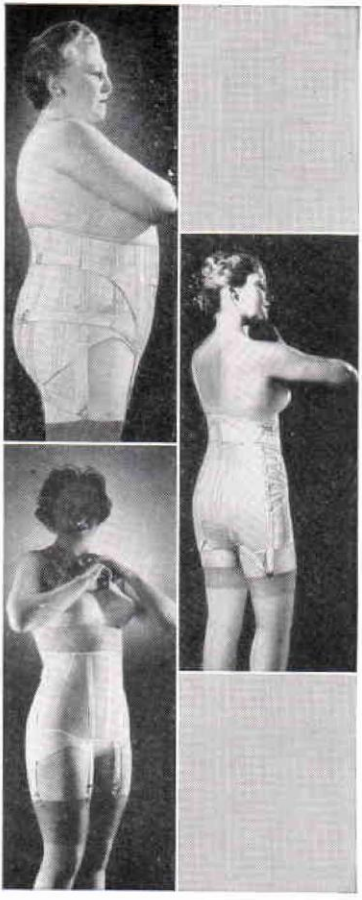

. . . FOR WOMEN

OBESITY

Doctors and patients alike appreciate the therapeutic values of Camp obesity garments. By establishing a foundation around the pelvis and holding viscera upwards and backwards, these high profit supports tend to help patients correct postural disturbances. Fifty years of experience . . . scientific craftsmanship, expert design and ethical service to the medical industry have created doctor and patient acceptance of Camp products. To them, Camp stands for functional quality supports and garments economically priced.

LUMBOSACRAL

This is another of Camp's doctor-prescribed, highly-profitable scientific supports, designed for specific support of the lumbosacral region. The patient is afforded partially-immobilizing back support from the lower ribs to the gluteus, protecting the sacrum, all the lumbar vertebrae and mid-dorsal area for low back trouble. Besides side-lacing models (illustrated), Camp offers a full line of back adjusting lumbosacral models, all featuring Camp's exclusive Magic Web fitting adjustment. Many models are provided with shaped steels, placed each side of the spine for added support.

GENERAL ABDOMINAL

For half a century Camp has been recognized by doctors and their patients as leaders in manufacture of scientifically designed, high-quality abdominal supports. Designed for postoperative, postnatal and posture control, the Camp abdominal supports are groin (illustrated) or skirt length, feature rear, side or front adjustment lacings and are provided in a variety of attractive, long-lasting materials. Camp's low cost to you assures highest profits for your supports department.

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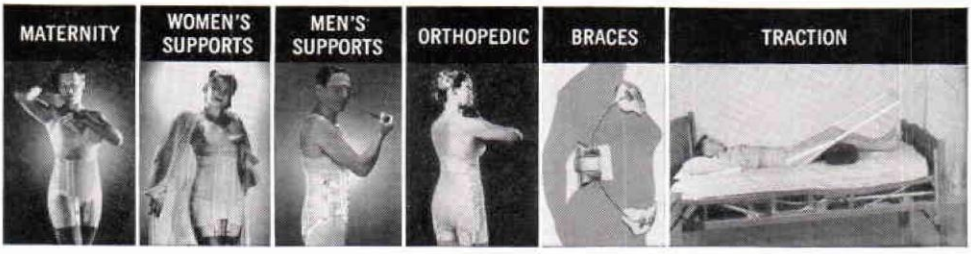
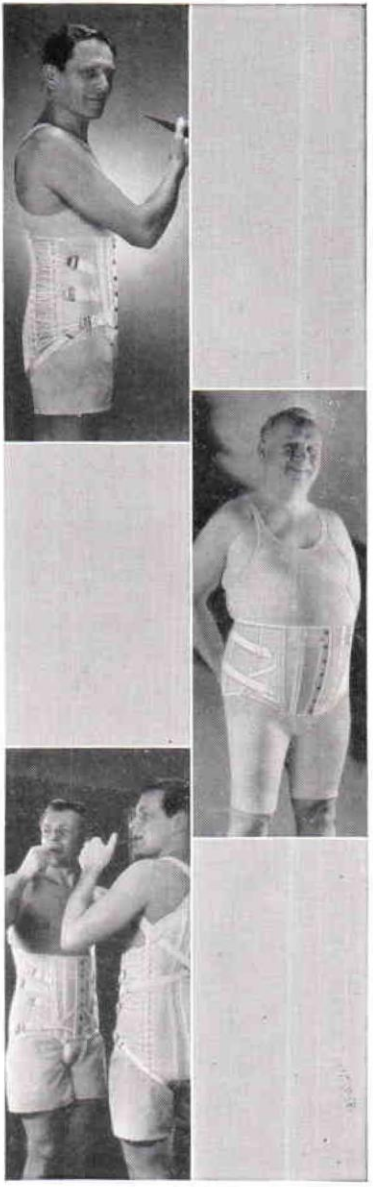


. . . FOR MEN



LUMBOSACRAL

Triple Adjustment, illustrated

Camp lumbosacral supports for men satisfy a wide variety of needs among patients with low back injuries or other disorders. Designed with wearing strength and powerful, functional control as their main features, the garments are prescribed for patients in all walks of life and social stations. Shown here are two garments in a highly profitable line that offer side lacing adjustment, snap button closings, two stainless steel stays for added rigidity. Made of strong, cream canvas. Camp lumbosacral supports extend from the lower rib cage well down over the gluteus, providing partial-immobilization for the pelvis and the entire lumbar spine.

GENERAL ABDOMINAL

Camp abdominal supports for men fill what many physicians consider an essential need for post-operative control and general support. The model illustrated here offers specific help in posture control for patients with pendulous abdomen. This garment and others in the line have also been prescribed for men who need extra back and abdominal support to help them withstand the strain of work in business, industry and sports.

DORSOLUMBAR

There are many conditions for which orthopedic surgeons wish to support a portion or all of the dorsolumber vertebrae, and Camp dorsolumbar supports are made in a variety of heights to satisfy doctor and patient requirements. Camp's method of manufacturing . . . tough fabric which may be reinforced with strong, pliable steels (model illustrated has two shaped steels) . . . puts the profitable dorsolumbar garments in heavy demand.

AND APPLIANCES FROM **CAMP**

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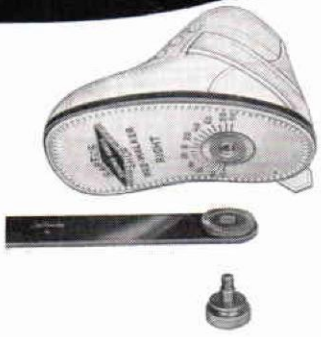

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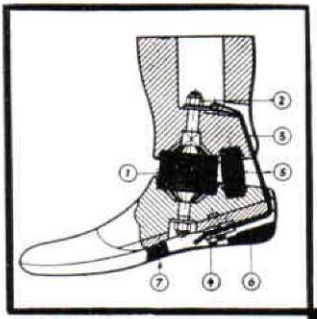

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prevents skin abrasion caused by twisting the stump in the socket.

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provide noiseless, gliding motion with no lubrication necessary.

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reduce sock wear to a minimum.

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4. Pinch Fitting
5. Rubber Damper
6. Foam Latex Rubber Sole
7. Hardwood Base

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PAUL LEIMKUEHLER AND HOWARD THRANHARDT NAMED LEADERS OF THE PROFESSION; OALMA BECOMES AOPA

National Assembly Votes Change of Name To Indicate Professional Status

The National Assembly of the Limb and Brace Profession, sponsored by the Orthopedic Appliance and Limb Manufacturers Association, met at Dallas October 18-22, at the Adolphus Hotel. Many members of the Association flew to Mexico City upon the adjournment of the Assembly, to take part in a Technical Session sponsored jointly by the Association and by the Asociacion Mexicana Rehabilitacion. (For details of the Mexico session, see page 31.)

Skilled and vigorous leaders were chosen by the two organizations active in the limb and brace field.

Paul E. Leimkuehler, C.P. of Cleveland, Ohio, was unanimously elected President of the American Orthotics and Prosthetics Association for 1959-60. That is the new name adopted by the Orthopedic Appliance and Limb Manufacturers Association.

Howard Thranhardt, C.P., of Atlanta, Georgia, was elected President of the American Board for Certification, the certifying agency in prosthetics and orthotics.

The Board of Directors of the Association met with the national officers during the Assembly to approve plans for the year ahead. Among other important actions, the Association voted to take out a sustaining membership in the International Society for the Welfare of Crippled Children and Adults. It approved also plans for the 1960 Assembly held in New York September 2-6, inclusive. The Assembly will be held at the Waldorf-Astoria Hotel immediately after the Eighth World Congress of the International Society for the Welfare of Crippled Children and Adults, thus making it possible for many of the delegates to the World Congress to join in the Technical Sessions of the Assembly.

Before adjourning of the Assembly, the Association took formal note of the contribution to the success of the Assembly which had been made by the participating orthotists, prosthetists, physicians, and rehabilitation workers. By resolution, the Association expressed its gratitude to these speakers and resource persons:

Dr. Robert E. Stewart and W. W. Anderson of the Veterans Administration, John Bray, C.O. & P.; William E. Hitchcock, C.P.; Ruth Jackson, M.D.; M. J. Benjamin, C. O.; Colin McLaurin and Fred Hampton of the Prosthetics Research Program, Northwestern University; Henry Gardner, C.P.; the Michigan Crippled Children Commission, Alfred B. Swanson, M.D.; James A. MacDonell, M.D.; Maurice J. Fletcher, Colonel, USA, Director of the Army Prosthetics Research Laboratory; W. Frank Harmon, C.O.; Howard Thranhardt, C.P.; Edward W. Snygg, C.P. & O.; Charles A. Hennessy, C.P. & O.; Carlton Fillauer, C.P. & O.; Anthony Staros, Director of the V.A. Prosthetics Center; Donald F. Colwell, C.P.; McCarthy Hanger, Jr.; Miles W. Anderson, Ed.D., Director of Prosthetics Education, University of California, Los

(See bottom of page 27)

N.R.A. HONORED—Presentation of a Citation of Tribute to the National Rehabilitation Association was a feature of the Assembly Banquet. Here we see left to right: George H. Lambert of Baton Rouge, President Paul Leimkuehler, Seid W. Hendrix, President of N.R.A., who received the Citation, and Past President Buschenfeldt.

CITATION

"The Orthopedic Appliance and Limb Manufacturers Association herein cites

The National Rehabilitation Association

For Constructive Leadership in the Rehabilitation Movement

The National Rehabilitation Association has through its vigorous efforts brought home to the American people a realization of the need for an effective program to aid our disabled citizens. Its leadership has been intelligent, constructive and cooperative. It has made local areas aware of the potentials of rehabilitation; it has kept the public, lay as well as professional, informed of legislative needs, and has provided a basis for interchange of ideas. The members of OALMA, perhaps more than any other group, know what this has meant in terms of improving the lot of the disabled.

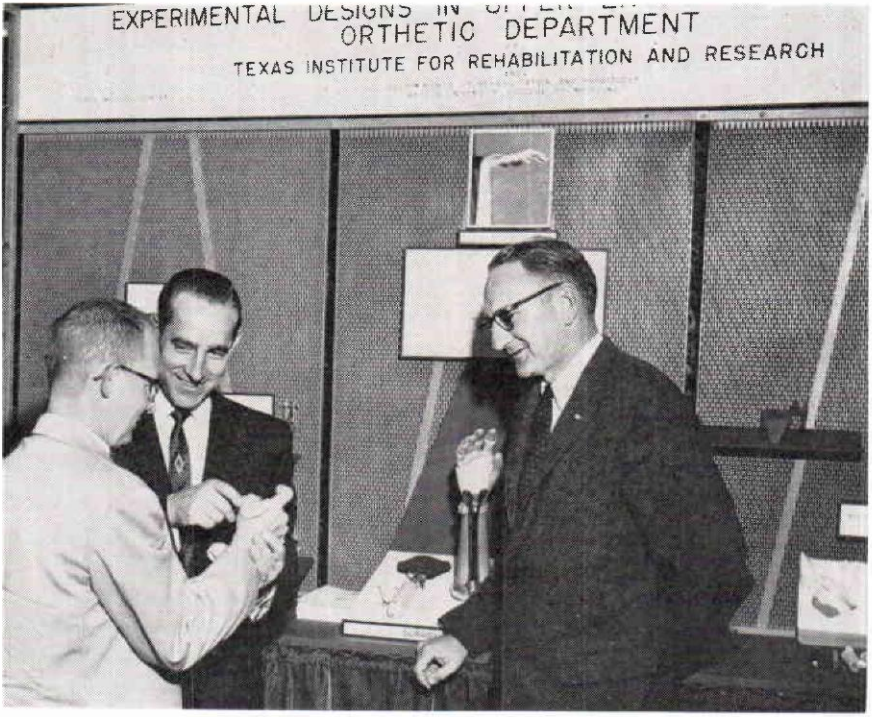
The Orthopedic Appliance and Limb Manufacturers Association at its National Assembly in Dallas this twenty-first day of October 1959, takes this opportunity to recognize and to commend the National Rehabilitation Association."

Angeles; Sidney Fishman, Ph.D., Director of Prosthetics Education, New York University; J. Warren Perry, Ph.D., Director of Prosthetics Education, Northwestern University; Harold W. Glattly, M.D.; Paul Meyer, M.D.; Ted R. Reynolds, C.O., Paul Williams, M.D., and orthotist William Miller.

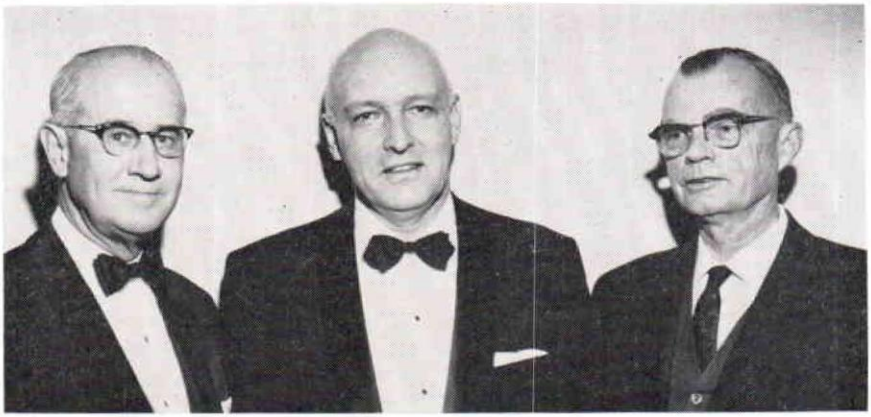
In a series of other resolutions, delegates to the Assembly voted the thanks of the Association to: Fred Quisenberry, C.P., Program Chairman for the Assembly; Exhibits Chairman David McGraw, C.O., and the members of his Committee, for the outstanding arrangement of exhibits; Mr. Fred Brown, Mr. George Smith and their associates on the staff of the Hotel Adolphus for their service in Assembly arrangements; and the OALMA members of Region VIII for the Western Party arranged by that Region for Assembly delegates.

AT THE ASSEMBLY

At the Assembly Banquet, left to right: Past President Clyde Aunger, the Reverend Father DeFevere, who gave the Invocation, and Joseph Martino, OALMA Regional Director, of Boston.



Thorkild Engen demonstrates some of the functional bracing designs to C. H. Dankmeyer of Baltimore and Dr. Charles O. Bechtol.



AT THE OALMA BANQUET—Left to right: Past President Chester Haddan and Lee Fawver with Dr. Samuel P. Rogers of El Paso, who is an Honorary Life Member of the Association.

FORMAL OPENING OF THE EXHIBITS—The Scientific and Technical Exhibits at the Dallas Assembly were opened with a ribbon-cutting ceremony by Mrs. Karl W. Buschenfeldt, wife of the President of OALMA. Here we see, left to right: David C. McGraw, Exhibits Chairman; Mrs. Buschenfeldt, Mrs. William Brownfield of Boise, Idaho, John Gallo of New York City and Mrs. Bobby McGraw, President of the Ladies Auxiliary. In the background may be seen Mr. and Mrs. C. N. Waterhouse, Tom McCann, his father, John McCann, and others.

A NEW NAME—OALMA BECOMES THE AMERICAN ORTHOTICS AND PROSTHETICS ASSOCIATION

Members of the Orthopedic Appliance and Limb Manufacturers Association at the annual meeting in Dallas, October 21, 1959, unanimously approved a change of name to "The American Orthotics and Prosthetics Association." The change in name becomes effective as of January 1, 1960.

This was the result of a movement and gradual change in the nature and aspirations of members. Increasingly through recent years, the professional and humanitarian aspects of the prosthetist and orthotist's work have been emphasized. The care of the patient, the exact fitting and alignment of appliances have grown in importance. At the same time, the difficult problems in manufacture and selection of materials have been solved satisfactorily. All this led to the realization that the old name did not fully and accurately reflect the purposes and programs of the group.

This is the third change of name. The Association was first organized in 1917 as the "Artificial Limb Manufacturers Association (ALMA)." In 1946 at the National Assembly in Minneapolis ALMA became OALMA—the Orthopedic Appliance and Limb Manufacturers Association.

The Assembly Exhibits make an ideal "showcase" for the display of new devices and supplies. One highlight of the exhibits was the introduction of the new "Marvel" safety knee, developed, and soon to be manufactured by the Ohio Willow Wood Company.

Shown above is Lou Troutman, Herman Barghausen and Edwin Arbogast examining the unit. Features include a single post thermoplastic joint with a forward mounted depending arm. This with a combination of friction elements results in effective braking up to 45 degrees flexion. The unit is said to be noiseless and easily adjusted.

MEXICO CITY TECHNICAL SESSION

The Asociacion Mexicana Rehabilitacion joined with members of the Orthopedic Appliance and Limb Manufacturers Association to sponsor a Seminar on Prostheses and Orthopedic Appliances. This was held October 23, and 24, in the New Institute of Rehabilitation at Tlalpan in the Federal District of Mexico. The International Cooperation Administration of the United States was also a sponsor of the session.

The party from the United States numbering some eighty in all left Dallas the afternoon of October 22, immediately after the National Assembly. They were led by the President-Elect of AOPA, Paul E. Leimkuehler. The party was met at the Airport in Mexico City by Dr. Rodolfo Martinez Herrejon, orthopedic surgeon of Mexico City, who was Program Chairman.

In the next two days, members took part in joint sessions with the Mexican Rehabilitation Association at its new Rehabilitation Center. Through the courtesy of Mr. David Amato of the Office of Technical Cooperation of the American Embassy, the telephonic system of translation made it possible for members to hear what was said in Spanish translated immediately into English. Likewise, the Mexican members in attendance heard the remarks of speakers from the United States translated into Spanish immediately.

The Honorable Miguel Bustamente, Undersecretary of the Mexican Ministry of Health and Welfare, opened the Technical Assembly. Joining in the greetings were the Honorable Edward G. Cale, Minister-Counselor of the Embassy of the United States, Mr. Amato and AOPA President Paul E. Leimkuehler who read a message from Miss Mary Switzer, Director of the U. S. Office of Vocational Rehabilitation.

The Technical Session opened with a demonstration of Appliances for the upper extremity amputee presented by Jerry Leavy, Vice President of the A. J. Hosmer Corporation. This demonstration was filmed and shown later that evening on television stations in Mexico City.

Dr. Luis F. Vales Ancona, who served as a discussant for Mr. Leavy's presentation, also presented a series and number of upper extremity amputees who had been fitted and are being trained in the use of appliances at the new Center.

Lower extremity amputees who have been rehabilitated were presented by Dr. Rodolfo Martinez Herrejon.

Romulo O'Farrill, Sr., outlined the purpose of this seminar as "to acquaint all of the best and modern methods used in the manufacture and adaptation of prosthetic and orthopedic aids to benefit invalids suffering through losses of the muscular and bone systems." Mr. O'Farrill is a President of the Mexican Association of Rehabilitation and is one of Mexico's leading publishers and businessmen.

Dr. Bustamente told the group that practical application of prosthetic and orthopedic aids in the rehabilitation of invalids is a relatively new field in Mexico and that, therefore, this seminar has a special importance today.

Delegates to the seminar toured the new Rehabilitation Center in the prosthetic facility where they were greeted by Donald Strand, C.P. Mr. Strand is a prosthetic technician on loan from the Naval Prosthetic Laboratory at Oakland, California. The first day session concluded with a buffet luncheon at which delegates were guests of Senor O'Farrill.

The meeting on Saturday morning, October 24, featured a discussion on Functional Bracing and Cosmetic Appliances, presented by Charles A. Hen-

Some of the members of OALMA (now AOPA) pictured upon their arrival at the Mexico City Airport, for the Technical Session.

AOPA'S PRESIDENT ENTERTAINED IN MEXICO CITY—President and Mrs. Paul Leimkuehler were Guests of Honor at a dinner given in Mexico City by Dr. Rodolfo Martinez Herrejon. In the picture above we see left to right, Dr. Martinez, Les Smith, Assistant Director of AOPA, Mrs. Martinez, Mrs. Leimkuehler and our President.

nessy, Past President of the Orthopedic Appliance and Limb Manufacturers Association.

The importance of training in the use of the appliance as a fundamental fact in rehabilitation was stressed by Joseph Aveni, C.P., who is Director of Prosthetics at the Liberty Mutual Center in Boston. The history of the pioneer rehabilitation project sponsored by Liberty Mutual Insurance Co. was described by William H. Seymour, who is Senior Vice President.

The formal session concluded with a summary of the benefits of the joint session by Dr. Carlos Aguerrebere, who is Director of Rehabilitation in the Mexican Department of Health and Welfare.

After the formal close of the sessions there were a series of demonstrations of appliances. Mr. Hennessy demonstrated the functional bracing units (these were made available through the Center as a gift by the Hosmer-Dorrance Company) and the cosmetic appliances which had been sent to Mexico by Prosthetic Services of San Francisco.

In the formal sessions and in the discussions which followed, there was considerable interest shown in the certification of orthotists and prosthetists which had been developed in the United States. Four members of the Certification Board were present and were introduced: President Howard Thranhardt and Directors Herbert Hart, Alvin Muilenburg and Charles Hennessy.

AOPA officials in attendance besides Mr. Leimkuehler included Vice President Fred Quisenberry and Regional Directors Fred Eschen, Robert Gruman and Kurt Nelson.

The visitors from the United States were tremendously impressed by what they saw in the Republic of Mexico. The progressive spirit and the evidences of dynamic construction were everywhere to be seen. Not only the scenic beauties of the countryside, but the elegance and charm of Mexico City made a deep impression. This was perhaps best summed up by Board member Herbert J. Hart, who said, "I feel certain that when there is another Assembly in the Southwest, another trip to this great city will be a must!"

Certified

The American Board for Certification announces that the individuals listed below have met the requirements of the Board as to experience and training. Each one successfully passed the comprehensive tests given at Dallas, Texas, October 16 and 17, 1959. Their names will appear in the 1960 Registry of Certified Orthotists and Prosthetists.

CERTIFIED AS ORTHOTISTS-PROSTHETISTS

GARDNER, HENRY, New York, N. Y.
Mr. Gardner was certified initially as a Prosthetist in 1952.

HARVEY, ROBERT E., Columbus, Ga.
Mr. Harvey was certified initially as an Orthotist in 1955.

McILMURRAY, WILLIAM, Brooklyn, N. Y.
Mr. McIlmurray was certified initially as an Orthotist in 1950.

SABOLICH, LESTER J., Oklahoma City, Okla.
Mr. Sabolich was certified initially as an Orthotist in 1949.

CERTIFIED AS ORTHOTISTS

BENKE, ROBERT F., San Antonio, Texas
BORAH, RAYMOND C., Oaklawn, Illinois
BURNARD, ROSS W., Kenner, Louisiana
CLARK, RALPH W., Great Falls, Montana
DALE, CHARLES L., Mansfield, Ohio
DAVIDSON, JUNIOR E., Abilene, Texas
DAVIS, ROBERT C., San Antonio, Texas
FINLEY, III, BYRON E., Alexandria, Louisiana
FITZGERALD, RICHARD A., Dallas, Texas
HINCHBERGER, ROBERT W., Lomita, California
HOBBS, MILES, Indianapolis, Indiana
JEFFRIES, JOHN F., Compton, California
JESSWEIN, SIEGFRIED, W., New York, New York
KOPF, WILLIAM F., Hyde Park, Massachusetts
LAYTON, WILLIAM W., Oklahoma City, Oklahoma
LETT, HARVEY, Indianapolis, Indiana
McDOUGLE, WILLIAM R., Beaumont, Texas
McINTYRE, ROBERT E., Baton Rouge, Louisiana
MEYERS, GERALD G., Oklahoma City, Oklahoma
MULLINS, STEVE, Birmingham, Alabama

ONE STEP IN THE CERTIFICATION PROCESS—THE ORAL EXAMINATION—Here we see a candidate taking his examination. The brace on the table is one of the topics of conversation as he is interviewed by a Committee consisting of left to right: Edward W. Syngg, C.O. & P., Roy M. Hoover, M.D., and W. Frank Harmon, C.O.

CERTIFIED AS ORTHOTISTS (Continued)

PARKER, ARVIL E., Hot Springs, Arkansas
PEARSON, G. WILBUR, Chicago, Illinois
PERIN, SILVIO, Pittsburgh, Pennsylvania
POTTER, JOHN W., Temple, Texas
TAYLOR, ROBERT, Fort Sill, Oklahoma
UREBEK, JOHN A., Temple, Texas

CERTIFIED AS PROSTHETISTS

CURRELL, IAN, Dallas, Texas
DEGLER, HEINZ, Leonia, New Jersey
ELLIS, HERMAN L., Oklahoma City, Oklahoma
GOLD, JACK, Iselin, New Jersey
GRAY, WILLIAM B., Memphis, Tennessee
GRAYDON, WALTER B., Mobile, Alabama
HEDGES, DONALD E., Indianapolis, Indiana
JOSLIN, WALTER M., Glendale, California
KARSTEN, LUDWIG F., Milwaukee, Wisconsin
RABB, MITCHELL D., Jacksonville, Florida
STANFORD, JAMES W., Birmingham, Alabama
STAUFFER, WALTER H., Edmonton, Canada
WEISGERBER, WILLIAM D., Milipitas, California
WELDON, JOHN L., Green Bay, Wisconsin

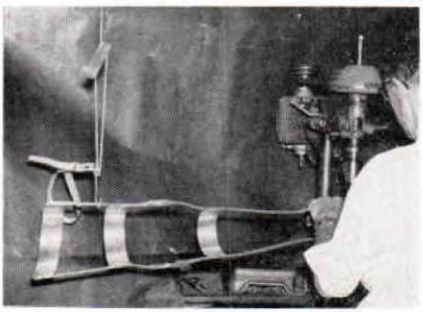
NELSON GADGETS

By K. B. NELSON, C.O.

Nelson Orthopedic Company, Pittsburgh, Pa.

Gadget No. 2—Sky Hook

Here is a gadget that is as good as an extra man to hold one end while you sew, drill or rivet the other end of a long and awkward brace or limb.



Using the hook on a long leg brace to support the heavy end of the brace.

Using the sling to make rotation of the brace possible.

To make it: cut a piece of wood 1" x ½" x 3½" and drill a hole in each end large enough to permit a rope to pass through. Attach one end of the rope to the ceiling then pass the other end through one hole in the wood block, then through the loop in the hook and back up through the other hole in the wood block. Cut the rope to desired length and tie a knot as shown in the picture. The hook is 3/16" wire, about 4" long and has a dual purpose. You may hook onto a bar or insert the brace into the loop, which permits rotating the brace or limb at will. The sling is ¾" webbing, cut about 32" long with a sliding buckle to adjust size of loop. When using the sling, hook moves out of the way and when using hook, sling moves away. To adjust height of hook rotate wood block to horizontal position and move it up or down for desired position. When released, it will lock itself.

If you make one of these sky hooks and use it, you will probably want one for each drill press, anvil, vise and patching machine.

(This is the second in a series of articles by Mr. Nelson on gadgets he has found useful during his many years of experience. Gadget No. I, a spacer, was described in the September 1959 issue of this Journal, page 61.)

THE APPLICATION OF SACH FOOT PRINCIPLES TO ORTHOTICS

By WM. McILMURRAY, C.O.&P. and WERNER GREENBAUM, C.O.

Veterans Administration Prosthetic Center, New York, N. Y.

Introduction

At a recent meeting of the Problem-Case Clinic at the Veterans Administration Prosthetic Center, Dr. Eugene F. Murphy, Chief of the Research and Development Division, Prosthetic and Sensory Aids Service, suggested that the heel wedge principle of the SACH (Solid-Ankle Cushion-Heel) foot be used in certain orthotic appliances. In particular, it was recommended that the principle be applied to limited-motion ankle joints (about 5 to 10 motion) stiff ankle braces and posterior-stop (equinus control) ankle braces.

The Function of the Heel Wedge in the SACH Foot

The function of the SACH Foot heel wedge in an artificial limb is to simulate plantar flexion by providing cushioning at heel contact in a foot rigidly attached to the shank (without an ankle joint). Exceptionally stiff, or hard wedges and bumpers will cause inadvertent knee buckling in a prosthesis. Similarly, an ankle joint that strongly resists or entirely prevents plantar flexion in a brace forces the wearer to take very short steps in an attempt to place his foot flat on the floor. If he takes normal strides, the high forces (Figure 1) between the calf band and the calf, at heel contact, will tend to rotate the shin forward about the heel, tending to buckle the knee unless the quadriceps are strong; thus often an above-knee brace with lock joints at the knee is provided.

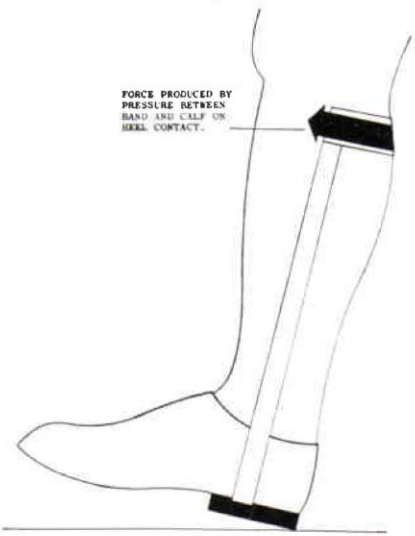


Figure 1

Leg Brace (or Below-Knee Brace) with no anatomical ankle motion allowable. The forces developed against the calf at the location of the calf band produce a moment which causes knee instability.

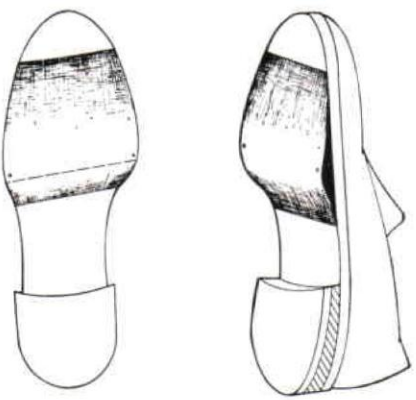


Figure 2

"Rocker" bar added to the sole of the shoe.

The heel-wedge principle, when applied to bracing permits a controlled plantar flexion as is now provided by many of the spring-loaded brace joints.

In contrast however, the damping action of the wedge occurs well below the natural ankle axis and reduces motion of the anatomical joint, a particularly significant feature for hemiplegics and arthritics or patients with painful bony fusions. The hemiplegic, in most cases, has a weak quadriceps condition which is susceptible to knee buckling. The damping effect of the brace wedge should not only minimize the tendency for knee buckling, but also should allow the hemiplegic to take longer strides during ambulation. The SACH Foot wedge will not only absorb shock and reduce the usually high posterior pressures in the calf area but will also permit a limited amount of inversion and eversion, reducing lateral calf band pressures when the brace wearer walks on uneven ground.

The Use of a "Rocker" Bar to Simulate Keel Function

For stiff ankle braces, or braces limiting plantar and dorsi-flexion, the addition of a "rocker" bar (Fig. 2) just behind the metatarsal heads (in conjunction with the SACH Foot wedge) will provide the patient with a more natural roll-over from heel contact to push-off. The "rocker" bar, like the front end of the keel of the SACH foot, provides firm support until late in the stance phase, thus lessening support required of the toes. Also movement of the ankle joint and metatarsus are reduced, another feature especially helpful to patients with arthritis, fusion of part of the ankle, and other painful ankle and foot disabilities.

Patients with an ankylosed Chopart stump will also benefit from this technique since they experience the same problems as the orthotic types mentioned previously. The heel-wedge principle, when used with the rocker bar, stabilizes the entire ankle out to the metatarsals and should minimize much of the discomfort associated with this type of amputation, especially at heel contact and at push off.

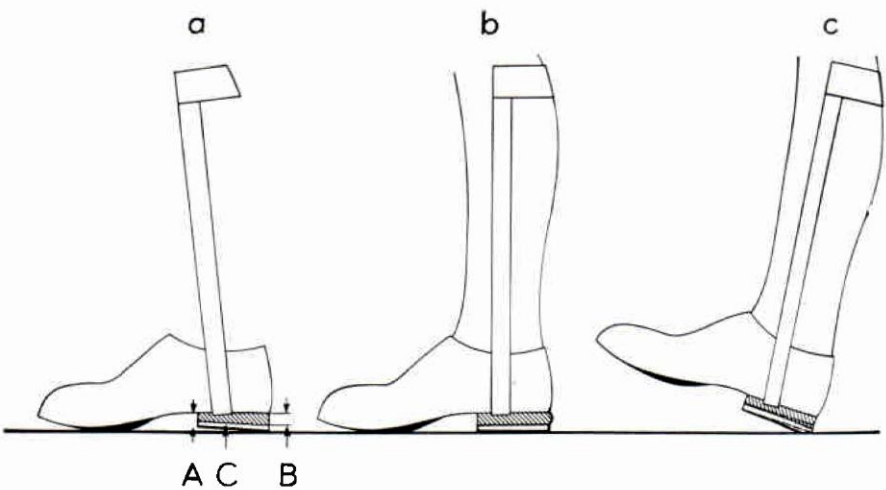


Figure 3

Construction Methods

In Figure 3a the shoe is in slight dorsi-flexion with respect to the axis of the unweighted brace. The uncompressed wedge with "rocker" bar should have this appearance; i.e. only the posterior edge of the heel and the apex of the "rocker" bar should be in contact with the floor. Figure 3b shows the brace and shoe with wedge and "rocker" bar when under load with the uprights vertical. Note that the plane of the heel should be at 90° to the upright when under load in this position. Note also that the apex of the rocker bar is in contact with the floor. Figure 3c shows the dampening effect of the heel wedge at heel contact.

A simple method of installing the wedge was developed by Mr. Dominick Bonarrigo of the Orthopedic Shoe Section of the VAPC. The procedure for its installation is described in detail below as is the procedure for the installation of the "rocker" bar.

The wedge is made of "Pedic" sponge rubber of approximately 90 shore durometer. At the breast of the heel (A), Figure 3a, the wedge thickness is normally ¼ to ⅜". At (B), it is usually ⅛" thicker than at (A). The wedge dimensions can best be established by trial and error, i.e. temporarily glueing the wedge and heel to the shoe sole. To gain room for a wedge of maximum thickness the thinnest available conventional rubber heel is used. The wedge is glued to the shoe sole with STABOND. If a metal reinforcing plate is used on the exterior of the shoe sole, an epoxy adhesive should be used for fastening the wedge to the metal.

The heel (C) is then cemented to the wedge, also with STABOND. While cementing alone will perhaps be adequate as an extra precaution against accidentally tearing the heel away and against slow creep of the heel or wedge, five (5) nails are driven into the heel wedge and sole, and clinched inside the shoe. Due both to use of the nails and to the relatively thin heel, frequent replacement of the heel is recommended. Goodyear Neolite Edge Dye (brown or black) is used to dye the "Pedic" sponge rubber to provide a uniform appearance.

The "rocker" bar is usually made of "bends" leather or Neolite. Its apex is situated slightly posterior and parallel to the line between first and fifth metatarsal heads. The "rocker" bar is temporarily installed (with a few nails) to establish its optimum functional position. When it is located correctly, it is rough cemented and then joined with clinching nails around the outer border of the "rocker" bar.

Clinical Experience

The wedge or wedge-rocker bar combination has been successfully used on fifteen (15) orthotic cases to date. Of the fifteen appliances, ten (10) were B/K weight-bearing braces (this type of brace was discussed in the June 1958 Journal*), three (3) were leg-thigh ischial weight-bearing braces, and two (2) were positive-stop equinus-control ankle braces.

The B/K weight-bearing braces were prescribed for patients with such etiologies as non-unions of the tibia, partially anklyosed ankles, and other painful ankle and/or foot disabilities. Wedge rocker-bar combinations were used for all ten (10) patients; five (5) patients had stiff (stirrup) ankle joints, and the other five (5) had limited (5° to 10°) motion stirrups at the ankle. All of the patients felt that the wedge-rocker bar combination aided

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* *A below-Knee Weight Bearing Brace, William McIlmurray and Werner Greenbaum, Orthopedic and Prosthetic Appliance Journal, June* 1958, 81-82.

them during the stance phase for the reasons outlined above. Five (5) of these cases had been wearing A/K weight bearing braces previous to the installation of the wedge-rocker on new B/K appliances. They were impressed, especially with the smooth and non-painful transition from heel contact to toe-off.

The three (3) patients with ischial weight-bearing braces had conditions that permitted no loading on the entire extremity and immobilization of the ankle, i.e. osteomyelitis or non-union of the femur, and anklyosed or painful ankle and foot disabilities. The patients had been using their braces for at least one year previous to the installment of the wedge-rocker components. They also commented on the ease of roll-over during stance phase, and were pleased with the cushioning effect at the ischium offered by the wedge at heel contact.

Both patients using the positive-stop equinus-control ankle brace were hemiplegics. They had weak quadriceps and had been wearing their appliances for approximately two years before the installation of the SACH-Foot type of wedge. They noted that the wedge reduced the high loads at the calf upon heel contact, thus reducing the tendency of knee buckling. The wedge also permitted them to take longer strides.

AOPA TO TAKE PART IN SEMINAR ON INTERNATIONAL REHABILITATION

A Seminar on International Rehabilitation will be held at the U. S. Department of Health, Education and Welfare in Washington on January 28-29, 1960. The American Orthotics and Prosthetics Association will be represented at the session by Director Glenn E. Jackson and Assistant Director Lester A. Smith, who is a member of the Committee on Arrangements.

Sponsors of the Seminar are the National Rehabilitation Association and the International Society for the Welfare of Cripples. The session will provide a forum for exchange of information and experiences on current rehabilitation developments abroad. It will bring together representatives of national organizations engaged in such activities.

The big expansion of activities and interests in rehabilitation efforts in the last few years has reached the point where many leaders in this country feel that an inventory of progress and a look at current and future plans is urgently needed. The United States Congress is considering legislation now which would have direct bearing upon the conduct of rehabilitation research and training abroad with United States participation. Many visitors are coming from abroad to study rehabilitation progress in the United States. And three International Congresses are scheduled to be held in the United States in 1960 in this field. Because of this setting of increased activities a Seminar in International Rehabilitation is considered to be not only timely but necessary for sound planning by the agencies which will be involved in this field in the next few years.

Speakers at the session include Miss Mary Switzer, Director of the Office of Vocational Rehabilitation, Dr. Howard A. Rusk, Director of the Institute of Physical Medicine and Rehabilitation in New York City and Dr. Henry Kessler, orthopedic surgeon and a founding member of the American Board for Certification.

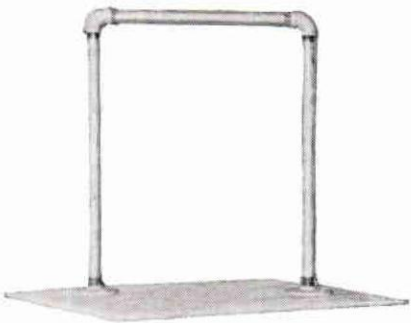
ASSISTIVE DEVICE FOR APPLYING SUCTION SOCKET

By EDWARD T. HASLAM, M.D., New Orleans, La.

The simple, inexpensive, assistive device pictured here enabled the patient, for whom it was designed, to apply her own suction socket after efforts to teach her to do this by the conventional methods had been unsuccessful over a period of almost a year. This patient just could not learn to pull down with her hands and pump her stump at the same time but had no trouble pulling up and pumping. She has now used this device for approximately four weeks and it is my impression that when she develops a little more confidence she probably will then learn to do this without using this device.

Since this apparatus cannot be conveniently carried about it is recommended only for use in exceptional cases and then primarily as a training aid.

This device could be constructed in several different ways. Possibly the simplest method would be to use ½" inside diameter gas pipe with two elbows and two floor flanges. The floor flanges could be either fastened to the floor or as in the illustration mounted on ⅜" plywood. The crossbar should be polished so as to remove any irregularities in the metal upon which the stump socks would catch.



THE ARCH ANGLE METHOD OF FITTING LADIES' HIGH HEELED SHOES WITH SACH FEET

By KENNETH KINGSLEY
Kingsley Manufacturing Company, Costa Mesa, California.

The fitting of SACH Feet to ladies' high-heeled shoes has not been satisfactory in many cases, because of the varying contour of the soles of ladies' shoes. At first, shoes of varying heel heights from a single manufacturer were examined. There was a definite indication of correlation of heel heights. However, when shoes of other manufacturers were to be fitted, at times discrepancies appeared.

About 250 ladies' high-heeled shoes were procured, from a wide number of manufacturers, with all the various heel heights available, and, of course, in the full range of sizes normally sold to ladies.

In the examination of this number of shoes, it was found that different manufacturers might use three different arch angles for the same heel height. This meant that a wide variety of sole contours existed, as is shown in Figure 1. On this chart are shown the sole contours for several shoes, all of which had the same heel height. This examination proved rather conclusively that no simple sole contour could be used and satisfactorily fit women's high-heeled shoes, as is now done with the male shoes.

The measuring of the arch angle of the various shoes indicated that if female SACH Feet were made with keel angles of 30, 40, 50 and 60°, one of them could satisfactorily fit any ladies shoe we had examined. This means that the arch angle of the shoe is the one factor that determines the selection of the SACH Foot to be used.

It then became apparent that an easy method for determining the arch angle of the shoe was needed. A pistol shaped measuring stick and a simple angle chart seemed to give this. By mounting this chart (Figure 2) on the wall back of any convenient shelf, you have your measuring site. You place the shoe on the shelf. You then place the pistol-shaped arch angle

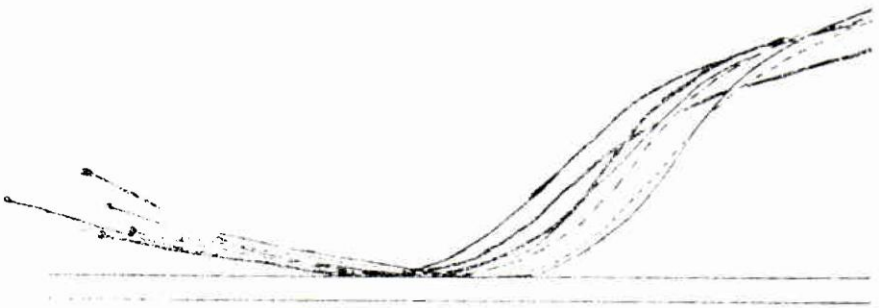


Figure 1

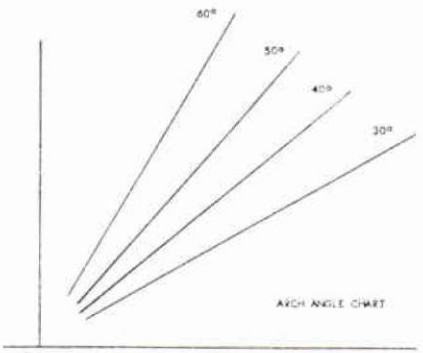


Figure 2. Arch Angle Chart.

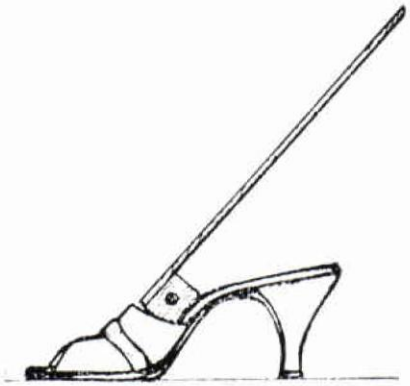


Figure 3

measuring stick on the inside arch of the shoe and read the *maximum* angle on the chart (Figure 3).

If the stick is too high or too low, the angle will be less than when placed correctly on the maximum angle area. Therefore, if you move the stick up or down on the arch, it is easy to discern the maximum angle. If this angle read 42°, you would select a 40° keeled foot, but if it read 45° or 47°, you would naturally select a 50° keel. In other words, by using a foot of greater angle, you assure yourself of the proper arch clearance.

Female SACH Feet in all keel angles should be made with the sole attached only at the toe and to be equipped with a full heel cushion of sufficient size that it can be cut to the sole contour shape of any shoe that might have that arch angle.

A template of the contour of the sole of the shoe should next be made. Mark the weight-bearing line on the contour, which is usually in line with the front edge of the heel of the shoe, or slightly forward of it. By next placing this contour on the SACH Foot with the weight-bearing line lined up with the bolt, you can trace the sole contour of the shoe to the foot. Band-saw along this line and adhere the balance of the sole to the foot. Mark the weight-bearing line on the inner sole of the shoe and remove it from the shoe. Place the inner sole on the sole of the SACH Foot with the weight-bearing line directly beneath the bolt. Trace this outline to the sole of the foot and shape the foot to this outline and to the shoe.

The Arch Angle Method has satisfactorily been used to fit female SACH Feet to ladies high-heeled shoes of all sizes and all heel heights.

ORTHOTICS IN REHABILITATION

WILLIAM A. TOSBERG, C.P. & O.

Technical Director, Prosthetics Research and Services, Institute of Physical Medicine and Rehabilitation, New York City

OALMA has become AOPA. At the National Assembly in Dallas, Texas, it was decided that the Orthopedic Appliance and Limb Manufacturers Association (OALMA) shall be known as the "American Orthotics and Prosthetics Association (AOPA).

The first part of the new name, "Orthotics" and the profession it represents are not as well known to the public as is the second part, "Prosthetics."

Through suction socket courses, the Prosthetics Research Board and training courses in upper as well as lower extremity courses, we have all become very familiar with the work of the prosthetist but *the important work of the orthotist has not been publicized to the same degree.* His work is not quite as spectacular, but, in the opinion of the writer, it requires as much skill, knowledge and ingenuity as that of his colleague, the prosthetist.

It has been said that an orthotist requires knowledge of twenty-seven different trades in order to serve his patients well. There is hardly any material which he is not required to use for one appliance or another. He must be able to operate many metal and woodworking machines and must know the properties of practically every material in order to shape it to accommodate to the needs of the different devices which he has to provide. He must work very closely with the patient as well as the physician, since he will have to construct devices for almost any affected part of the body from footplates to Sayre-slings.

He may be called on to provide an abduction brace for the infant born with Erb's palsy or to construct a brace to unweight a fractured neck of the femur caused by decalcification of the bones due to old age.

The types of braces which may be required cover five major groups. Braces are constructed to: (1) support body-weight; (2) prevent deformities; (3) correct deformities; (4) control involuntary movements; and (5) maintain correct alignment of body segments. This in itself indicates the need for many different designs as well as different materials.

Whereas the prosthetist is primarily concerned with the surface anatomy of the extremities, the orthotist requires knowledge of anatomy as well as kinesiology and physiology of the whole body. A spinal brace constructed for tuberculosis of the spine differs widely from a spinal brace made to alleviate low back pain, although both would be made for the same part of the body. A leg brace constructed for an un-united fracture differs widely from a leg brace needed to compensate for muscle paralysis. The splint for a spastic condition requires a different design from a splint for a flaccid condition.

The materials most widely used are metal, leather and to a limited degree, plastics. For a long time a high grade surgical steel was used almost exclusively in the construction of orthopedic appliances. Only when aluminum was combined with other metals did this material become popular in this field. Since several aluminum alloys are almost as strong as steel, the reduced weight became a great advantage. Duraluminum is strongest in its resistance against bending and compression. Resistance against shear and

friction, however, is rather low compared to steel, and this property has to be considered carefully wherever duraluminum is used. In the selection of metal safety should not be sacrificed for weight.

One of the first designers and constructors of orthopedic appliances who became widely known was Friederich von Hessing in Germany. Braces named after him were rather heavy and complicated. Their main advantage was the fact that they offered almost unlimited adjustment possibilities. These braces required plaster of paris casts from which positives had to be made. Screw plates were attached to the cast and a special type of leather was molded over it. Sidebars were provided with slots. As a result of this construction the brace could be lengthened, shortened, and the alignment of the lower as well as the upper part could be changed almost at will. This brace is rarely, if ever, seen in its original form in the United States today since the indications for such a construction do not exist any longer.

Since the time of Hessing the philosophy of bracing has changed considerably. Through the advances in medicine orthopedic appliances are used more and more to complement orthopedic surgery and not to substitute for it. Physical medicine and improved surgery in many instances has obviated, or at least restricted, need for orthopedic appliances. This in turn has made it possible to make braces lighter in weight and less complicated in construction. In many cases bands can be substituted for closed cuffs; straps and buckles replace long lacers. This makes it much easier for the patient to apply his brace and he can do so in less time.

Certain fundamental principles have to be observed although these differ depending upon the disability and also upon the age of the patient. In a brace made for a patient in early childhood the materials must be light and noncorrosive. One has to consider the need for proper nursing and also the sensitivity of the skin. With advancing age conditions change. The child becomes more active and the proper relationship between the required strength and the weight of the brace has to be kept in mind. The brace should be simple and in the lower extremity especially, the need for extension due to growth has to be considered. Frequent follow-up visits become necessary in order to determine whether or not the brace still fulfills its intended purpose.

In adolescent age cosmesis quite often is of importance and complicated constructions might have to be resorted to in order to make braces acceptable to patients who are very selfconscious as to their appearance.

For the adult it is essential that one consider the patient's social status, his occupation, and also the patient's body weight. For a farmer a leg brace without joints may be proper, whereas the same construction could be very unsuited for a socialite woman with limited occupational needs.

As far as possible, a brace should be comfortable and wherever joints are required it is essential that a mechanical joint correspond to the anatomical joint as closely as such is possible. The question of overbracing and underbracing has been discussed from either point of view. It seems to be the opinion of the majority of physicians to apply more bracing wherever there is any doubt and remove parts as soon as it can be justified instead of adding braces where originally not enough support was provided. The psychological effect of removing parts is usually beneficial to the patient.

The concept of teamwork has been thoroughly established in the approach to physical disability. It is well established in prosthetics clinics all over the country but it is even more essential in the prescription and

construction of braces that close cooperation exists between the physician and the orthotist since basic requirements for efficient brace making are: (1) correct medical indication; (2) scientific orthotic construction; (3) good workmanship; (4) high grade materials; (5) careful fitting; and (6) intelligent use by the patient.

READERS COMMENT ON TESAMOLL FOAMSTIK TAPE

The *Journal* has received the following comments from certified facilities as to their use of Tesamoll Foamstik Tape which is distributed by AOPA member, L. Laufer & Co., New York City.

Ernest Baehr at Flint Limb and Brace Company reports that they have been using Tesamoll for several months. "Because of its convenience in using, we give some to each of our back brace wearers, telling them to use it as they think best in making themselves more comfortable. We find that they shift the Tesamoll pad from place to place until they discover the proper location for it, and it aids them in becoming accustomed to the necessary pressures and still the pad is thin enough so as not to distort the fit of the brace."

Later in his report on Tesamoll, Ernest Baehr writes: "We particularly like Tesamoll for padding of hand splints and for the wearers of cervical braces, who tolerate the pressures of the braces with far fewer complaints when they can alter pressure points themselves as the need arises."

Some of the other facilities which have purchased Tesamoll from L. Laufer & Co. are: Veterans Administration, Bay Pines, Fla.; Harveys of Columbus, Georgia; the Daniel Rehabilitation Institute of Florida; and Duke University.

Earle Daniel writes: "We have been using the new material, Tesamoll, but our experience is still too limited to formulate a decisive report. We used it recently in the designing of a helmet made of celastic for a small child of about two years of age who had fallen and suffered a serious concussion and skull fracture; a helmet that would not allow any pressure or contact with this injured area was required. The Tesamoll sure did a fine job; it did not crush or mat in any manner. It is cool and light. I feel it will fill a long-awaited need for insulating and cushioning a tender and injured area."

Also included in Mr. Daniel's report was the following statements: "We had one of the rare cases where an amputee complained of not being able to take weight in the ischial seat area of an AK socket, so we used some Tesamoll for cushioning and the trouble was overcome, to the extent that the amputee has not returned for further attention.

I feel that Tesamoll has good possibilities. Of course, experience shows that material and devices that work with one person may not be suitable for another. Many supplementary devices give relief, but I believe that it's better to have a properly fitted socket that will not give discomfort than a poorly fitted prosthesis that requires supplementary cushioning."

Heath Harvey of Columbus, Ga., writes about Tesamoll that "So far, we have used it for padding shoes, braces, corsets and artificial limbs and have been well satisfied with the results. It is our opinion that it could have many other uses than the ones mentioned above and we would certainly recommend it for those which we have experienced."

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.

This department has recently received several communications, one of which we believe has special merit, and is presented in this issue. Dr. Edward T. Haslam has devised an assistive device for training in the initial application of the suction socket, which should help to instill confidence in the new amputee, who might otherwise be discouraged from regular use of the prosthesis. We appreciate Dr. Haslam's communication and hope that there will be further constructive ideas forwarded to us so we may pass them on to our readers.

The Prosthetics and Sensory Aids Service of the Veterans Administration is now undertaking a clinical application study of the newly developed Hydra-Cadence artificial leg, which is an above-knee prosthesis incorporating a hydraulic knee mechanism, working in unison with the wood foot to which it is mechanically connected. The SACH foot cannot be used with this device because of the dynamic mechanical connections. The aims of the study are to gather data regarding advantages or disadvantages of the limb, to determine maintenance problems, and to ascertain any difficulties in training an amputee with such a prosthesis. The Washington Orthopedic and Prosthetic Appliance Clinic has been selected as one of the field stations for testing of this device, and we will be happy to forward our comments to you as the prostheses are prescribed and placed under field study. We anticipate many interesting observations as to whether the Hydra-cadence unit actually does give synchronized knee action and toe pick-up, cadence control enabling the amputee to take either short or long strides, and secure and proper ankle movements.

This clinic has been somewhat discouraged in its observations on biceps cineplasties, as we have yet to find a single cineplastic amputee who continued with the use of his cineplastic prosthesis for more than a few weeks or months after discharge from the military service. We have had six amputees with biceps cineplasties, and all have converted to a conventional below-elbow prosthesis. In three instances, the difficulty was due to torsion of the tunnel pin, and in the others the constant irritation and discomfort in the tunnel site with regular use of the prosthesis hindered its regular use. We have made several attempts to continue use of the cineplastic device, but in each instance the amputee has returned and demanded replacement with a conventional appliance. Two have asked for revision of the stump with excision of the skin tunnel in order to eliminate the bothersome daily hygienic cleansing which becomes more difficult as the tunnel becomes increasingly narrow. We would like to have your comments on this particular problem, to determine whether the cineplasty operation should continue to be advocated. Please pass your observations on to us so that we may publish them for the benefit of our readers.

With long Above-Knee stumps, the placement of the knee center sometimes presents a vexing problem. The prosthetist members of our clinic team have been successfully using an inverted knee stop to conserve space in such long above-knee amputation stumps in order to retain the knee center as high as possible. Do you have any novel ideas about this particular prosthetic fitting problem? Do you like the lever type of knee stop?

The value of a social worker in the orthopedic clinic team has been repeatedly proven, especially in securing follow-up physical therapy, gait training, and the carry-over into vocational rehabilitation. In our clinic she has been particularly valuable in the follow-up on upper extremity amputees, who are notoriously infrequent users of their prostheses, especially those above the elbow. We have been conducting a survey of these amputees in an attempt to resolve any problems hindering regular use of the prosthesis. However, there has been considerable difficulty in securing the return of the above-elbow wearers, those presenting the principal problem, and it appears that our many modern advancements in this field will have only limited success because of the associated psychological and follow-up problems.

The clinic has recently become interested in the use of plastic corsets for both upper extremity and lower extremity prostheses. We would like an expression from those who have used such appliances as to durability, ease of manufacture, and satisfaction of the wearer. Plastics are becoming more generally used throughout the industry, and dissemination of information would be a valuable contribution to all concerned. Our prosthetists are particularly interested in the question of proportion of rigid versus flexible elements in the manufacture of plastic corsets.

The relationship of pain in the unamputated side to the amputation stump must always be borne in mind. We recently had a young amputee with a persistent strain of the knee which was found to result from a malfunctioning below-knee prosthesis on the opposite side. Replacement of the prosthesis relieved his knee strain, which had been under investigation by other physicians for several months.

We are continuing the use of 2% Prantal dusting powder, and to date have been very much encouraged by its control of perspiration problems, especially with suction sockets. The product is under limited distribution at present by Schering Corporation, Bloomfield, New Jersey, but limited quantities are available for use under controlled conditions of field investigation.

Our orthotist, A. E. Corfman, Jr., of R. & G. Orthopedic Appliances, has come up with a rather novel idea of using a lead weight in the heel of the shoe to help control a moderate footdrop deformity, as a substitute for a short-leg brace. This is in limited use at present, but the idea might be used by others; we would appreciate hearing comments on its use. The average weight used is approximately 14 ounces.

Again, we ask for your comments in all of these fields, as it is our function to distribute them. This will be of considerable aid to the innovator of the idea, as he can thereby gain a fuller evaluation and perhaps modify his idea for more successful use.

EVERETT J. GORDON, M.D.

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.

III

Editor's Note: This is the second in a series of case reports from the Child Amputee Prosthetics Project, University of California, Los Angeles. The first such report, Cases I and II, appeared in the September 1959 Journal, Pages 44-50.

A six-year-old boy with congenital left very short below-elbow amputation was first fitted in December 1955. His mother rejected the incomplete child at birth. He lived with his paternal grandmother, but had good relationship with father, who brought him in. He was a bright child; his father was anxious for him to have help. He appeared to be a good candidate for prosthesis. He was fitted with a step-up hinge and 99x hook (Fig. 1).

It was quickly noted that, with the split socket, he lacked the necessary strength to obtain full elbow flexion. For this reason, a forearm lift assist [1] was added to the prosthesis. This, in turn, created a demand for greater excursion of cable to open the T.D. at full flexion. Following this modification, he became a very competent user. He wore the device all his waking hours.

During the ensuing year, his parents were divorced and he was placed in a foster home. His father became a Deputy Sheriff. The boy made a good adjustment to these conditions. He outgrew the prosthesis and a new one was made.

He continued to be a good user, and outgrew two more prostheses. In September 1958, the fourth artificial arm with No. 88 hook was delivered. The father was then a federal prison guard. He is an unstable person who never stays long in any job. At that time it was noted that though this boy was undoubtedly a constant wearer, he was not a good user as he should be in view of his intelligence and the encouragement he has had from his father. The psychological trauma incident to the divorce, living in a foster home, and pathetically striving for some normal relationship with a somewhat unstable father, whose work sometimes keeps him away from home for several days, undoubtedly contribute to the substandard performance.

The addition of a very simple device, the forearm lift assist, resulted in a significant improvement in performance.

The relatively poor performance level here appears to be due to the absence of a feeling of real need for the prosthesis. He wears it to please his father.

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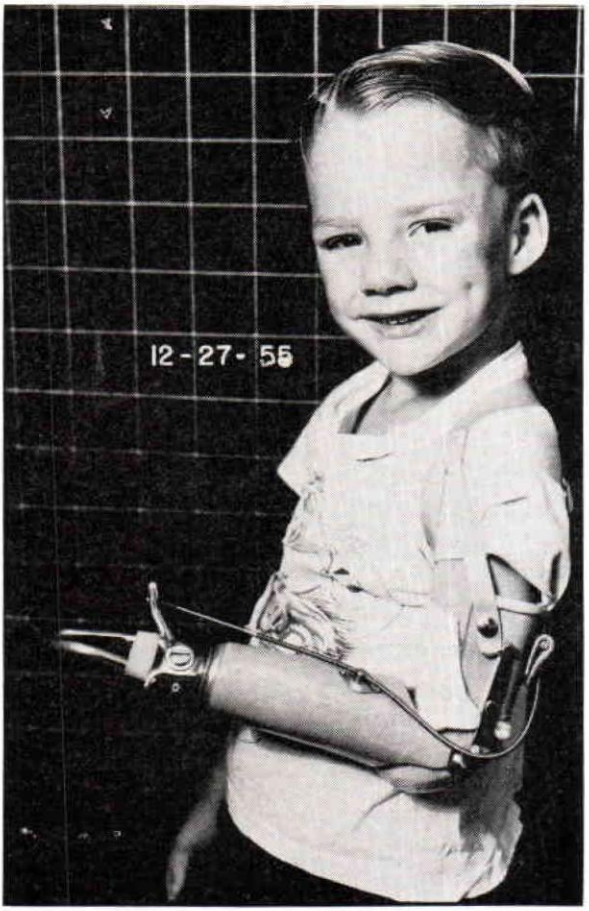
[1] Dual Control System for Split Socket Prosthesis, page 166 of the Manual of Upper Extremity Prosthetics, Dept. of Engineering, Univ. of Calif., Los Angeles, 1958.



Case No. III

IV — D. H.

An 8-year-old colored boy was first seen in November 1953, fifteen months after a right forequarter amputation by a freight car. (Fig. 1). A secondary scoliosis had developed. He lives 90 miles from UCLA. Prescription in the face of the handicaps of distance, membership in an underprivileged group, questionable parent cooperation, no available local training facilities, and a deformity severe enough to prohibit very great function, was considered justified because of the magnitude of the challenge to an investigative program.

A forequarter amputation prosthesis with axilla loop, straight shoulder plates, nudge elbow lock control, passive friction wrist rotation union, and Dorrance No. 88 hook was furnished in March 1954. The rib cage of this boy was too straight up and down to keep this shoulder cap in place without additional support. For this reason an over-the-shoulder clip was riveted to the prosthesis to keep it from slipping downward. Transportation and family difficulties made adequate training unfeasible. Consequently he became a wearer but not a user. The scoliosis was corrected.

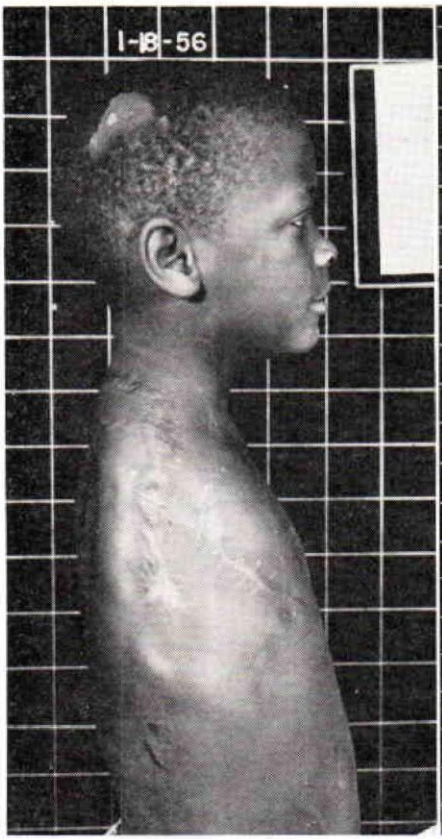


Figure 1—Showing right forequarter amputation

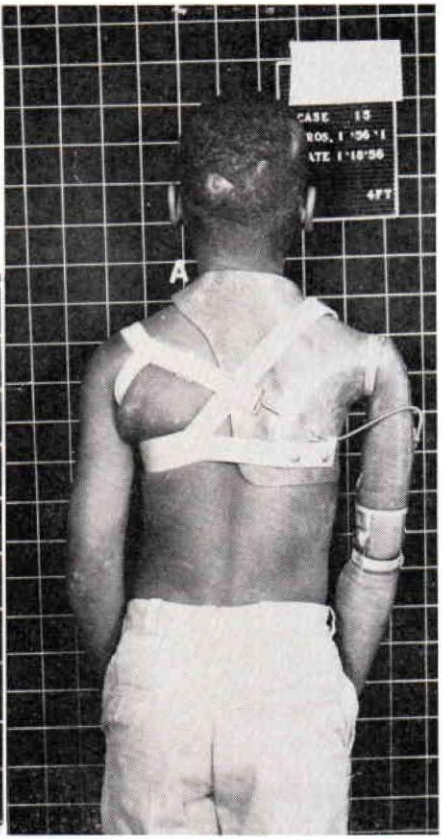


Figure 2—"A" shows the over-the-shoulder clip incorporated into the socket to keep the prosthesis in place.

Approximately two years after fabrication of original prosthesis, he had outgrown the device and a second one was made. In the second prosthesis, the over-the-shoulder clip was incorporated into the socket.[1] (Fig. 2). Canted shoulder plates permitting simultaneous flexion and abduction of arm were used.[2] The nudge control of elbow lock was replaced by a strap running from the region of the right nipple to top of left trousers anteriorly. A twist of trunk activated the lock. (Fig. 3). During the ensuing weeks of training, he exhibited good understanding of the controls, and, considering his severe disability, became a fair performer.

Upon his return home, there was no one to encourage and guide him in prosthetic use. He quickly reverted to intermittent wearing. His non-use was due partly to inadequacy of this type of prosthesis to provide any very great function. He could, when directed, open the TD in the range between full extension and 90 degrees elbow flexion, but not beyond this. In this small child, with only one scapula, cable excursion is restricted even more than it would be in a larger person, or one with both scapulae.

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[1] Manual of Upper Extremity Prosthetics 2nd Ed. Dept. of Engineering, UCLA, 1958, p. 297.

[2] IBID, p. 137.

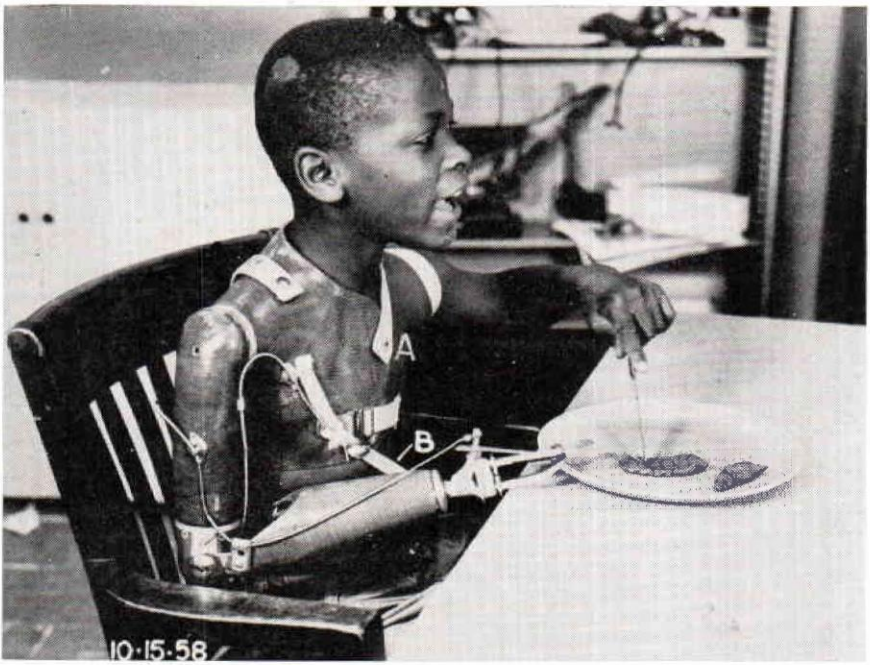


Figure 3—In his present prosthesis, over-the-shoulder clip has been replaced by a strap A. Elbow lock control is by a strap running to the belt on the opposite side B.

Efforts to initiate training in his community were not completed until four months after he received his second arm. He was persuaded to wear the device while in school, where he used it for some holding activities. There was no outside school use. Numerous adjustments of shoulder cap, harness, placement of control straps, cables, etc. had to be made from time to time. (It would have been financially impossible for a private shop to invest the time his problems demanded).

He again outgrew the prosthesis and a third one was given him in September 1957, almost four years after his initial visit. In the third device, a strap replaced the over-the-shoulder clip (Fig. 3) as his thorax had developed a sufficiently trapezoidal contour to hold the socket on.

He still performed at a relatively low functional level. This was due partly to the limitations imposed by the equipment, *i.e.* functional efficiency of prosthesis, and partly to lack of motivation. He could perform some simple tasks, such as button his cuff, carry a tray with both hands, sharpen a pencil, and hold a nail for the hammer.

For five months following delivery of the third prosthesis, there was no local training. When last seen in December 1958, he did not use the prosthesis except during training sessions, after a four-and-a-half year trial. His mother is only superficially interested in the problem. The scoliosis, which had developed post trauma, was corrected by the weight of the prosthesis.

The severity of his handicap and the impossibility of providing use stimulus or training in his home environment contributed to a rather unsatisfactory functional result here. The limited motor power (single scapular

motions) available for harnessing in this child, and the technical limitations inherent in the devices prescribed, all militated against a high performance level. These emphasize the desirability of development of a source of external power to operate prosthesis in the extremely handicapped amputee. A weighted shoulder cap alone would have corrected the scoliosis.

AN IMPROVED METHOD FOR SHAPING LIMBS

HARRY CAMPBELL, C.P.

Child Amputee Prosthetics Project, University of California, Los Angeles

The modern prosthetist is as truly an artist as any brush-wielding Rembrandt or Picasso. Each piece of his work bears some characteristic touch, which is the stamp of his personal talent. Just as surely as a fine canvas reveals, through stroke or color tone, the identity of its creator, a production in the field of prosthetics can be identified by those who know the products, with complete assurance: "This is the work of ————————; that was done by ————————."

Such artistic achievement is a source of very great pride, not only to prosthetists themselves, but also to those in all other branches of medicine who have occasion to work with these aids or their wearers. Sometimes, however, the naturalness or suitability of the appliance for the particular patient is sacrificed to artistic effect. This problem has been minimized, if not solved, by a new approach to the shaping of artificial limbs.

The technique described below was devised and used in the Child Amputee Prosthetics Project at the University of California Medical Center in Los Angeles, under the direction of Dr. Milo Brooks. It has been largely the work of Mr. Harry Campbell, C.P., with the cooperation of Mr. Lee Wilson, C.P., of the University of California at Berkeley. The method yields especially good results in wooden appliances.

Materials needed are: a Polaroid camera, projection film type 46, a grid background of one-inch squares, tracing paper, measuring tape, scissors, a band saw, and a sander.

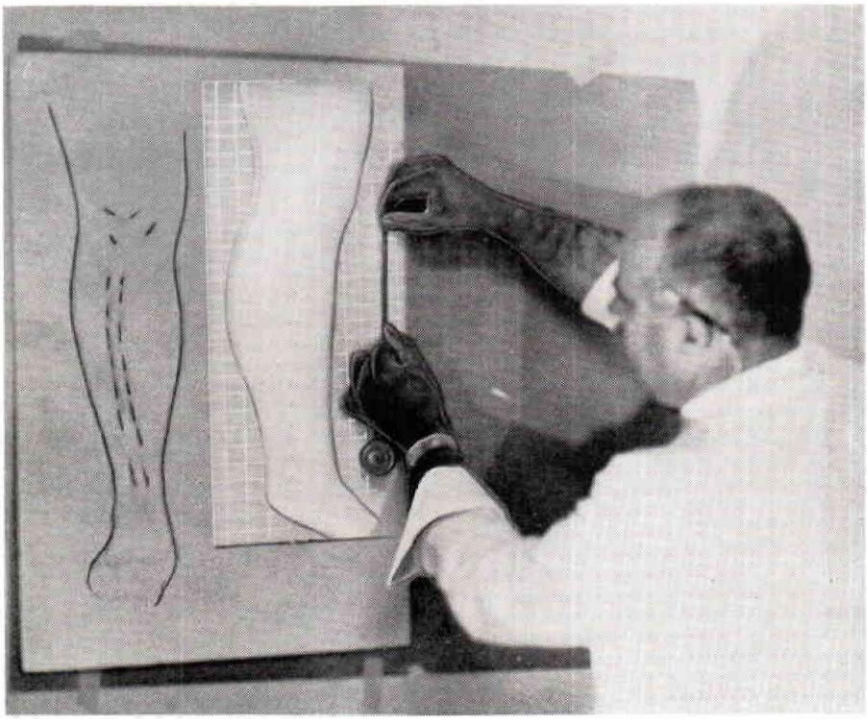
The procedure is as follows:

1. Front and profile photographs are taken of the good limb (using a Polaroid camera and projection film, type 46) against grid paper.

2. The two slides are then reversed, or turned over, to give the outline of the opposite limb.

3. These can be used in the plastic mounts furnished for a 4x4 projector, or trimmed to fit 2x2 glass mounts. The latter size is correct for a standard-type 2x2 or 35 mm slide projector.

4. Next, they are projected to correct size, onto template or pattern paper. Careful measurements are made at this point (as shown in the figure), to insure the accuracy of the one-inch squares on the grid.



5. Prominent markings are sketched in.

6. The tracings are cut out, and applied to a wooden block of the necessary size.

7. The block is then shaped to the photograph tracing with a band saw. Photographs or slides are used as a further guide to naturalness.

8. Finishing is done on a sander, according to the usual method.

There are many advantages of this slide-projection procedure:

1. Distortions, such as now occur on tracings, are eliminated.

2. Better duplication of muscle contours in a standing or walking position, with relation to the type of shoe to be worn, is possible.

3. Because the equipment is simple, the method is quicker and easier than tracings.

4. Slides or films are easily stored as a compact permanent record.

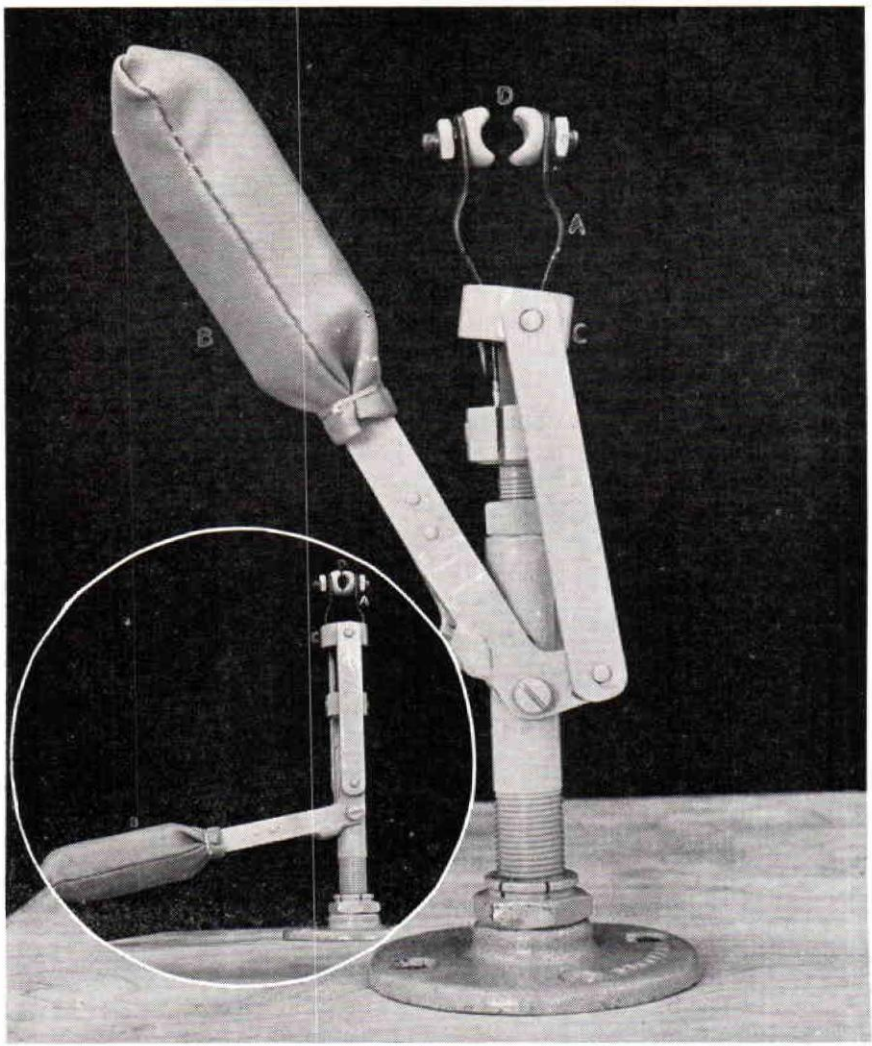
5. Less time is required with the amputee.

Although this process is still in the developmental stage, principally because of the small number of cases at hand, those who are using appliances so made are greatly pleased with the result.

CLAMP DEVICE TO AID IN PLACEMENT OF TUNNEL PINS OF BILATERAL AMPUTEE WITH CINEPLASTIC OPERATED PROSTHESIS

MURIEL E. ZIMMERMAN, OTR* and TOWNSEND M. HICKS**

Complete independence in the use of any prosthesis is the ultimate goal. This means not only the use of the arm itself for performing various functions, but also the ability to put on and remove the prosthesis.



Detail of clamp mechanism. (Open). The circled insert shows the clamp mechanism closed.

* Supervisor of the Orthetics Service, Institute of Physical Medicine and Rehabilitation, New York University-Bellevue Medical Center, 400 East 34th St., New York 16, N.Y.

** Designer, Orthetics Service.

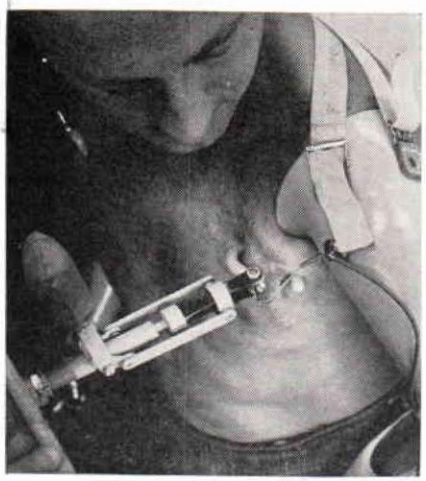
a. Tunnel pin placed in clamp and locked in place with chin lever.

b. Inserting pin in tunnel by moving body over pin.

The device shown and described in this article was designed for this purpose. The patient is a bilateral amputee. Prostheses were provided for both arms, in which part of the function was activated by a pectoral cineplastic tunnel. The patient could put on and remove the arms themselves, but he could not place the curved pins in the pectoral tunnel.

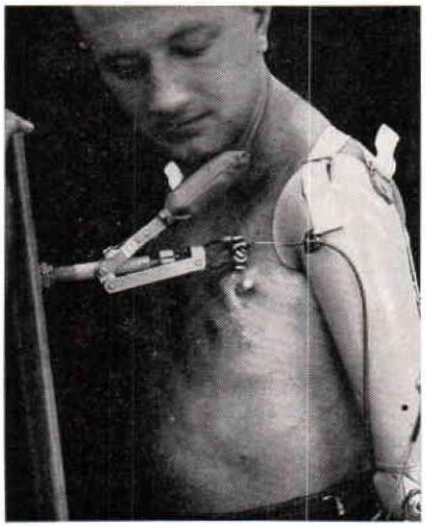
A mechanism was needed to hold the tunnel pin. It was constructed as follows:

A spring clamp "A" opened and closed by means of a chin-operated handle or lever "B", which raises and lowers a slide ring "C" over the curved portions of the spring clamp. The clamp is provided with special ends "D", shaped to hold the round tunnel pin in a secure grasp; these



c. Completion of insertion of tunnel over pin.

d. Unlocking clamp from tunnel pin.



e. Locking clamp over tunnel pin (start).

f. Locking clamp over pin (partially locked).

are covered with plastisol. The chin lever is padded for comfort. The whole mechanism is mounted on to the wall or wherever the device is convenient for use.

An added feature, found helpful in placing pin in proper position to go into tunnel, was the provision of the screw portion of the device. By grasping the ends of the clamp in the mouth, the clamp could be rotated to desired angle.

g. Locking of clamp (completion).

h. Removing pin from cineplastic tunnel.

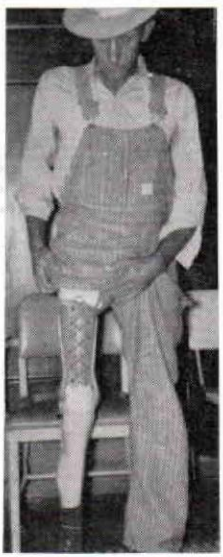
The device is operated as follows:

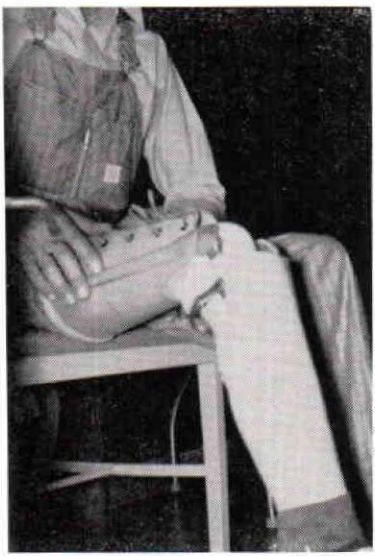
The tunnel pin is picked up by the mouth and placed into the clamp. Clamp is tightened by pushing lever up and away from self. By maneuvering the body, the tunnel opening is brought to the pin and pushed over it into position. When pin is in place, then clamp is unlocked by bringing the lever forward. (See picture series *a* through *d*.) Pin is removed by reverse process (see picture series *e* through *h*).

CONGENITAL AMPUTEE CASE

Reported by DONALD BOHNENKAMP, C.O. & P.
President, Missouri Valley Brace Company, Omaha, Nebraska

Donald R. Bohnenkamp reports to the Journal about the case of a 46-year-old patient who was a congenital amputee. He had a long history of ill-fitting limbs and of not being able to walk properly. He has a small foot attached to the back of his calf. This might have been removed by surgery, leaving an excellent below-knee stump, but the patient could not be convinced that this would be best for him.





When first seen the patient was using a wooden shank with an anterior cutout covered by a laced leather pad. Crutches were necessary for ambulation.

To give him a good fit, the Missouri Valley Brace Company made a molded plastic socket. It was necessary to cut out the posterior wall and hinge it back so that the stump could be inserted easily. The posterior wall was locked in place with a trunk latch type of clasp. Now he has worn this limb for about six months and is quite satisfied with it.

In the accompanying photographs details of the patient's stump and new prosthesis are shown with the prosthesis. There does not seem to be

any sensitive area in the stump but he gets an irritation if too much weight is borne on the medial aspect of the tibia. The weight in the new prosthesis is distributed around the top of the socket, with most of it being supported on the anterior portion just below the patella. There is also some weight carried on the ball of the small foot. The socket is of hard plastic shaped the same as a below-knee limb. A conventional foot is used.

This prosthesis was designed and fitted by Mr. David Burton, C.P. & O.

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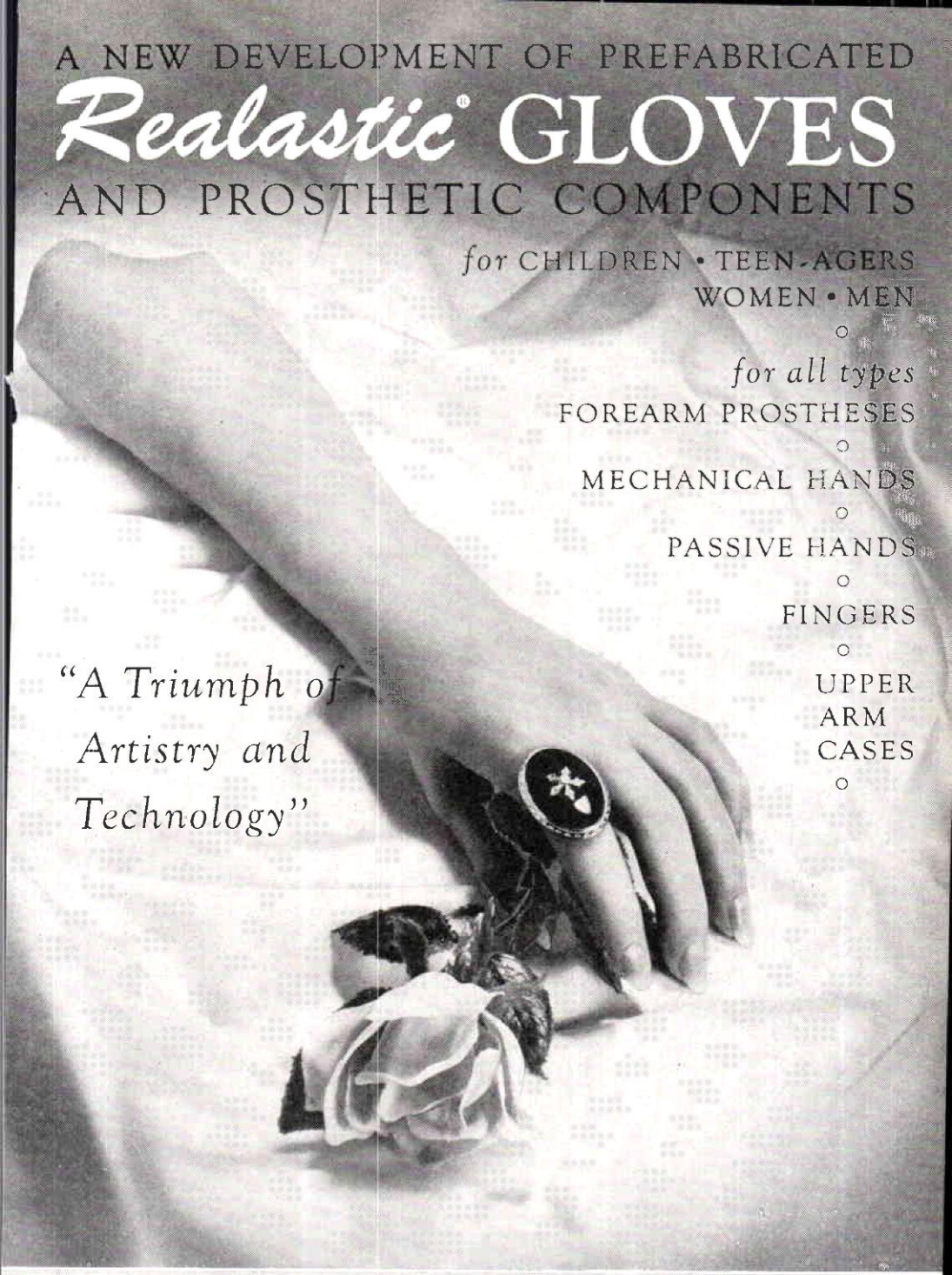

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FOLLOW-UP STUDY ON A GROUP OF OLDER AMPUTEE PATIENTS

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Detailed interviews were held with 51 amputees followed for varying periods after fitting of prostheses and release from hospital. Psychological factors affecting attitude and motivation seemed to be operating to various degrees. Favorable morale regarding value and use of the prosthesis by individuals appeared to be related to degree of change in physical condition, mode of living, and restriction on activities. It is believed worthwhile to provide prostheses with assistive devices for older amputees in order to help them remain more functional in their self-care, ambulation, and post-hospital adjustment.

With the increasing number of older patients in the hospital population, it is pertinent to study various aspects of treatment and the outcome as it relates to such individuals. The purpose of this study was to obtain follow-up data concerning the posthospital adjustment of a group of older patients for whom the amputation of a limb or limbs had been necessary. The major areas investigated were physical status, mortality trends, personal and socio-economic adjustment, and the extent to which a prosthetic appliance had been prescribed and was actually being used.

Patients included in this study were 55 years of age or older at the time of surgery and had been out of the hospital at least one year by the time of the follow-up interview. Through the assistance of the medical record librarian, cases were identified and initial data entered on work sheets for amputee patients who were in the designated age range and who had been discharged from this 712-bed general medical and surgical hospital, the Veterans Administration Hospital, Oakland, Calif., between Jan. 1, 1950, and April 30, 1955. There were 53 such patients. We were able to obtain follow-up information on 51 men, who comprised the number in this study.

The method of investigation consisted of two parts: a review of the hospital records and a follow-up survey. Clinical, physical medicine and rehabilitation, and social work service records were examined concerning pertinent areas which were uniformly reported. A schedule was prepared and a follow-up survey was carried out through social work service. An essential part of this was a personal interview with each ex-patient as a means of making observations and of getting first-hand information.

Hospitalization Data

Background Information.—All 51 amputees were males. Sixteen were between the ages of 55 and 59.9 years, 22 between 60 and 64.9, and 13 over 65 (one man was 82). The mean age was 63.1; the median age was 62.0 years. Three-fourths of these patients were under 65 years of age. Information concerning marital status and mode of living prior to admission to the hospital is combined in table 1.

Table 1.—Marital Status and Mode of Living of Patients Prior to Admission to VA Hospital

Mode of Living	Patients		Married	Single	Divorced	Widowed
	No.	%				
With own family	24	47.1	24	—	—	—
By self	15	29.4	—	9	4	2
Domiciliary setting	6	11.8	2	—	3	1
With relative	5	9.8	—	3	1	1
Other hospital	1	1.9	—	—	—	1
Total	51	100.0	26	12	8	5

One-half of the patients were married. All but two of these had been living at home. One had been at a state veterans home; the other, who had been in a Veterans Administration domiciliary, became ill when on holiday leave to visit relatives and was admitted to the hospital. Twenty-five patients were single, divorced, or widowed, and for them there was a diversified pattern in mode of living. Fifteen had lived by themselves in an apartment, room, hotel, or cabin; five had been residing with a relative; four were transferred for hospital treatment from a state veterans home; and one was transferred from another hospital after a cardiovascular accident.

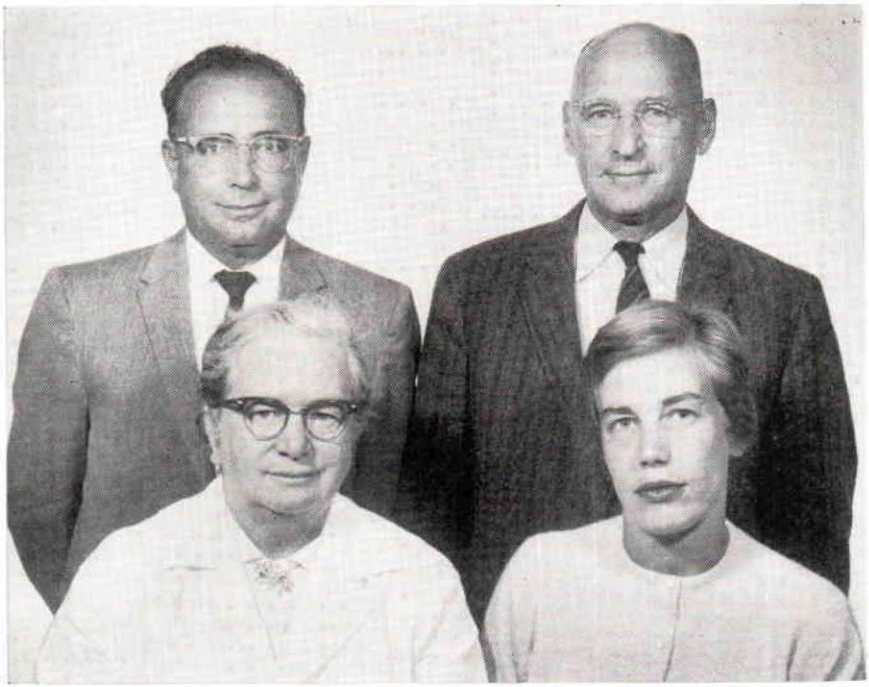
Ten of these 51 patients who were under the age of 65 were reported to have been employed prior to admission. Of those patients over that age, none was reported to have worked for some time. This employment picture appeared to be related primarily to conditions in the labor market affecting older workers and to the high incidence in this group of chronic illness which imposed limitations on occupational activity.

Major Pathological Condition and Reason for Amputation.—A characteristic of this group was the prevalence of multiple diagnoses. The major pathological condition was arteriosclerotic cardiovascular disease in 23, general arteriosclerosis in 10, diabetes mellitus with arteriosclerosis obliterans in 5, embolism and/or thrombosis in 5, traumatic fracture in 2, chronic osteomyelitis in 2, carcinoma in 2, thromboangiitis obliterans in 1, and traumatic arthritis in 1. The predominant major illness was arteriosclerotic cardiovascular disease, which occurred in 45.1% of the total number of patients. Those with some type of major arteriosclerotic involvement numbered 38 (74.5%) of the patients studied.

A trend in connection with age appeared when compared with diagnostic groupings. Of the 38 patients suffering from a major arteriosclerotic involvement, 78.9% were 60 years of age or older. For the 13 having other major pathological conditions, 61.5% were under 60.

By far the most frequent complication which was the reason for performing an amputation was that of gangrene. This occurred in 37, or 72.5%, of the cases. There were four instances of osteomyelitis; three each of ulcer and embolism; and one each of vascular insufficiency, nonunion old fracture, purulent drainage, and epidermoid carcinoma.

Fifteen patients had sympathetic blocks, 4 of them having had more than one block; 17 patients had sympathectomies, of whom 5 had bilateral sympathectomies. Six of the above 32 had both a sympathetic block and a sympathectomy. In spite of these therapeutic surgical interventions to improve circulation, it was still necessary to perform an amputation at a later date on all of these patients.



Reading from left to right back row: Arthur A. Buckley, Rehabilitation Coordinator, PM&R; Howard F. Palmer, Chief, Social Service. Reading from left to right in front row: Carrie E. Chapman, M.D., Chief, PM&R Service; Dorothy Bell, Social Service Worker.

Site of Amputation.—The site of amputation was above the right knee in 24, above the left knee in 14, bilateral in 10, upper part of the left arm in 2, and below the left knee in 1. There was a preponderance of amputations above the knee on the right side. It was thought that one factor affecting this might be poor sitting posture, namely, with the leg on the dominant side being crossed more often.

Of the 10 bilateral amputees, 9 had a major arteriosclerotic involvement. Two had double above-knee amputations while hospitalized, and eight had had previous amputations. For these eight, the time intervening between the two surgical procedures tended to fall into two patterns; for five the interval was from 12 to 24 months, and for three it was between 56 and 62 months. The resulting situation was that, of the 10 bilateral amputees, 6 had both amputations above the knee and 4 had one above-knee and one below-knee amputation. The high incidence of amputations above the knee, whether unilateral or bilateral, posed a greater problem in terms of rehabilitation and ambulation training.

Deaths in the Hospital.—Four of the 51 patients died in the hospital. All had suffered from arteriosclerotic cardiovascular disease. Their ages were 63, 68, 71, and 78, all being older than the average age for the total group. There were, then, 47 amputee patients who were discharged from the hosiptal.

Patients Receiving Prosthetic Appliances.—The decision as to whether or not a patient was going to be issued a permanent prosthesis was based primarily on a careful medical appraisal of the nature and extent of the patient's illness or injury in relation to his physical and mental capacity to

use a prosthesis and the effect on his functional efficiency in performing activities of daily living outside of the hospital environment.

Such an evaluation required a thorough and comprehensive review of not only all the medical factors involved but also the nonmedical aspects. In this respect, the importance of peripheral vascular tests cannot be overlooked as a base line in evaluating the circulation of the limb or limbs concerned. These tests were significant not only in determining the necessity for amputation but as a follow-up evaluation of the condition of the extremity or extremities under medical and physical therapy treatment.

Of the 47 patients, 26, or 55.3%, were fitted with and trained in the use of prosthetic appliances. This included one arm amputee. For the second arm amputee, the stump was too short for a prosthesis to be feasible. There was variation according to age and major pathological conditions in patients who received prosthetic appliances. Of the patients aged 55 to 59.9 years, 10 received prostheses and 6 did not; of those aged 60 to 64.9, 14 received prostheses and 7 did not; and of those aged 65 and over, 2 received prostheses and 8 did not. Of the 34 patients with a major arteriosclerotic involvement, 15 (44.1%) received prostheses; of the 13 with other major pathological conditions, 11 (84.6%) received prostheses.

Of the 10 bilateral amputees, prostheses were issued to 3. Two were 55 and one was 59 years old. One used a prosthesis which he had, plus crutches. One used an old prosthesis plus a new one and crutches, and the third was issued an above-knee-right and a below-knee-left prosthesis and crutches.

Physical Medicine and Rehabilitation Prosthetic Training Program.—The prosthetic program comprised four phases. Phase 1—bed training—consisted primarily of body positioning, general conditioning, and bedside stump exercises. Phase 2—clinical training—consisted of preambulatory and crutch training, bandaging, and exercises such as mat, general conditioning, and Buerger-Allen exercises. Phase 3—pylon training—consisted of progressive resistive exercises to stump, pylon training, balancing in parallel bars, and continuation of Buerger-Allen exercises, bandaging, and mat exercises as indicated. Phase 4—prosthetic training—consisted of a continuation of all activities of phase 3, when indicated, except that prosthetic training was conducted instead of pylon training. Concurrent with this prosthetic training, the patients participated in an intensive self-care program.

The use of a pylon in ambulation training was one of the most important phases of the amputation program. Generally, about six to eight weeks after surgery a plaster bucket was made of the patient's stump, either above-knee or below-knee. The plaster bucket was then inserted into the leather cuff of the pylon, which could be adjusted to the individual patient's needs.

Pylons have proved advantageous in our program in (*a*) shrinking and seasoning a stump for preparation of a permanent prosthesis; (*b*) retraining of the proprioceptive tracts during the shrinking period, thus enabling the patient to build confidence in balance and coordination while ambulating; and (*c*) eliminating the cost of expensive bucket adjustments which are necessary when preparing a stump during training for a permanent artificial limb.

Social Work Service.—A number of these patients came to the attention of social work service at an early point as the result of personal difficulties connected with hospitalization or impending surgery or because of financial or family difficulties. Because of social, economic, or emotional complica-

TABLE 2.—*Period of Hospitalization of Patients*

	Patients No.	Days Hospitalized Median No.	Days from Amputation to Discharge Median No.
With prosthesis	26	192.5	133.0
Without prosthesis	21	129.0	90.0
Total	47	154.0	112.0

tions, other patients became known later on. Some requests for a social evaluation, as a part of rehabilitative or treatment planning, were made initially and some at a subsequent point in hospitalization. Despite the specific problem presented, the factors of the threat represented by amputation, the imposition of limitations of activity, and concern about the future were reactions with which the patients needed help. In the process of discharge planning, it was necessary to mobilize to the utmost the capacities existing in the patient and his family, including all relatives, and to utilize all available community resources. With a number of these older patients a problem was to conteract their reluctance to leave the hospital. The general pattern was not so much one of continuous activity with the patient but rather that of giving the needed services according to an integrated timing with on-going treatment and rehabilitative planning.

Period of Hospitalization.—There was a wide range in the number of days of hospitalization, varying from 52 days to periods of 573 and 579 days for two patients with resistive bone infections. The mean was 147 days, there being four patients with that period of hospitalization. Because of the two atypical cases, the median, rather than the mean, was computed for each group (table 2). For the total group the median number of days hospitalized was 154.0, and the median interval between the date of amputation and the date of hospital discharge was 112.0 days. It is of interest to note that the difference in number of hospital days from amputation to discharge was only 43 days higher among those who had received prostheses than those who had not.

Capacity for Self-care and Ambulation.—At the time of leaving the hospital 32 of the 47, or 68.1%, were completely able to care for their personal needs, while 15 needed partial assistance. Since the capacity to ambulate was not involved for the two arm amputees, the number reviewed here is 45. The categories used were based on the prevalent or customary way of getting around.

Twenty-five leg amputees had been fitted with prostheses. One ambulated with the prosthesis alone, 10 with the prosthesis plus a cane, and 13 with the prosthesis plus crutches. One 71-year-old man, who was insistent that he be given a prosthesis, was able to use it only part of the time with the aid of crutches, but he actually depended on crutches to get about, and was so classified. Six ambulated with crutches alone. Fifteen got about in a wheel chair, seven of them being the bilateral amputees for whom prosthetic appliances were not believed to be advisable. All of these patients were given intensive self-care training so as to be functional in a wheel chair.

Posthospital Living Arrangements.—Of the 47 patients who were discharged, 21 of the 24 married men returned to live with their own family. Six single, three divorced, and one widowed went to live by themselves in an apartment, room, hotel, cabin, or a place where they had room and board. This mode of living had been their pattern in the past and was one which they preferred to try again on leaving the hospital. Of the eight who went to a domiciliary setting or state veterans home (three of whom were married, one single, two divorced, and two widowed), five had been transferred from there, and this was the most feasible discharge plan for an additional three. Of the seven who went to live with relatives (four of whom were single and three divorced), three went to a sister, two to a daughter, one to a son, and one to his wife's mother. One single man was transferred to a county hospital for care of chronic conditions.

When the mode of living prior to admission was compared with that at the time of discharge, it was found that the percentage of those in their own home remained about the same. There was a drop in the number of those living by themselves and an increase for those going to a domiciliary setting or to live with a relative.

Follow-up Data and Survey

Mortality Data.—On completion of the follow-up survey, it was found that, of the 47 patients who had been discharged from the hospital, 15 had died. These, added to the 4 who had died in the hospital, totaled 19, or 37.3%, of the original 51 patients in the study.

TABLE 3.—*Major Pathological Condition of Patients Who Died*

Major Diagnosis	Total	Died	
		No.	%
Diabetes mellitus with arteriosclerosis obliterans	5	3	60.0
Arteriosclerotic cardiovascular disease	23	12	52.2
General arteriosclerosis	10	2	20.0
Embolism and/or thrombosis	5	1	20.0
All other	8	1	12.5
Total	51	19	37.3

Of the 15 who died after having been discharged, 9 had been readmitted to this hospital for a total of 21 times, usually for treatment of the same conditions or for complications connected with them. In four instances a stump revision was necessary. For one patient with general arteriosclerosis the amputation of the other leg had to be done within six months. Some of the patients died in this hospital, but a number did not; therefore, we do not have uniform data as to the specific cause of death.

A correlation between major pathological condition and mortality trend appears in table 3. The mortality trend was considerably greater for those in whom arteriosclerotic involvement was complicated by a diabetic or a cardiovascular condition. It was the same for those having general arteriosclerosis and those with embolism and/or thrombosis and was much less for those with other diagnoses.

The mortality trend according to unilateral and bilateral amputees and in regard to those having and those not having prostheses is given in table 4. The intervening time for the total number who died after leaving the hospital ranged from 14 to 45 months, with an average of 27.9 months, or well over two years. The average for the bilateral amputees was slightly higher than for those with one leg amputed.

Of the total, four had prostheses when they left the hospital. Subsequently one unilateral and one bilateral amputee had been fitted with a prosthesis. For another patient, the amputation of the remaining leg had been necessary and an additional prosthetic appliance had been prescribed. Thus, the total having prostheses became six; these lived from 24 to 45 months, or an average of over three years. The nine who had no prostheses lived from 14 to 35 months, with an average of less than two years.

As to age, the average time out of the hospital for the 15 amputees who later died was 32.0 months for six in the 55-to-59.9-year age group, 28.2 months for the five in the 60-to-64.9-year age group, and 21.5 months for the four who were 65 years of age or older.

Method of Survey.—Of the patients discharged, 32, or 68.1%, were interviewed by a social worker at their place of residence. In this way the items in the survey schedule were covered and an opportunity was provided for direct observation. These contacts were usually made without prior notification to the ex-patient. Twenty who lived within the geographical area around the hospital were seen by one of us (D. M. B.). Nine who were living in different parts of the state and three who were in other states were interviewed by social workers from various Veterans Administration regional offices. In nearly all instances, these former patients felt that the visit was an indication of interest in how they were doing and they were quite willing to discuss their situation.

Period Between Hospital Discharge and Follow-up Interview,—One of the criteria for selection of this group was that each patient be out of the hospital at least one year by the time of the follow-up survey in 1956. The actual interval between hospitalization and follow-up ranged from 14 to 72 months, with the frequency distribution being fairly even. The mean was 39.4 months and the median 36.0 months.

Physical Status.—Considering the age of these amputees and the prevalence of degenerative disorders, it was not surprising that 20 of the 32 had been rehospitalized here or elsewhere. Seven, including three who had been rehospitalized, had received treatment from a private physician, and one had been treated at a county hospital. Of the 20 who were rehospitalized, 9 experienced difficulty with the stump, 5 had a stump revision, 2 reported continuance of phantom pain, and 3 (all of whom had arteriosclerotic cardiovascular disease) required an above-knee amputation of the other leg within 11, 14, and 24 months respectively. Of the total of those in the follow-up survey and those who died after having left the hospital, nine, or 19.1%, had to have a stump revision, and for four, or 8.5%, the amputation of the other leg became necessary.

Inasmuch as the individual's feeling about his physical condition played an important part in his general attitude and adjustment, this point was covered with each amputee. Fourteen reported their conditions were good, 13 fair, and 5 poor. These subjective reactions appeared to be related not only to presence of symptoms or of discomfort and the recency of having received treatment but also to their ability to ambulate or to move about and to their capacity for caring for their personal needs.

TABLE 4.—*Number of Months Between Hospital Discharge and Death of Fifteen Patients*

Site of Amputation	Patients No.	Months Intervening Av. No.
Unilateral—above knee	9	26.2
With prosthesis	3	33.3
No prosthesis	6	22.7
Bilateral—above knee	6	30.5
With prosthesis	3	42.3
No prosthesis	3	18.7
Total	15	27.9
With prosthesis	6	37.8
No prosthesis	9	21.3

It was interesting to note that only four of the amputees were still protesting the loss of a limb. The others had, in varying degrees, and better for the unilateral than the bilateral amputees, come to a psychological acceptance of the loss of their limb or limbs. One man, an obviously poor candidate for a prosthesis, was resentful because he had not been given one. There seemed to be the possibility that his feeling was related to others having been issued prosthetic appliances in the domiciliary where he was living. Three former patients expressed the reaction that their hospitalization had not included sufficient treatment or had not been long enough. On checking the records, however, it was found that considerable effort had been expended in their treatment, that they had all been trained in the use of their prostheses, and that they had all been hospitalized much longer than the average.

TABLE 5.—*Mode of Living and Marital Status of Amputees at Time of Follow-up*

Mode of Living	Patients No.	%	Married	Single	Divorced	Widowed
With own family	14	43.8	14	—	—	—
With a relative	6	18.7	1	3	1	1
By self	4	12.5	—	2	2	—
Domiciliary setting	4	12.5	—	—	2	2
Other hospital	4	12.5	2	1	1	—
Total	32	100.0	17	6	6	3

Ability for Self-care.—The ability for self-care at the time of follow-up compared with that at time of leaving the hospital was as follows: There was a drop in the number of those who were capable of taking care of their own needs (from 24 patients to 19), a slight increase among those requiring partial assistance (from 8 patients to 9), and a definite increase for those needing full-time care (from no patients to 4). Of the four in the last category, one was a bed patient at home, and three were in the hospital unit at a state veterans home.

With age and physical limitations, there appeared to be a decrease in capacity for self-care and an increase in the need for arrangements where more care or supervision could be provided. This observation was reflected also in the material in the next section.

Mode of Living and Marital Status.—Table 5 shows data on the mode of living of the amputees at the time of follow-up. Of the 17 married men, 14 were living with their families, 1 was with a relative, and 2 were hospitalized at a state veterans home. Of the 15 who were either single, divorced, or

widowed, 5 were living with a relative, 4 were living independently, 3 were residing at a state veterans home, one was at a Veterans Administration domiciliary, and 2 were hospitalized at a state veterans home.

A comparison of percentages as to the mode of living at the time of admission, at the time of hospital discharge, and subsequently at the time of follow-up revealed the following trends: The number of those living with their own family remained the most constant, with only a small decrease in the percentage; there was a marked drop in the number of those living alone and an increase for those in a domiciliary setting. Twice the number were living with a relative, while there was a noticeable increase in number of those in another hospital.

Only 6 of the 32 amputees had made shifts in living arrangements between the time of hospital discharge and follow-up. Two had merely moved from the home of one relative to that of another. Four had been living alone; of these, two had moved to the home of a relative and one had gone to a Veterans Administration domiciliary and one to a state veterans home. This relative lack of mobility may be partially explained by the age and physical disability of this population. It also indicated that the plan at the time of leaving the hospital, if suitably made, was likely to be the continuing living arrangement for a person in a group such as this.

Vocational and Financial Situation.—One amputee was gainfully employed full time at reconditioning valves in his own shop. Three others were working part time; one did repair work and saw-filing in his workshop at home, one supported himself and his wife by operating a concession in an amusement park, and the third operated a lodge in the hills where he lived during the hunting season. All four men were between 61 and 66 years old, all had an above-knee amputation of the right leg, and all had been fitted with prostheses. They had been out of the hospital for 14, 26, 36, and 62 months respectively. They all expressed the opinion that having a prosthesis was most helpful in enabling them to pursue a vocational activity. Their general attitude was observed to be very good.

Financially, it was found that two men were fully self-supporting. Another received Social Security and Old Age Assistance benefits. The remaining 29 were in receipt of Veterans Administration benefits. For 14 of these, this was their sole source of income. This income for the other 15 was supplemented by Social Security or retirement benefits, by the wife working in five instances, by part-time work for two, and by Old Age Assistance for one. Of the 32 amputees, 6 who were married and 4 of the others reported having a difficult time financially. Twenty-two stated that they were managing adequately.

Recreational Activities.—The recreational activities of this group seemed to be influenced by the individual's capacity to move about, his attitude toward his physical condition, and his living situation. An examination of the changes in recreational patterns was not possible inasmuch as there was little information available regarding recreational activities prior to the amputation. Our observations will be limited to the activities in which these amputees were engaging when they were interviewed for this study.

Recreational activities were classified as active or passive. Active recreation included gardening, walking, hiking, fishing, dancing, bowling, or such creative hobbies as wood carving or metal work. The passive forms of recreation were reading, listening to music, watching television, attending motion pictures, or card playing.

Thirteen amputees engaged in active types of recreation (this of course, did not exclude passive recreation), while 19 were interested only in

passive amusements. Of those who engaged in active recreation, 10 had prostheses and 3 did not. It appeared that a family living situation was more conducive to active recreational activities.

TABLE 6.—*Mode of Ambulation*

Mode	When Leaving Hospital			At Follow-up		
	Total No. of Patients	Unilateral	Bilateral	Total No. of Patients	Unilateral	Bilateral
Prosthesis alone or plus aid	19	17	2	15	14	1
Crutches alone	4	4	—	4	4	—
Wheel chair	7	4	3	9	4	5
Bed patient	—	—	—	2	—	2
Total	30	25	5	30	22	8

Ability to Ambulate or to Move About.—The capacity to ambulate did not affect the two arm amputees; therefore, the number considered in this section will be the 30 leg amputees. At the time they left the hospital there were 24 above-knee, 1 below-knee unilateral, and 5 bilateral amputees. Between that time and the follow-up interview, it had become necessary to remove the other leg for three above-knee amputees, which increased the number of bilateral amputees to eight. In addition, 21 amputees in the follow-up survey had been fitted with prostheses while hospitalized, but afterward two others obtained prostheses, making a total of 23 by the time of follow-up.

Considering the changes mentioned above, comparative data in table 6 regarding typical mode of getting about are based on both that at the time of leaving the hospital and that at the time of follow-up. There were no over-all changes among the unilateral amputees in regard to mode of getting about except for three who had required the amputation of the other leg. Of the eight bilateral amputees, however, only one (who had an above-knee and Symes amputation) was able to ambulate adequately, whereas five were confined to a wheel chair and two had become bed patients.

Next, the mode of moving about was examined more specifically, and the extent of ability to get about was appraised (table 7). At the time of leaving the hospital only one amputee had been able to ambulate with his prosthesis alone. At the time of follow-up this was true for eight, who could go as far as they wished or walk for moderate distances. The seven

TABLE 7.—*Ability to Move About*

Mode	Total No. of Patients	As Much as Desired	Moderate Distances	Around Quarters Only	Not at All
Prosthesis alone	8	5	3	—	—
Prosthesis plus cane	4	2	2	—	—
Prosthesis plus crutches	3	1	—	2	—
Crutches alone	5	1	1	3	—
Wheel chair	8	—	1	7	—
Bed patient	2	—	—	—	2
Total	30	9	7	12	2

who ambulated with their prostheses plus a cane or crutches did equally well, except for two who were restricted to moving about their quarters. Of the 13 who got about on crutches or in a wheel chair, 10 moved about their quarters only, and two had become bed patients.

Extent of Use of Prosthesis.—Of the 32 amputees, 24, or 75%, had received prostheses by the time of the follow-up interview (table 8). This

number included one arm amputee who used his prosthesis some each day but who tended to do most things with his uninvolved arm. Thirteen, or 54.2%, were using their prosthetic appliances regularly and consistently, and 3 used theirs some each day, but not as extensively as the 13.

That a certain amount of complications for a group of this age could be anticipated was borne out by their experiences. Nine reported pain, swelling, dermatitis, or other trouble with their stumps; two had a continuation of phantom pain; and five required stump revisions. Twelve, or one-half, reported having mechanical trouble or difficulty with the fit of the prosthesis. Most had had theirs repaired; two had been issued new prostheses.

TABLE 8.—*Extent of Use of Prosthesis*

Extent	Total No. of Patients	Unilateral Prosthesis	Bilateral Prosthesis
Regularly and consistently	13	12	1
Some each day	3	3	—
Infrequently	2	2	—
Not at all	6	5	1
Total	24	22	2

It appeared, however, that such physical or mechanical complications did not wholly explain the individual's adjustment to and use of the prosthesis. Psychological factors affecting attitude and motivation seemed to be operating to various degrees. Difficulty with stumps or prosthetic appliances did not appear to assume as much significance for those who used theirs consistently as it did for some of the others. For example, the three men who used their prostheses some each day were reported as being bored and inactive, afraid because of several falls, and complaining and seeking sympathy. Of the two who used their appliance only infrequently, one was reported to have "given up." His wife stated that he used his appliance very little because he "was afraid" and "had no nerve." The other man tended to project all blame for his situation outside himself and doubted if he "could do anything about it." This aspect also appeared to be operating with two of the amputees who were not using their prostheses at all.

Of the six men who were not using their prosthetic appliances at all, two, aged 62 and 71, both with arteriosclerotic cardiovascular disease, had within 11 and 14 months had an amputation of the other leg and had been confined to a wheel chair. Two other men, one aged 55 who had arteriosclerotic cardiovascular disease and one aged 59 who had diabetes mellitus with arteriosclerosis obliterans, had had cerebral accidents and were wheelchair patients.

The remaining two had discarded their prostheses. One, a 60-year-old single man and an alcoholic, was living on skid row and getting about on crutches. The other, a 65-year-old single man who was living with a relative, depended on crutches and had never tried to use his prosthesis. He said that he felt he was "about to die" and that he "did not care anymore."

Thus, it was found that, of the 24 amputees who had prostheses, 16, or 66.6%, used theirs regularly or some each day. Four, or 16.7%, had been forced to discontinue the use of theirs because of another amputation or because of a stroke. Four, or 16.7%, used their prosthetic appliances only infrequently or had discarded them.

General Attitude.—Based on the various aspects which have been discussed and on statements made by the 32 amputees interviewed, a composite evaluation showed the general attitude was good for 13, fair for 12, and poor for 7. The majority of those whose attitude was good were found to be experiencing less physical discomfort or symptomatology, caring for their own personal needs, living with their own family or with a relative, engaging in a more active type of recreation, and capable of ambulating in a satisfactory manner. To the extent that negative changes occurred in physical condition, mode of living, ability to get about, and restrictions in activities, the attitude tended to become fair and in a few instances poor.

SUMMARY

A study, based on a review of hospital records and on a follow-up survey, was made on 51 amputee patients who at the time of amputation were 55 years of age or older. There was a prevalence of chronic conditions and of multiple diagnoses. The most frequent complication necessitating an amputation was gangrene for slightly under two-thirds of these amputees. After a careful evaluation, including physical condition, age, and personal and socioeconomic factors, 26 of 47 patients were fitted with prosthetic appliances while hospitalized.

Data relative to physical status at the time of leaving the hospital compared with those at the time of follow-up revealed a considerably shifting picture. For example, evidence obtained concerning those who had died indicated that a fairly large number had required further medical care, had had trouble with stumps, or had had difficulty with prosthetic appliances. Nineteen patients (37.3%) had died, 4 during the period of hospitalization when the amputation was performed and 15 after having been discharged. There was a higher incidence of mortality for those whose arteriosclerotic involvement was complicated by a diabetic condition or by cardiovascular disease.

In the follow-up survey, 32 (62.7%) former amputee patients were interviewed at their places of residence. The time intervening since the termination of hospitalization ranged from 14 to 72 months. Four men who had been fitted with prostheses were gainfully employed. In all, 22 were managing financially, usually with the assistance of various benefits.

The number of amputees living with their own family remained the most constant, twice as many were living with relatives. There was a marked drop in the number living by themselves and an increase for those in a domiciliary setting or hospital. Nineteen men were completely self-caring, nine required partial assistance, and four needed full-time care. Thirteen engaged in active and 19 in passive type of recreation.

Twenty-four of the 32 men had, by the time of the follow-up survey, been fitted with prosthetic appliances. Of these, two-thirds were using their prostheses regularly and for part of each day, one-sixth had become unable to use theirs, and one-sixth preferred not to use theirs.

Favorable morale or general attitude appeared to be related to less extensive changes regarding physical condition, mode of living, ability to ambulate, and restrictions on activities. It is believed that it was worthwhile to have given these older amputees the benefit of the use of prostheses with assistive devices in order to help them remain more functional in their self-care, ambulation, general activity, and posthospital adjustment.

Virginia Bowman, medical record librarian, assisted with identification of cases and entering of initial data on work sheets for amputee patients in this study.

KNEE SPECIFICATIONS CORRECTED

Editor's Note: Mechanical difficulties resulted in a transposition of text on pages 76-79 of the September Journal. The correct order is given here:

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, 18½" 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. *Extension 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 and 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 and 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.

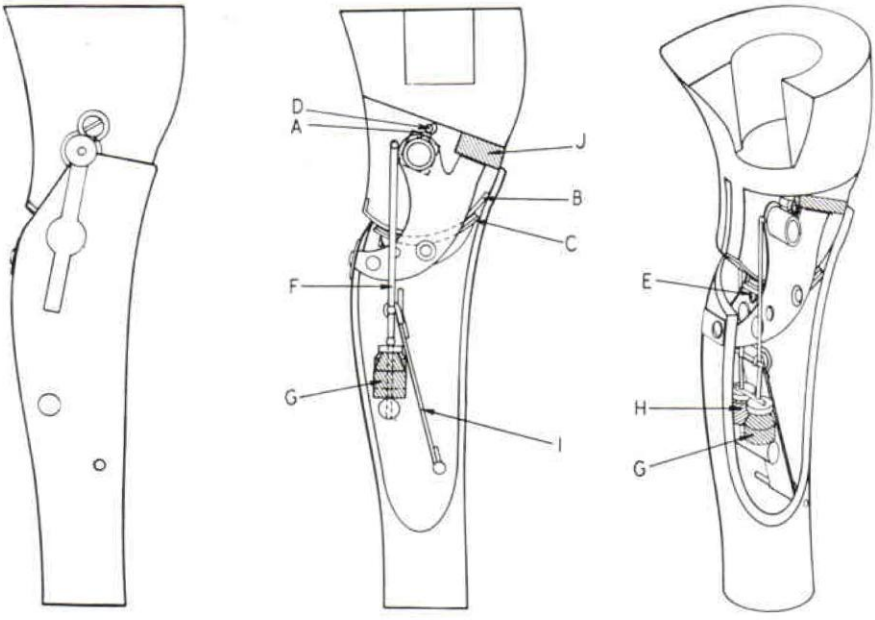


Fig. 1—Schematic Drawings of the Vari-Gait V100 Knee.

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 and allows contoured fibre surface to engage brake shoe to provide weight-bearing brake.

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 (widths determined by circumferential calf measurements).

b. Components and parts are dimensioned in metric system.

2. *Functional Controls:*

a. 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 provides 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 *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 and 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.

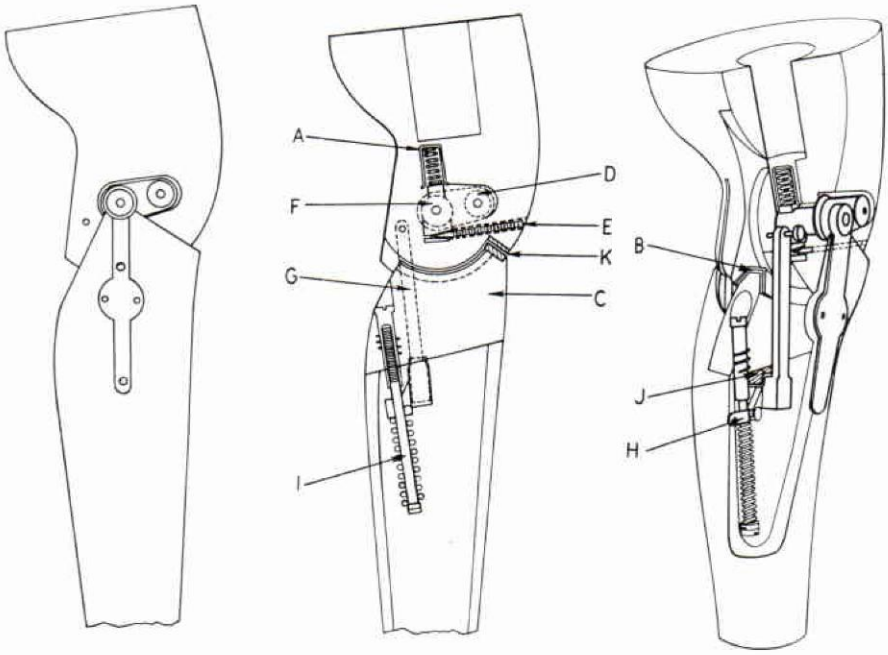


Fig. 2—Schematic Drawings of the Otto Bock Safety Knee.

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" and calf sizes 30, 32, 34, 36, 38, 40 centimeters.

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.

Mr. Leavy with the Cessna Plane Which He Flies throughout the Country.

FLYING WITHOUT HANDS

By BILL E. BURK

Editor's Note: We are indebted to the *AOPA Pilot*, for permission to reprint this interesting story about Jerry Leavy. It originally appeared in the July 1959 issue of the *Pilot*, the organ of the Aircraft Owners and Pilots Association. Mr. Burk, the author, is Aviation Editor of the Memphis, Tennessee Press-Scimitar Newspaper. He is a private pilot and met Jerry Leavy when the latter flew into the Memphis Airport in his own plane.

There was nothing different about the way this Cessna 182 circled Memphis Municipal Airport.

It entered the traffic pattern at 1,000 feet. It made a smooth glide on final approach. Just before touching down, the pilot lifted the nose skyward and the plane greased in for a smooth landing. The pilot taxied on to the Dixie Air Associates hangar at the southwest corner of the field and was guided to the tie-down area by an attendant.

Once stopped, the pilot—a trim young businessman in a brown sport coat and brown slacks, white shirt and bow tie—nonchalantly gave orders for servicing the plane. He reached into the cabin of the plane and picked up a briefcase, then walked away to catch the airport limousine into town—fresh and ready for a day of business.

He looked no different than any of the hundreds of other businessmen who fly their own planes into Memphis, except for one thing—he had no hands.

The pilot was Jerry D. Leavy, 32, (AOPA 130948) of Santa Clara, Calif., vice president and traveling representative of A. J. Hosmer Corporation, manufacturers of artificial arms, hooks, wrist units and elbows. Leavy

is a wonderful walking advertisement for their business because he has artificial arms. He uses steel hooks for hands. Persons who have seen him fly attest to the fact that he isn't handicapped when it comes to controlling an airplane.

600 Hours in the Air

A veteran of more than 600 hours in the air, Leavy has flown coast-to-coast four times. His only restriction was that he once could not fly at night. "But that was removed long ago," he says. In 1958, he flew about 90,000 passenger miles, using airline standards.

Leavy began his flight training under Russell Hill at San Jose, Calif., Municipal Airport about three years ago in an Aeronca *Champ*.

"Hill insisted I learn on a stick," he said. "I argued the point, but he insisted that I learn spins and spin recovery, even though they were no longer a part of the private license test." He was thankful some months later when he went for the check ride. The FAA inspector asked him to put the plane in a spin and recover. Leavy passed hands down.

He soon switched to the Cessna line and the tricycle landing gear "because it was easier to handle." Leavy's own Cessna 182 has only one special attachment, a ring on the throttle to replace the knob. All other equipment is normal and he flies the plane as any unhandicapped person would. He will soon be ready to try for his instrument ticket and, should he pass, plans to try his hand (hooks, if you prefer) at multi-engine flying.

Leavy was born in Columbus, Neb. He fell out of a cherry tree when he was 13 and smashed both arms. Gangrene set in. The left arm had to be amputated below the elbow; the right arm above. He was given artificial arms when he was 14, but couldn't use them well.

Jerry was with the Government nine years doing research in artificial limbs for handicapped people. He continued this work at the University of California at Los Angeles and finally entered the same field in private enterprise.

Leavy finds that flying his own plane is more satisfactory than traveling on commercial airlines. In calling on customers, he doesn't like to be hurried. He doesn't like to have to be at the airport at a certain time to catch a flight. With his own plane, he can stay with a customer as long as he desires and feel relaxed.

He is married and has three children, aged from three to seven. He doesn't think of himself as handicapped—well, not much.

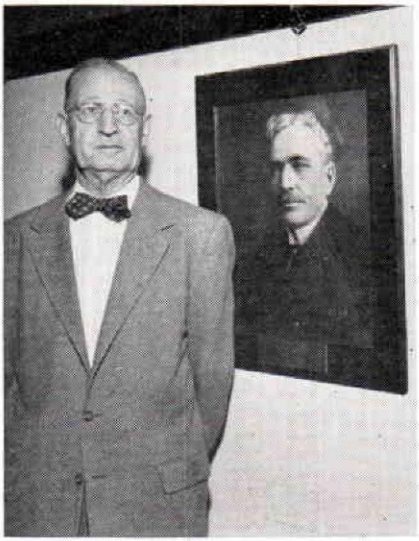
Asked why he took up flying, Leavy said: "I have to call on about 400 wholesale accounts from California to New York. I had been driving the distance. It was too long; too tiring. I found myself fatigued as I went into my sales pitch. Flying seemed the answer."

He was asked if he weren't afraid his hooks would handicap him in a tight situation.

"A plane is only as safe as the man who flies it," Leavy answered. "I fly by the rules, avoid bad weather, and try to make sure that I am safe at all times. I have never been in a spot where my hooks have handicapped me."

SCHOENE TAKES CONTROLLING INTEREST IN THE J. F. ROWLEY COMPANY

Report by JACK HELTSLEY



J. Blaine Korrady, manager for many years of the J. F. Rowley Company in Chicago is shown with a photograph of the late J. F. Rowley, founder of the firm.

Waldemar Schoene, Chicago, has purchased controlling interest in the J. F. Rowley Company, which occupies 8,000 square feet of floor space at 521 West Monroe Street, Chicago. In issuing this statement, Blaine Korrady, who has guided the destinies of the company since the late J. F. Rowley's retirement in 1933, announced his own approaching retirement.

"Waldemar was formerly associated with the Rowley Company," said Mr. Korrady. "He understands thoroughly the type of artificial limb with which we have been identified and he has remained a close friend throughout the years. We thought he was the best qualified to carry on the high standards and traditions of the firm."

Mr. Korrady has consented to remain for an indeterminate period as consultant.

"I promised to stay on as long as I'm needed," he said, "but I'm optimistic enough to believe it won't be for too long. I have a lot of important loafing to do."

With the retirement of Korrady, a long and important chapter in the history of prosthetics in America comes to a close.

Blaine Korrady is as well known in prosthetic circles here and abroad, as the founder of the firm, J. F. Rowley who died in 1938, was before him.

Mr. Korrady was secretary of the Orthopedic Appliance and Limb Manufacturers Association immediately preceding the incumbent secretary, M. P. Cestaro. He was also the first secretary-treasurer of the American Board for Certification. Until its dissolution in 1956, he was an active member of the Advisory Committee on Artificial Limbs of the Council on Physical Medicine and Rehabilitation of the American Medical Association, and

numerous citations in the *Journal of the American Medical Association* attest to the importance of his contribution. Korrady joined the J. F. Rowley Company in 1922 as office manager, later becoming secretary of the firm.

The rise of the J. F. Rowley Company is an American success story and, in the artificial limb field, many of its incidents have become legendary. But it is really more than this: it is a story of social significance because the era of its growth parallels, and is even identified with, the evolution of the concept of rehabilitation as we know it today.

J. F. Rowley opened his first one-man shop in Des Moines, Iowa, in 1886. As a child in a very large Iowa farm family, he gave early evidence of cleverness with his hands and an independent and inquiring mind. As we might surmise, his own ideas about his manifest destiny did not always coincide with the plans his family had for him. Milking cows and pitching hay were useful and honest work, but they didn't fit his notion of what he should do with his life.

How his attention turned toward the problems of limb prosthesis is now obscure, but there is no doubt but that his peculiar combination of artistic skills and mechanical inventiveness ideally fitted him for that career. During his lifetime he secured some fifty patents for improvements in artificial limbs.

From Des Moines, Rowley later came to Chicago, where the J. F. Rowley Company was incorporated in 1904. By that time the energetic founder of the firm had already laid the basis for many of the improvements in artificial limbs later generally identified with his name.

Before opening his own shop, Rowley had been employed in making artificial legs with wooden sockets and wooden feet. A catalogue issued by his company in 1922 says, "The Anglesey leg somewhat modernized and the Marks leg with sponge rubber foot with rigid ankle" occupied the market until Rowley entered the field as an inventor in 1886.

To appreciate the problem confronting him, it is necessary to assess the situation which prevailed in 1886. In the first place, there was the element of human resistance. The old timers thought that what was good enough last year would be good enough this year, and to overcome this conservatism Rowley was forced to strike out for himself. In the second place, there was the matter of materials.

Rubber, later to become an industrial and household commonplace, was at that time little known or used. In that day, a few carloads was enough to supply the needs of the entire country. Rowley himself knew little of it; the plants which manufactured the commercial product were hundreds of miles away and weren't giving out any information.

One way or another, he had come by a section of a rubber foot (probably of the Marks type mentioned above) and became fevered with the desire to do something on his own, and, if possible, do it better. From a dentist he got the address of a supplier and soon had a small supply of uncured gum. His first attempt at vulcanization was successful as far as it went. Using equipment he borrowed from the dentist, he turned out some solid rubber, much like the rubber heels of today.

What he wanted, however, was a sponge rubber which, he figured, would be much lighter, much more elastic and resilient, and much more durable. In a general way, he knew how the rubber could be spongefied: if a chemical which would become gaseous during vulcanization could be introduced into the raw gum, a leavening process would occur similar to that in the baking of bread.

The chief problem was how to introduce the chemical into the green rubber, which is a refractory material. This was solved by passing the raw rubber through hot rollers during which the chemical was introduced into the gum. A vulcanizer big enough to hold several foot molds was obtained, a foot form made, patterns and castings made, and the first attempt was launched. On the first try the rubber was not properly cured, but the second was successful.

The first client was a young farmer with a below-knee amputation. He was fitted with a wooden socket leg attached solidly to the rubber foot. Later the mortise and tendon joint became slightly loosened—a mishap that left the young man undisturbed because, he said, it gave enough play to make walking more natural for him. This led to an early modification resulting in a sponge rubber foot having elastic cushions of rubber so placed as to permit this type of motion. It was patented as the Rowley Standard Foot.

There followed a succession of improvements in the foot and other components of the leg with which the trade is familiar. The Rowley foot, joints, and other components are used by artificial limb manufacturers in this country and abroad.

The story of the Rowley triumphs in the international field during the first world war was ably told by Mrs. Dillard in the biography of her father, William Edgar "Billy" Isle, in the June 1959 issue of the *Journal.* The triumph of the Rowley leg over all others in competition with it in Great Britain on July 21, 1915, gratifying as it was, brought additional burdens and responsibilities to Rowley.

As many as 500 legs were shipped per month from the Chicago plant, and the establishment of facilities in England and Scotland made it necessary for him to be abroad much of the time during the war and immediately in the postwar era. Despite this, he maintained a constant interest in facilitating exchanges of ideas, the elevation of professional standards in prosthesis, and the improvement of professional relations in the industry.

He played a prominent role in the organization of the Association of Limb Manufacturers of America, which preceded the present OALMA. His intimate association with orthopedic surgeons in resolving the problems of amputation in their relation to prosthesis led him to take an active though non-official interest in the discussions which later bore fruit in the *Handbook of Amputation,* the first manual of its kind, issued by the Council on Physical Therapy of the American Medical Association.

No specific plans for reorganization of the Rowley Facility have been announced. Mr. Schoene, who is himself prominent in American prosthetics, says that the company will continue to maintain high standards of service both to fabricators of limbs to whom it has supplied Rowley parts for many years and to individuals who wish to be fitted with an artificial limb. Among the changes contemplated, however, Mr. Schoene has definitely announced that the machining of all parts will be standardized and that they will be available to all manufacturers.

EUROPEAN PROSTHETIC TRIP

Report of JERRY LEAVY, Vice President, A. J. Hosmer Corp.

Early in 1959 after receiving a few inquiries from persons in the prosthetics field in Europe, it was decided that a representative of Hosmer-Dorrance would make a trip in August 1959, for two reasons:

1. To visit, discuss and study the methods of fabrication and various types of prosthetic component parts and devices used in Europe for upper extremity amputees.

2. To attend the International course on prosthetics held at Copenhagen, Denmark the latter part of July and the first part of August, 1959.

My wife, Pearl, and I departed from Los Angeles at midnight on July 29, for a one-stop flight to Copenhagen, Denmark. It later turned out to be a two-stop flight after engine failure 550 miles at sea forced us to make an emergency landing at a Greenland Air Force base.

The 12 hours' delay while another plane was flown in, proved to be an eventful experience with daylight being present during the night and a very cold night sleeping in the aircraft. Off to Copenhagen the next morning in our replaced aircraft and after an uneventful but interesting flight to Copenhagen we found, upon checking into our hotel, a few familiar faces from the States. There were Col. M. J. Fletcher, Director of Army Prosthetic Research Laboratory, Washington, D. C., Capt. T. J. Canty, Director of Prosthetics, Oak Knoll Hospital, Oakland, California, Professor Charles Radcliffe, Prosthetics Research, University of Calif., Berkeley, Calif. and our other long time friend, William Tosberg, Director of Prosthetics at NYU, Bellevue, New York City, N. Y.

The International course on prosthetics being held at the Copenhagen Orthopedic Hospital was well attended. Students from 18 countries were enrolled. Many variations of ideas, along with numerous prosthetic items both lower and upper extremity, were presented before the group with discussions following.

To mention one or two of these, the German method of vacuum system in plastic fabrication was very impressive and stimulated us enough to cause us to purchase a complete unit from Germany for use in Hosmer's fabricating department.

The German technique of fitting the plastic socket to the stump and trimming the socket shell on the below elbow stump differs from our method in this country in that the cutaway or trim line around the biceps tendon area is very slight and in general they "harness" the condyle area for positive gripping of the socket when applying a load at the terminal end. This, of course, does not permit full 135° forearm flexion as we strive for in our check-out program. However, on the other hand, although they are limited to great degrees of forearm flexion they do gain the maximum utility when it comes to "heavy duty" performance with this type fitting.

SACH feet, adjustable walking legs, alignment jigs and other techniques presented by the U. S. instructors at times faced "lifted eyebrows" when demonstrated for the class. However, in the expert guidance of Professor Radcliffe of the University of California, Berkeley, the application and demonstration soon had its effect on most viewers and later on in the halls many inquiries were being made and notes being tabulated as to how, why, where and when this information can be made available.

After spending most of the week attending the classes in Copenhagen, we journeyed on to Stockholm, Sweden to visit prosthetic facilities and

gave a demonstration before a group of Swedish prosthetic experts on the American type upper extremity prosthesis.

A wonderful flight in the new French Caravel jet rushed us into Germany with stops at Hamburg, Hannover, Duderstadt, Heidelberg and Frankfurt, where a general tour of prosthetic facilities in the institutions was made.

One of our most interesting visits in Germany was to Duderstadt and the Otto Bock Company where we were guests of Mr. and Mrs. Max Nader, director of the Bock Company. The Naders extended wonderful hospitality and made our two-day visit with them a most enjoyable one that shall long be remembered.

The Otto Bock factory has a very well arranged, modern and efficient plant producing the popularly known Otto Bock knee and AK set-up. Many aspects of manufacturing and producing prosthetic parts were viewed with great interest. Many of the methods were similar to ours in this country.

A prearranged visit to Zurich, Switzerland with Mr. Ernst Rutschi, president of the Swiss Orthopedic & Limb Mfg. Assoc., followed with a discussion and demonstration before a group of orthopedic surgeons, prosthetists, orthotists, therapists and others was invaluable from the standpoint of warm praise given us for the American type upper extremity prosthesis. The number of arm amputees in Switzerland of course is very small due to the size of the country and its peaceful history.

From Zurich to Paris, France, Brussels and Antwerp, Belgium and on into Holland where our continued travels took us to various prosthetic facilities and institutions.

Our next and last stop was in London, England where a very interesting three days were spent visiting "Steeper & Company" at Queen Mary's Roehampton Hospital. We enjoyed our visits and discussions with the arm training department, physical therapy department, research and development group and others within the prosthetic organization at Queen Mary's Hospital.

The "Steepers," our hosts, were most gracious in showing us their complete factory and operation in the manufacturing of component parts and devices for upper extremity prosthesis.

The English-type of upper extremity prosthesis differs from those in the United States. The English manufacturers for the most part use leather for their sockets in place of plastics. For common everyday wear, most arm amputees use passive hands with moveable thumbs and leather gloves.

In place of the common utility hook seen in this country, the English arm amputee is furnished with numerous "quick change" devices that can be interchanged at the wrist and for such items as hammers, pliers, chisels and dozens of other items too numerous to mention. The type of working tools to interchange in and out of the prosthesis depends of course entirely on the particular amputee's vocation or avocation.

To sum up observations on the European trip, we were impressed by the fact that arm amputees wore prostheses primarily for cosmetic purposes on the street since almost no hooks are ever seen or worn in public. Many European arm amputees were seen on the streets without any sign of a prosthesis, as was true in our country only a few years back.

As a result of the acquaintances made during this trip, we hope and we look forward to a better understanding between the countries involved with an exchange of ideas, leading to continued improvement in prosthetic parts and devices and methods of manufacture.

THE WORK OF THE COMMITTEE ON PROSTHETICS EDUCATION AND INFORMATION

Editor's Note: The National Assembly of the Limb and Brace Profession at Dallas, Texas, heard a report "And What of the Physician?" describing the work of the Committee on Prosthetics Education and Information of the National Research Council. It was presented by Harold W. Glattly, M.D., Secretary of the Committee. An abstract of Dr. Glattly's remarks follows.

Dr. Glattly opened his remarks by stating that the Committee on Prosthetics Education and Information (CPEI) is vitally interested in plans concerning the education and training of prosthetists and orthotists. He presented the best wishes of Dr. Alfred R. Shands, Jr., Chairman of CPEI, and expressed for him the desire for close working relationships with the recently organized Education Committee of the American Orthotics and Prosthetics Association.

A brief outline of the interests and activities of the Committee was presented. To begin with, CPEI has been quite successful during the past year in documenting the national needs in terms of a prosthetics educational program. This has been accomplished through contacts with the physicians and, more recently, the physical therapists who have evidenced their interest in amputee care and management by taking the courses at the prosthetics schools. These individuals have given a picture of what needs to be done throughout the United States in order that the amputee population can receive the benefit of modern rehabilitation services. The many suggestions received fall into the following three areas:

1. The undergraduate and graduate training of the medical and relevant paramedical disciplines with respect to the modern concepts of amputee care and management.

2. An informational program that will reach the members of these disciplines who are already out in practice.

3. The organization of amputee clinics in areas where such specialized facilities are today not available.

The success of this national program will require a wide variety of activities conducted by many groups and organizations. This general principle has been recognized by the two government agencies most concerned with improving amputee rehabilitation services—the Office of Vocational Rehabilitation and the Veterans Administration—in that they are both giving support to a number of activities that fall within the broad area of prosthetics education. The assistance given to the prosthetics schools by OVR and the publication of the journal ARTIFICIAL LIMBS by VA are examples. It is recognized that there are many parts to be played in the total program. In this regard, it is believed that a committee of the National Academy of Sciences-National Research Council can best assist by assuming a liaison and correlating role with respect to groups and individuals who are interested in improving amputee rehabilitation services. Although a committee of the Academy-Research Council cannot by its very nature become an operating agency, such a group can serve a useful purpose by stimulating the interest and active participation of appropriate groups in prosthetics educational activities and in assisting those who are already so engaged.

In considering a national prosthetics educational program, the Committee believes that it is very important to include the basic principles of

amputee management in undergraduate medical education. To obtain factual information with respect to the status of prosthetics in medical education, a spot-check survey was made of 28 medical schools through their departments of orthopedic surgery and physical medicine. Almost all of the reporting members of the faculties of these medical schools stressed the need of teaching materials, including audiovisual aids, as a means of providing better training for their residents, interns, and medical students. An *ad hoc* subcommittee of CPEI, under the chairmanship of Dr. J. Hamilton Allan, has been formed to study this matter and make recommendations. A similar study is being made of the present status of prosthetics in schools of physical and occupational therapy.

There is a need to give increased emphasis to prosthetics in residency programs in the fields of orthopedic surgery and physical medicine. A prerequisite to this program is the availability of organized amputee clinics in the training hospitals.

A major deterrent to improved amputee services lies in the lack of knowledge on the part of the medical profession at large with respect to the modern concepts of amputee care and management. The Committee is interested in promoting grass-roots types of prosthetics programs. An invitation was recently received from the American College of Surgeons to present prosthetics demonstrations at their regional meetings. The Northwestern University prosthetics school has offered to take the first of these programs that will be held in Minneapolis next spring. The Committee has been requested by Mr. Charles L. Eby, Director of the Bureau of Vocational Rehabilitation for the State of Pennsylvania, to work with his organization to improve amputee services in that state.

The Committee on Prosthetics Education and Information has been very gratified with the interest that has been evidenced in a prosthetics educational program and by the many offers of assistance that have come from all parts of the country from individuals who are interested in improving amputee services. With this type of support, it can be expected that the program will gain momentum.

CAMP COURSE

S. H. Camp and Company in 1960 will hold its 32nd Annual series of fitting courses. These are for men and women, desiring to become skilled garment and appliance fitters.

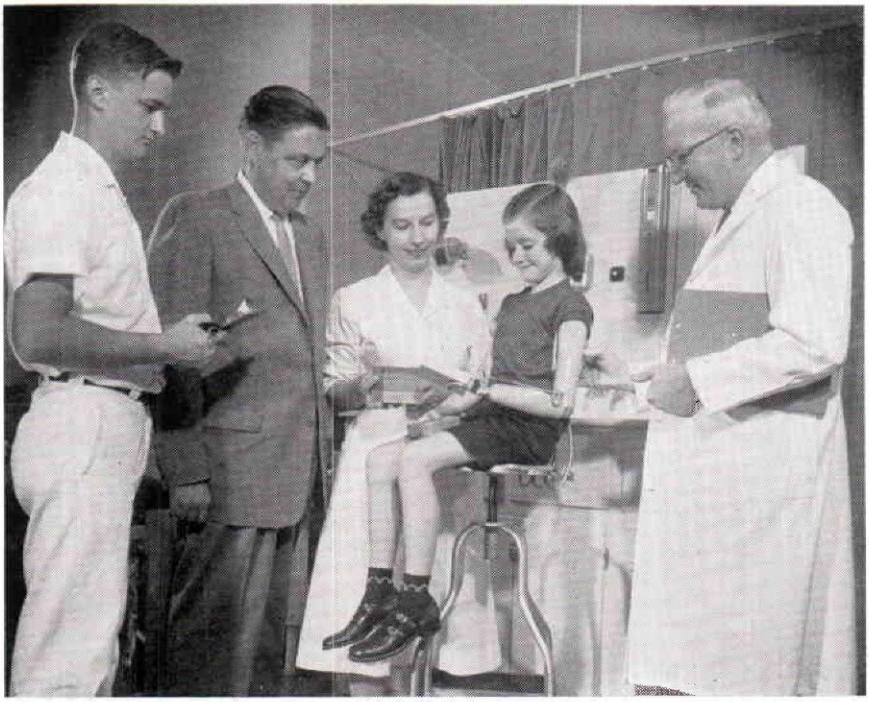
Enrollment is now open for the 1960 classes which may be taken either in New York City February 1-4, at the Sheraton Atlantic Hotel, or in Chicago March 14-17, at the Edgewater Beach Hotel.

In each city the four days of instruction will cover the rudiments of anatomy, body mechanics, modern developments in medical science relating to the therapeutic value of scientific supports, braces and appliances. Lectures, visual instruction and practical demonstrations with live models representing many customer types and their needs are included in the course.

The courses also give students an insight into methods of creating good patron relationships, developing confidence in their own abilities and in giving satisfaction to the patient and doctor.

Many members of AOPA have taken these courses in previous years. The faculty over the years has included many leaders in the field of orthotics.

CLINIC AT WORK



Left to right: Kenneth Lauterwasser, P. T., Richard G. Bidwell, C.P., Mrs. Marjorie Herring, O.T., Colleen Cummings, the patient, and Dr. E. C. Welsh, Clinic Chief.

WISCONSIN CLINIC

Shown above is a picture of the prosthetic Clinic at Columbia Hospital in Milwaukee. This is one of the clinics featured in the Educational Exhibit shown at this year's meetings of the American College of Surgeons.

The Clinic meets monthly or more often if necessary to consider cases referred by physicians throughout the State of Wisconsin. Participating agencies in the Clinic are: the Community Rehabilitation Project, the State Rehabilitation Division and the Bureau for Handicapped Children. The mechanics of the Clinic include

1. Initial evaluation and prescription for therapy and prosthesis.
2. Initial check-out of prostheses at next meeting.
3. Training in Physical Therapy and Occupational Therapy if limb passes the check-out procedures.
4. Final evaluation by clinic team.
5. Discharge.
6. Recheck in six months or more often if necessary.

The clinic has been found useful in the teaching of residents in training from the VA Hospital at Milwaukee who attend, to learn about upper extremity prosthetics. Other students include those from physical therapy and occupational therapy classes at the University of Wisconsin, Marquette University, Milwaukee Downer College and Mount Mary College.

CROSS COUNTRY REPORT

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

PAUL E. LEIMKUEHLER ELECTED PRESIDENT OF THE AMERICAN ORTHOTICS AND PROSTHETICS ASSN.

OALMA turned to one of its outstanding members in choosing the first President to serve under the new name of the American Orthotics and Prosthetics Association. Paul E. Leimkuehler, Certified Prosthetist of Cleveland, Ohio, was formally installed at the National Assembly in Dallas, Texas, October 21.

The new President, though a comparatively young man, has had twelve years of outstanding achievement in prosthetics. He has been active in the Association for several years, serving successively as Regional Director for Region V (Ohio, Michigan, West Virginia), as Program Chairman for the 1955 Assembly and as Vice President. Formerly a member of the Committee on Prosthetics Research and Development of the National Research Council, he is a Past President of the Ohio State Rehabilitation Association.

Mr. Leimkuehler lost his limb in World War II, during the Battle of the Bulge. He was a First Lieutenant in the infantry. While convalescing at McGuire General Hospital in Richmond, Virginia, Mr. Leimkuehler volunteered his services to the artificial limb facility in the hospital and his interest in helping amputees has its first beginnings there.

He entered the artificial limb field officially in Cleveland in 1948, organizing the Leimkuehler Limb Company. In the years since then Mr. Leimkuehler has made prosthetics his all embracing interest. He is a graduate of the special courses in this field offered at the University of California Los Angeles, New York University, Northwestern University. He now serves as Consultant on four amputee clinics in Greater Cleveland. A special interest is the fitting of congenital leg deformities with individually designed artificial limbs.

Before losing his leg, Mr. Leimkuehler was active in sports. He was Ohio State Bicycle Racing Champion and also raced in ice skating. Since his amputation, his sporting interests have turned to golfing and skiing. He has participated in the National Amputee Golf Tournament for the past 8 years. Mr. Leimkuehler skiis on one leg and has amazed many two-legged skiers with his remarkable skill on high mountains.

Mr. Leimkuehler is married and the father of four children, Paulette, aged 14; Jon, 12; Bob, aged 8, and Bill, aged 4. Mrs. Leimkuehler is a former President of the OALMA Ladies Auxiliary.

AOPA—AND THE YEAR AHEAD

MESSAGE FROM PRESIDENT LEIMKUEHLER

Fellow Member:

It is indeed an honor to be chosen President of our newly named American Orthotics and Prosthetics Association. It is also a responsibility which I shall not take lightly.

As your representative, I feel I should know all of the inner workings of our Association, and keep you advised. You have elected Ralph Storrs, Fred Quisenberry and M. P. Cestaro to assist me, and with our National Office plus Past President Karl Buschenfeldt and our Regional Directors I am sure we will serve you well.

Our Washington Office staff is hard at work making tentative plans for our 1960 assembly, which will be closely related to The World Congress of the International Society for the Welfare of Cripples.

We are also working on the design and construction of a Prosthetics and Orthotics Exhibit, which the Office of Vocational Rehabilitation is helping to finance through a grant to the American Board for Certification. This exhibit will be shown for the first time at the World Congress Meeting in New York. It will display the services of our Orthotic and Prosthetic profession in America. This exhibit, or sections of it, will be available for use at future Medical and Rehabilitation conventions.

The National Office and your Executive Committee are also working on the design and selection of a new insignia for AOPA.

Our Committees for 1960

To give you an idea of projects we are undertaking this year, I am listing below the committees which are already in operation.

Committee on Advances in Prosthetics—Chairman: Carlton Fillauer
Committee on Education—Chairman: Ed Snygg
Committee on Surgical Appliances—Chairman: Ted Smith
Committee on Membership—Chairman: Fred Quisenberry
Committee on Regional Meetings—Chairman: Ralph Storrs

The following committees have not been assigned, so if any of you members are interested in serving on a particular committee, please contact me or the National Office as soon as possible.

Committee to review the By-Laws, and if necessary revise and present them to the membership for approval.

Committee on Public Relations and Information.

Committee to Study Costs of Attending Clinics.

Committee on Types of Membership in AOPA.

Economic Project Committee. To investigate a standard bookkeeping system for our members, and then reactivate the economic project.

Committee to investigate methods of patients financing orthotic and prosthetic appliances.

Special Committee (consisting of the Executive Committee) to develop an Organizational Chart of our Association, and also an Operational Chart defining the duties of the elected officers, committee chairmen and paid personnel. Chairman: Paul E. Leimkuehler.

Our Executive Committee by the way is a standing committee. It consists of the President, the two Vice Presidents and the Secretary-Treasurer.

As you can see from the above information, we have plenty of hard work ahead of us and any help or suggestions you can offer will be appreciated.

Sincerely,

Paul E. Leimkuehler

ACADEMY MEETING SET FOR JANUARY 23-28

The American Academy of Orthopaedic Surgeons holds its 1960 Meeting January 23-28, at the Palmer House in Chicago, Illinois.

Among the Scientific Exhibits will be:

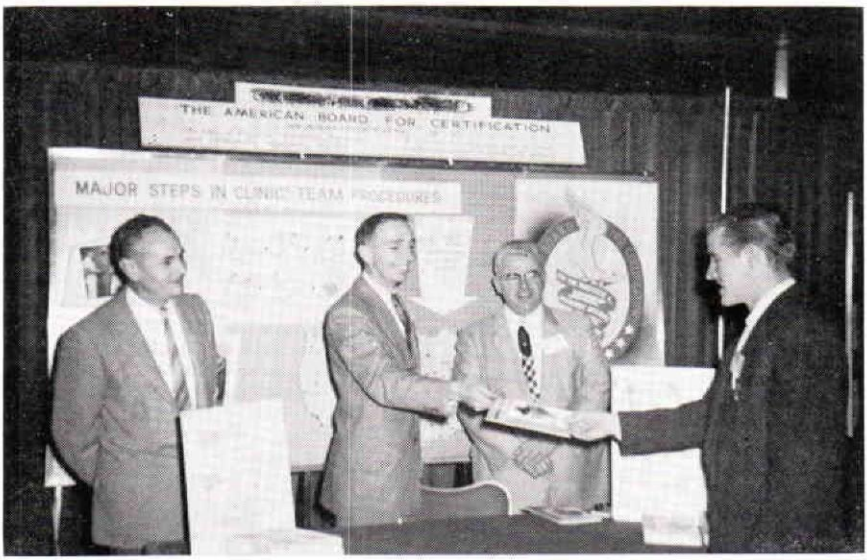
1. The American Board for Certification exhibit on "The Role of the Surgeon in Certification of the Individual Orthotist-Prosthetist and of the Facility in Which He Works." This is being arranged by Les Smith, Assistant Director of the Board. Alfred Denison, John De Bender, Richard Bidwell and George H. Lambert, Sr., will be assisting at the booth.

2. "Lower Extremity Amputation Prostheses—Special Problems." This is being arranged by Dr. J. Leonard Goldner, Dr. Frank W. Clippinger and Bert R. Titus, Head of the Brace Department at Duke University.

Among the instructional courses of interest is "Advanced Techniques for Fitting Special Amputations." The teachers for this course include Dr. Charles Bechtol, Dr. Fred Vultee, Colin McLaurin and Herbert B. Hanger of Northwestern University Prosthetics. Dr. Ruth Jackson will again offer her course on "The Cervical Spine" (Dr. Jackson's session on "Neck Bracing" at our Dallas Assembly attracted a capacity audience and proved to be one of the most interesting sessions). Dr. George Aitken and Dr. Charles Frantz will again offer their popular course on "Amputations in Children."

Dr. Jacqulin Perry and Dr. Vernon Nickel will offer a session on "Functional Bracing of the Upper Extremity."

AOPA is now a sustaining member of the International Society for the Welfare of Cripples. Here we see Don Wilson, Secretary of the International Society, Chester C. Haddan of Denver, with Dr. Leonard Mayo, President of the Society, who is accepting a check for the membership from AOPA Executive Director Glenn Jackson.



OUR DISPLAY AT THE NRA CONVENTION—OALMA and the Certification Board had a display when the National Rehabilitation Association met at Boston, October 26-28. In the picture shown above we see at the left Herman Kraus and Herman Buschenfeldt of Boston with Paul Guimond of Manchester, New Hampshire. Mr. Buschenfeldt is showing our JOURNAL to Mr. Beauchemin, a member of NRA. AOPA members everywhere are indebted to our good members of the New England Council for manning the display. Howard Mooney reports an excellent meeting with considerable interest shown in our booth.

AOPA ANNOUNCES NEW MEMBERS

(Editor's Note: The firms and organizations elected to membership in the American Orthotics and Prosthetics Association will be announced in this column. Their names should be added to the printed Membership Roster.)

John A. Watson, C.O., President of the Mesa Orthopedic Appliance Facility.

The buildings of the Mesa Orthopedic Appliance Facility at Grand Junction, Colorado. Mesa Company rents space in their building to a professional pharmacy and also provides medical offices.

John A. Watson is President of Mesa Orthopedic Appliance Co. which operates a certified facility at 2103 North 7th Street, Grand Junction, Colo. Upon request, Mr. Watson sent the Journal the following biographical statement:

"My home town is Montrose, Colorado. After finishing pre-med. in preparation for dentistry at Union College, Lincoln, Nebr., I went into the service during World War II, where I spent most of my time making orthopedic appliances, etc. During this time I became so interested in orthopedics that I decided to make it my life work.

"In 1955, after completing my apprenticeship and examination for certification, I established my own facilities at 2103 North Seventh, Grand Junction, Colorado—The Mesa Orthopedic Appliance Company, and have furnished orthopedic service to the hospitals and medical professions in Western Colorado and Eastern Utah. Recently I have added medical offices and a professional pharmacy to the Appliance Company building, under name—Professional Plaza. Enclosed are pictures of the medical center and brace shop.

"My wife is the former Miss Annie Laurie Perkins of Hammond, Louisiana. We have two boys—Danny, 13 years old, and Tommy, 11 years old.

"I might add that it is a real privilege to be a member of such a fine organization as AOPA."

Eugene J. Sabel

I. SABEL, INC. ELECTED TO AOPA MEMBERSHIP

The firm of **I. Sabel, Inc.** was elected to Associate Supplier Membership in the American Orthotics and Prosthetics Association in November 1959. I. Sabel, Inc. was founded in 1924 by Mr. E. Sabel of Philadelphia, Pennsylvania. His basic idea of bringing orthopedic shoes of outstanding quality to the public at reasonable cost and within a minimum of time has grown into a nationwide chain of Sabel agencies.

Today, the firm is headed by his son, Eugene J. Sabel, President of the Company. Executive offices are maintained at 1207 Chestnut St., Philadelphia 7, Penna. (Telephone number: LOcust 7-3516).

The firm produces the only complete line of orthopedic footwear in the United States. Products range from size 0000N in a Pre-Walker club shoe, to a size 15 in a man's shoe. The firm is internationally known for its specialty of special footwear constructed with the requirements of the medical and brace professions in mind.

The purpose of the company is well stated in the Sabel slogan:

"Basic shoes and their proper fitting have been our constant study. All phases of their construction and adaption to the needs of suffering humanity occupy our closest attention as do the recommendations of the medical profession. As well equipped as today finds us to provide its needs in our line, we confidently expect to be equally well prepared to meet tomorrow's requirements. Moreover, as further study and experience make possible the building of better basic shoes and service, Sabel Basic Shoes will continue to maintain their enviable reputation and leadership in this field."

U. S. MANUFACTURING COMPANY EASTERN OFFICE

E. B. Strong, field representative of the *United States Manufacturing Company*, will make his headquarters in New York City. The office is located at 784 Columbus Avenue. While Mr. Strong will be travelling throughout the United States, telephone messages may be received at the New York City Office; phone: Academy 2-0996.

THE YEAR AHEAD— MESSAGE OF THE PRESIDENT OF THE AMERICAN BOARD FOR CERTIFICATION

To the friends and supporters of the certification movement:

In this first column as President, may I take the opportunity to welcome two new members of the Certification Board, Dr. Thomas Aitken of Grand Rapids, Michigan and Mr. Alvin Muilenburg, C.O. & P., of Houston, Texas.

We are indebted to the Academy of Orthopaedic Surgeons for the nomination of Dr. Aitken. He has long been active in the Prosthetics Research Program of the National Research Council. He is one of the area surgeons in the Crippled Children's Program of the State of Michigan. Biographical sketches of Dr. Aitken and Mr. Muilenburg appear in this issue of the *Journal.*

I would like also to pay tribute to the two retiring members of the Board. Our immediate Past President, Dr. Roy Hoover, was certainly dedicated to the advancement of the Certification Movement. Dr. Hoover is retiring from active medical practice but we hope this means that we will benefit from even more of his time and advice, and see him often at our meetings.

Mr. Frank Harmon, the other retiring member, had served as Vice President of the Board and as Chairman of its Credentials Committee. We are happy that he has agreed to continue active as a member of this important Committee.

After consultation with the National Office, we are pleased to announce the appointment of the following Committees for the ensuing year.

CREDENTIALS:

Alvin L. Muilenburg, Chairman, Houston, Texas; Edward W. Snygg, San Francisco, California; W. Frank Harmon, Atlanta, Georgia; Roy M. Hoover, M.D., Roanoke, Virginia

FACILITIES:

Herbert J. Hart, Chairman, Oakland, California; Theodore W. Smith, Kansas City, Missouri; Milburn J. Benjamin, Los Angeles, California

EXAMINATIONS:

Howard R. Thranhardt, Chairman, Atlanta, Georgia; John J. Glancy, Providence 7, Rhode Island; William E. Brownfield, Boise, Idaho; Bert R. Titus, Durham, North Carolina; George T. Aitken, M.D., Grand Rapids 3, Michigan

ETHICAL STANDARDS:

Charles A. Hennessy, Chairman, Los Angeles, California; Eugene E. Record, M.D., Boston 16, Massachusetts; Vernon L. Nickel, M.D., Los Angeles 33, California

May I express to all certifees and other friends best wishes of the Board for the Holiday Season.

HOWARD THRANHARDT, *President*

P.S. If you have not already done so, I hope you will see the October 1959 issue of "The Journal of Bone and Joint Surgery." Pages 1345-1347 contain a description of our exhibit at the 1959 Academy Meeting, including a useful list of reference aids in prosthetics and orthotics.—H. Thranhardt

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A. B. C. RULES CHANGE

By action of the Directors of the American Board for Certification of the Prosthetic and Orthopedic Appliance Industry, Inc., in their meeting on October 18, 1959, the following additions, amendments and deletions have been made in "The Book of Rules," issued September 1, 1959.

ADDITIONS:

p. 6—Rule II A. 4—Tenure.

a. The Applicant must establish that he has had at least four years of experience in either Prosthetics or Orthotics by the date set for the receipt of the applications. *Of the four years of required experience, a minimum of two years shall be required in responsible fitting under Certified personnel.*

p. 8—Rule II F.—Emeritus Certifee.

1. Upon the request of a Certifee in good standing and upon the documentation of the circumstances by the Executive Director a certifee who has retired will be placed upon the "Emeritus Roll."
2. Emeritus Certifees will be maintained on this Roll by annual request.
3. Emeritus Certifees have neither the privilege of vote nor that of holding office.
4. Emeritus Certifees will be entitled to the Orthopedic and Prosthetic Appliance Journal.

AMENDMENTS:

p. 2—I A. 6—Past Directors.

b. A past director may be called upon to serve as a consultant to the Board *with vote* or as an extension of the Board in whatever capacity deemed necessary by the Board.

DELETIONS:

p. 2—I A. 6—Past Directors.

a. A past director will be considered as a member-at-large of the Board.

AITKEN AND THRANHARDT ELECTED TO CERTIFICATION BOARD

The annual Certification Session has become an outstanding part of each year's Assembly. Certainly this was so at the 1959 National Assembly at the Adolphus Hotel, Dallas, Texas.

Dr. Roy M. Hoover, President of the Board, presided over the program, which included these reports.

"Credentials — How Applications Are Handled," described by W. Frank Harmon.

"The Examinations"—A report by Howard Thranhardt on the examination process written, oral and investigative.

"The Certification of Facilities, A Review of the Processes By which Establishments Become Certified Facilities" presented by Edward W. Snygg.

"Setting Standards and Living up to Them"—Charles A. Hennessy, reporting on the work of the Committee on Ethical Practices.

In the business session which followed, the annual Report of the Treasurer was unanimously approved.

Turning then to the election of new Board members, the qualified voters present unanimously elected Dr. George T. Aitken of Grand Rapids, Michigan to fill a vacancy caused by the retirement of Dr. Roy M. Hoover.

Two nominations were presented for the vacancy caused by the retirement of W. Frank Harmon. In the vote which followed, Alvin Muilenburg of Houston, Texas, defeated Richard Bidwell of Milwaukee, Wisc.

George T. Aitken, M.D., was born in Detroit, Michigan in 1909, and received his degree in medicine from Indiana University in 1933. He was an interne at Harper Hospital in Detroit the next year, followed by a year of residency in orthopedic surgery at Blodgett Memorial Hospital. He was Assistant Instructor in Anatomy at Michigan University.

Dr. Aitken was made a member of the Academy of Orthopaedic Surgeons in 1942. He has been engaged in the practice of orthopedic surgery at Grand Rapids, Michigan, except for a tour of duty in the United States Army Medical Corps, in the years 1942-1946.

Dr. Aitken is now Chief of the Department of Orthopedic Surgery Service, St. Mary's Hospital, Grand Rapids, Michigan. He serves as a Consultant for Orthopedic Surgery at Blodgett Memorial Hospital and the Mary Free Bed Guild Children's Hospital, both at Grand Rapids, Mich.

Dr. Aitken has become internationally known with his colleague, Dr. Charles Frantz, through the program of the Michigan Crippled Children Commission, which they serve as area surgeons. With Dr. Frantz, he appeared on the program of the National Assembly of the Limb and Brace Profession held at San Francisco in October 1956.

Alvin L. Muilenburg, C.P. & O., is a graduate of the University of Minnesota. He served in the U. S. Navy as a Deck Officer during World War II, and then began his training in prosthetics at Minneapolis Artificial Limb Company. In 1948 he opened his own facility in Houston, Texas, which is now operating as the Muilenburg Artificial Limb Company. Mr. Muilenburg is a former Director of AOPA Region VIII, a member of the Advisory Council to the Certification Board and the AOPA Committee on Education. He served as an Instructor for many of the courses at the University of California, Los Angeles.

NEW EXHIBIT TO SHOW U. S. ORTHOTICS AND PROSTHETICS

O.V.R. Makes Grant To Certification Board

The U. S. Office of Vocational Rehabilitation has approved a proposal of the American Board for Certification to design and construct a prosthetics and orthotics exhibit. A grant of $32,150 to the Certification Board for this purpose was approved on November 19. This grant is to cover expenses in building and displaying the exhibit through the period November 1, 1959 to October 31, 1960.

First showing of the exhibit will be at the Eighth World Congress for the Welfare of Crippled Children and Adults in New York City at the Waldorf-Astoria, August 28-September 2, 1960. It will also be on display at the Assembly of the American Orthotics and Prosthetics Association in the same hotel immediately thereafter. In the years ahead it is planned to show the exhibit at the most important medical and rehabilitation conventions in the United States.

The project was approved for two additional years by the Office of Vocational Rehabilitation. However, this is conditional upon the appropriation of the necessary funds by the Congress and upon satisfactory progress on the project.

Glenn E. Jackson, Executive Director of the Certification Board will serve as Project Director. M. P. Cestaro will be Financial Officer. Members of headquarters personnel who will work on the Project as a part of their duties include Assistant Director Lester A. Smith and A. Bennett Wilson, Jr., who is currently Secretary of the AOPA Committee on Advances in Prosthetics.

The plan for the Project describes the need for the exhibit and its purpose in these terms:

Purpose: The design and construction of an exhibit to demonstrate the accepted methods and procedures employed in the United States for providing amputees, paralytics, and other orthopedically disabled persons with prostheses and orthopedic appliances, and the training in their use.

Justification: The present methods and procedures used in rehabilitation of amputees and brace wearers which have proven to be successful have been possible only because of the efforts by many different groups and organizations, some governmental, some non-governmental, but each contributing its own talents and training to a common cause. However, it would seem that both more widespread usage of present methods and the development of improved methods can be accelerated if the individuals involved in the rehabilitation process can be made fully aware of how their own particular efforts fit into the pattern that is emerging. The exhibit which would be made available to meetings of organizations interested in rehabilitation work should help materially in defining the roles of those involved and in stimulating those who are not now making use of their own potentialities.

It is anticipated that the first display of the proposed exhibit would be at the Eighth World Congress of the International Society for the Welfare of Cripples to be held in New York in August 1960. This meeting is to be followed immediately by the annual Scientific Assembly of the Orthopedic Appliance and Limb Manufacturers Association and a meeting of the International Society of Orthopedics and Traumatology.

Other groups which meet regularly and to whom the exhibit will be of interest are:

The American Medical Association
The American Academy of Orthopaedic Surgeons
The American College of Surgeons
The American Congress of Physical Medicine & Rehabilitation
The National Rehabilitation Association
The National Society for the Welfare of Crippled Children and Adults
American Physical Therapy Association
Association of Life Insurance Medical Directors of America
Regional Medical Societies

Methodology: The exhibit will show the major steps involved in the rehabilitation of amputees, paralytics, and other orthopedically disabled persons and point out the roles played by the various groups in this country, such as Federal and State Government, charitable organizations, the medical profession, the prosthetics and orthotics professions, manufacturers, research groups and others. The relationship between government and free enterprise will be stressed.

The exhibit will be designed by competent professional designers. Technical assistance will be provided by the staff of the American Board for Certification and consultants as required. It is expected that animation and audience-participation devices will be employed. In the design every effort will be made to develop a unit which can be displayed in part if necessary due to space limitations and other considerations. A *brochure* to supplement the exhibit and in which are included sources of information for those desiring to further their knowledge in this field, will be prepared.

REVIEWS

CLINICAL PROSTHETICS FOR PHYSICIANS AND THERAPISTS. By: Miles H. Anderson, Ed.D., Charles O. Bechtol, M.D. and Raymond Sollars.

Published by Charles C. Thomas, Springfield, Ill., 1959. 393 pages, including illustrations. Price $10.50.

Reviewed by A. Bennett Wilson, Jr.

The material in this publication is essentially that which appeared in "Manual of Arm Amputee Checkout and Training" and "Manual of Above Knee Prosthetics for Physicians and Therapists," both publications (1957) of the Prosthetics Education Program, School of Medicine, University of California (Los Angeles). Both have been used in the short term courses in upper-extremity prosthetics and above-knee prosthetics for physicians and therapists.

The "Manuals" were originally published in loose-leaf form and were available only through the University. Now published in a bound edition, the "Manuals" are available through commercial bookstores as a single volume.

Although not as well unified as would be the case if the authors had prepared the original manuscripts with the idea that each Manual would be part of a single volume, the fields of upper-extremity prosthetics and above-knee prosthetics from the standpoint of physicians and therapists are covered thoroughly. It is unfortunate that other areas of limb prosthetics are not included as the title implies.

This brace being adjusted by Alfons R. Glaubitz, director of Elizabethtown Crippled Children's Hospital Brace Shop, is called an "anti gravity" brace and is used to help correct lordosis in patient Rebecca Smith.

"TWENTY YEARS FOR THE ELIZABETHTOWN HOSPITAL FACILITY."

Hidden among the hills of Pennsylvania's Dutch Country is an unusual school and workshop where men combine old skills and modern machinery to learn the art of bracemaking.

The school is part of the brace shop at Elizabethtown Hospital for Crippled Children, maintained by the Pennsylvania Department of Health in Lancaster County. This unique shop celebrated its 20th birthday anniversary this year.

Alfons R. Glaubitz, C.P. & O., who set up the original brace shop at the hospital in a tiny room no bigger than today's brace shop storeroom, is in charge of the facility that has grown to two large workrooms, a fitting room, several storerooms and a special forge shop. His staff boasts eight orthotists, one prosthetist and two apprentices, with a combined experience of 200 years.

"The braceshop was established not only to make orthopedic appliances for the patient but also as an institution of learning for those who wished to take up the art of constructing orthopedic appliances," Mr. Glaubitz said. "This course is in the form of an apprenticeship."

The apprenticeship, which lasts four years, includes instruction and practice in hand-forging, machining, leather and corset work and the use of celluloid and other fabric materials for braces. For several years the shop has been making artificial legs as well as braces. Early this summer the shop started manufacturing plastic artificial arms.

Techniques and construction principles originated by the Elizabethtown brace shop have received national acceptance and recognition. Most of this reputation may be attributed directly to Mr. Glaubitz, a second generation orthopedic appliance man.

Both the brace shop director and his brother, Erwin Glaubitz, who is on the Elizabethtown brace shop staff as a prosthetist or artificial limb maker, learned the art of brace and limb making from their father, also a prosthetist in Germany.

Alfons R. Glaubitz emigrated to the United States in 1925, after earning his master's degree in brace and limb making in Germany. He worked for a bracemaking firm in Brooklyn, N. Y., for 10 years and for a similar firm in Philadelphia for two years before coming to Elizabethtown.

It was while he was in New York that he and Dr. Henry Jordan coauthored a book in English on bracemaking. They called it "Orthopedic Appliances." Since that time Mr. Glaubitz has collaborated with numerous men in writing articles for technical publications and also has authored several himself.

Part of his time at Elizabethtown Hospital is spent in lecturing to resident physicians in orthotics or the use of braces and prosthetics, the use of artificial limbs.

At present there are 155 patients in the hospital. The brace shop services all these youngsters. In addition, between 60 and 80 persons attend the weekly clinics at the hospital and receive brace shop services.

SUPPLIER'S INDEX—December 1959

To the Ladies:
FROM OALMA's AUXILIARY

Mrs. Margaret Peters
President

Mrs. Gertrude Buschenfeldt
Vice President

Mrs. Pearl Leavy
Second Vice President

Mrs. Margaret Brownfield
Secretary

Mrs. Lorraine Scheck
Treasurer

Dear Reader:

I am so happy for this opportunity of being able to communicate with you all at one time. I was so busy being a Grandmother (for the first time) that I was unable to attend the National Assembly at Dallas.

I missed the pleasure of seeing everyone again and although many of us only see each other once a year, at convention time, it is amazing how we always pick up the threads of our conversation from the last Assembly. I was able to pick up one thread as Ruth Finlay and I visited during my grandmotherly sojourn in Milwaukee, Wisconsin.

For those of you, including myself, who were unable to attend the Dallas meeting, Pearl Leavy is filling us in with a report on Dallas and the trip to Mexico City.

We will be in New York City next year (September 3-6) and I know our Program Committee will have a difficult job on its hands. There is so much to do and see in New York that maybe it would be wise just to give you each a map of New York City and say, "Go to it."

I would love to hear from you during the year and any ideas or suggestions that you may have for our Auxiliary activities in New York City will be most welcome. My best to you all.

Sincerely,
MARGARET PETERS

LAREDO BRANCH

The Lux Artificial Limb and Brace Company of San Antonio, Texas, has opened a branch facility at Laredo, Texas, in order to serve more efficiently their numerous patients in that area. Harold Prescott, partner in the company, is manager of the Laredo Branch, which is located at 701 Victoria Street (Telephone: RAndolph 2-2831). His associate, Charles Kymes, manages the home facility at San Antonio.

DALLAS AND MEXICO CITY; A REPORT ON THE NATIONAL ASSEMBLY FROM THE DISTAFF SIDE BY MRS. PEARL LEAVY

Bobbye McGraw made a fetching cowgirl. Here we see her with her husband Dave McGraw.

First of all, for those of you who missed the Dallas convention we should like to tell you, "You missed a great time." It's been heard many times that Texas does things in a big way and you can really believe it.

The ladies' activities were very well planned by our past president, Mrs. Bobbye McGraw. The weather was very cooperative while we were in Dallas which made our stay that much more enjoyable.

A tour through the Neiman-Marcus department store was enjoyed by all the ladies who cared to "live dangerously." A beautiful luncheon and style show in the Zodiac Room at Neiman-Marcus was a high point on the agenda. During our visit to Dallas, Neiman-Marcus was dedicating its entire decorative scheme to the South American countries.

A trip was taken to the *Decorative Center* where a multitude of showrooms are combined for the convenience of commercial buyers and their customers. We saw many beautiful materials as well as different periods and stylings of furniture set up in their respective room grouping.

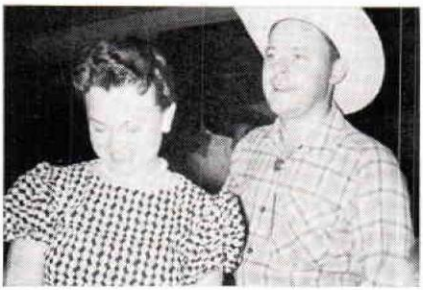
Aside from the ladies' planned activities a wonderful time was had by all the evening of the "Western Whing Ding." Everyone dressed in Western clothes. A Western band played and we found we had quite a few square dancers in the group.

Mrs. Laura Hedgecock, one of our loveliest ladies, showed up in a beautiful squaw dress and was having the time of her life. Jim Snell looked even taller than his 6-foot 6-inches in that ten-gallon hat.

The evening before the close of the Dallas Meeting the banquet and dance were held with everyone turning out in their best array. It was a gay evening. Everyone was saying their good-byes and going home while others were anticipating the trip to Mexico the next day.

Dallas had been good to us and we're all looking forward to coming back some day.

WESTERN "WHING-DING"—Delegates to the National Assembly at Dallas last October were guests of OALMA Region VIII. This took the form of a Western Party and Square Dance and was greatly enjoyed by everyone. Here you see some of the partygoers, reliving the Old West.



Above—Pearl and Jerry Leavy just in from the ranch. At the right: Mrs. Don Bohnenkamp and husband show D. O. Lee the right way to wear a Western hat.

At the right: Frank Harmon, I. M. "Pete" Pease and Jack Pava.

MEXICO TRIP

Those going to Mexico left from Ft. Worth International Airport. The trip was a very gay, relaxed one as the entire plane was filled with members of our group, with the exception of four people.

When we arrived in Mexico the Mexican officials treated us wonderfully. A group picture was taken as we came off the plane, refreshing drinks were served by the Mexican Tourist Office and after a short inspection of our baggage and papers, our Mexican holiday was ready to begin. We were given every possible courtesy on our arrival with taxis at our disposal and every detail seemed to be planned with great care.

Before arriving at our hotel we had already seen much of the city and the great difference between the U.S.A. and our neighboring country. The same hospitality was extended us at the *Del Prado*, a very beautiful hotel.

Mexico City is about 7,300 feet above sea level and generally speaking quite cool. Fall clothes were in order most of the time.

Friday morning some of the ladies were taken on a shopping tour of some of the interesting spots by Mrs. Rodolfo Martinez. Some ladies attended the technical session held at the Mexican Rehabilitation Association. Demonstrations and a general exchange of ideas took place followed by a tour of the building and a delicious buffet luncheon.

In the afternoon we went on a bus tour of the city seeing many interesting highlights, beautiful cathedrals, the Federal Palace where Diego Rivera's murals tell their very controversial stories, and also many of the residential sections of the city.

Everywhere you go in Mexico you will find young boys and girls selling their wares on the streets.

Our group made an interesting picture hanging out the bus windows bargaining for a silver bracelet, shawl, basket, or some trinket. By the time we were in Mexico a couple of days it seems everyone had tried their skill at this "street bargaining."

Many of the ladies found a place called "Basket Market" where they could buy beautiful baskets of all shapes and sizes for a very nominal price.

The city was very beautiful by night.

One evening we went on a night club tour which included two very typically Mexican places with guitar players, senoritas dancing and a real Mexican atmosphere.

Saturday we took a bus tour out of the city first stopping at a very old church, The Shrine of Guadalupe where many hundreds of people pass through to worship every day. We then went on to the Pyramids of the Sun and Moon, ancient pyramids built by the Aztecs.

On this tour we saw some very beautiful countryside, small villages, women carrying baskets on their heads, and all the very typical things you expect to see in Mexico.

Sunday we went to the Palace of Fine Arts to see the Tiffany Glass Curtain which is a stage curtain made entirely of sections of glass with a mountain scene painted on it. The lighting used on it while watching gives the effect of the sun rising, full daylight, and the sun setting again—it is a truly magnificent piece of work.

A ride through grounds of the University of Mexico was well worth the trip. The exterior walls of many of the buildings are entirely covered with very colorful mosaic tile. You can see these buildings from a great distance because they are so outstanding—a wonderful piece of architecture.

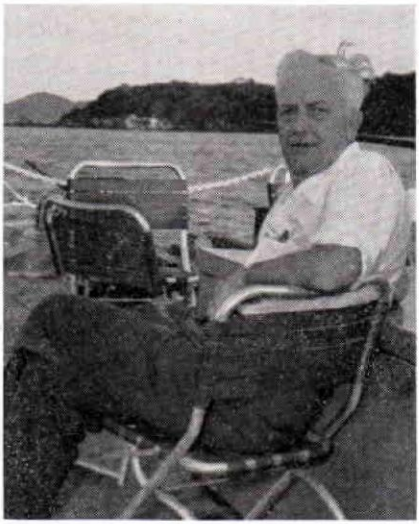
We also went to the Floating Gardens of Xochimilco. Here there is a large open air shopping center along with many of the "street vendors" who fall on you at all times. Small boats decorated with flowers were used to take the group down the waterway to see more of the beautiful surroundings. By the time we got back to the bus to leave everyone had bought her share of souvenirs and it was fun finding out whether you had paid the same amount for the same article someone else just bought.

Sunday afternoon we went to the bullfights where a special section was reserved for our group.

Our guides, Carlos and Pedro, explained it to us which helped make it more interesting. Before you knew it our whole group was yelling 'Ole" as if we'd done it for years. Many of us were a bit reluctant to go in the first place but when it came time to leave these same people were the ones who wanted to stay for more. It was a very exciting afternoon.

On Monday morning we left Mexico City for Acapulco with stops in Cuernavaca and Taxco.

Mr. and Mrs. Alvin Muilenburg enjoy a Mexican Holiday.



M. J. Benjamin on the deck of the yacht "Fiesta," which took some forty members of OALMA for a cruise around Acapulco Harbor and out into the Pacific Ocean and the Bay of Puerto Marquez.

By this time our group had been together about ten days and on these bus tours we were beginning to feel like "one big happy family."

We made a stop in *Cuernavaca* for a visit to the Borda Gardens where Maximilian and Carlotta lived. Cuernavaca has many beautiful flowers of vivid colors making it a real paradise for the tourist with a camera.

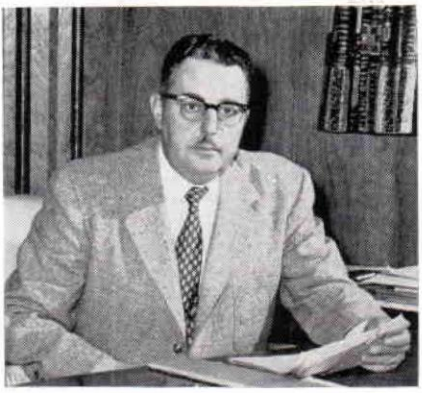
Leaving Cuernavaca we drove through more beautiful countryside to *Taxco*, a very old town with many silver shops, leather shops, and cobblestone streets so narrow one can hardly get through.

The *Hotel De la Borda* in Taxco was in a beautiful setting. At night you could see the lights and church steeples on the hillside. We reluctantly left this little town to continue on to Acapulco. When we dropped down into the city it was grey and rainy and very sticky. Our first impression, needless to say, was not a good one but this was quickly changed when we arose the next morning to find the sun shining brightly on the very blue Pacific Ocean. Our hotel was located at the top of a hill where we could see the entire bay while we were enjoying our meals. It is very true; you can swim under the stars here in Acapulco. The weather was quite sultry at all times like most tropical spots and cool dress was definitely in order. After the more formal dress worn at convention everyone was glad to get into sport shirts and sundresses.

On Wednesday we saw the Acapulco boys dive into the sea from the La Quebrada Cliffs some 600 feet down. We enjoyed a breathtaking tour by bus around the bay where we had many views of the city. We stopped and visited some of the fabulous hotels along the beach.

On Thursday we left Acapulco with a promise to ourselves to return soon. It is a real paradise. We then journeyed on to Mexico City where our beautiful trip came to an end. Bidding goodbye to all our friends, each went his own way until next year.

In Memoriam



Howard P. Emery, Secretary-Treasurer of the American Rawhide Manufacturing Co., died October 26, in Chicago, Illinois.

The company which he founded with his brother Munson, has been for many years a member of OALMA. Howard Emery was a familiar and beloved figure at many of our National Assemblies.

Operations of the American Rawhide Manufacturing Co. are being continued with his brother Munson continuing as President and John Emery as Vice President, and Richard A. Craft assuming the duties of Howard Emery. John Emery is the son of Munson, and Dick Craft is Howard's son-in-law.

Howard is survived by his wife, Naida, two brothers, three daughters and seven grandchildren.

William Didier, pioneer manufacturer of knee and ankle joints, died August 8, at Racine, Wisc., at the age of 84. Mr. Didier was the founder of the William Didier Manufacturing Company.

Present officers of the Didier firm are William Kenton, President, and Julius Alperovitz, Secretary-Treasurer.

Mr. Didier founded the company in 1902, after he had lost a limb as a result of an industrial accident. He retired from active management of the company in 1943.

Oscar J. Bruce, Certified Prosthetist, died suddenly on October 21. Funeral services were held in Roanoke, Virginia, October 26.

Mr. Bruce was manager of the certified facility operated by J. E. Hanger, Inc. of Virginia, at Roanoke, Virginia since 1948. He had been an employee of the Hanger organization, beginning in the year 1907, when he was interviewed by the late Hugh H. Hanger and immediately employed. At the time of his death he was the dean in terms of service of all J. E. Hanger branch managers. He is survived by his son, Dana Thomas Bruce of Pittsburgh, Pennsylvania, and a sister.

Mr. Bruce lost his left leg at the age of twelve, due to blood poisoning as a result of a rusty nail entering his foot.

Christian A. Letzing, founder of the Brace Dept. of Duke University Hospital, died September 13, at the age of 75. Mr. Letzing began his career in the Orthopedic Department of Children's Hospital in Boston. He came to Durham, North Carolina in 1936, organized a brace shop in Duke Hospital, retiring in August, 1954. He was succeeded by the present incumbent, Bert R. Titus, who now is Director of Prosthetic and Orthopedic Appliances at the Duke University Medical Center.

Do you have this new Dorso-Lumbar Support in stock?

Here's the story on the new Truform contribution to correct therapy and patient comfort . . . as it's now being told to your physicians in medical and osteopathic Journals. Their prescriptions will come to you . . . be ready to serve their patients.

For the first time...

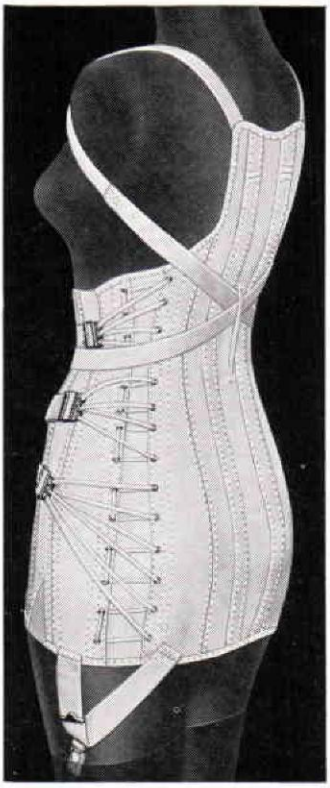
a dorso-lumbar support with single adjustment of shoulder straps in front to assure correct support

It's always been a problem for the patient to adjust satisfactorily the conventional dorso-lumbar support. In order to adjust shoulder straps at each side, the patient has to turn the shoulders out of normal position. This makes it difficult to attain the optimum support for the upper back.

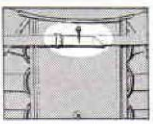
Now Truform has the answer . . . shoulder straps that are tightened by a single adjustment in front, as shown in the drawing. No twisting and turning to each side. The patient's shoulders stay in their normal position, the adjustment firmly maintains the desired corrective position. The tightened straps, which cross in the back, are then held securely in a simply designed "keeper" (shown in drawing).

Greater height in the back, too, with two full-height steel stays to assure firm support. Comfortable adjustable underarm pads . . . 3 pull-straps to adjust and distribute tension.

Always look to Truform supports that are anatomically correct and therapeutically sound . . . fitted with skillful knowledge . . . available to you and your patients only from the Ethical Appliance Dealer.



NEW DORSO-LUMBAR SUPPORT



Women's models 1173-HS full skirt (pictured above) and 1174-HS regular length. Men's model 417-HS regular length. Drawing shows single adjustment of shoulder straps in front, retained in "keeper"

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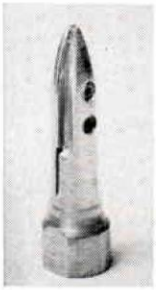
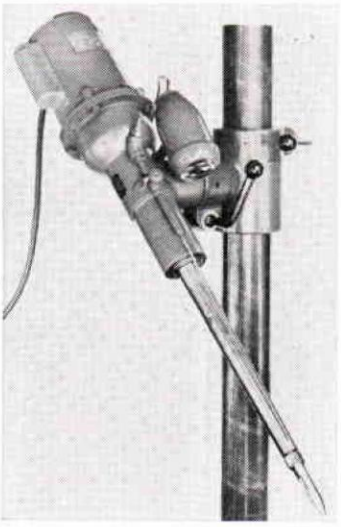


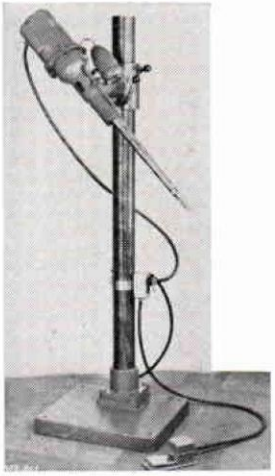
MIDGET CUTTER—No. 2100H

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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We've had requests for a foot-operated switch, and this is the answer. It can be attached in a matter of minutes to any Trautman Carver. Designed so that if the operator wishes to use the hand switch instead of the foot pedal, all he has to do is remove the motor plug from the receptacle on the column of the Carver and then plug it directly into the power supply. Does not affect the Carver's normal operation. Cost $22.65.

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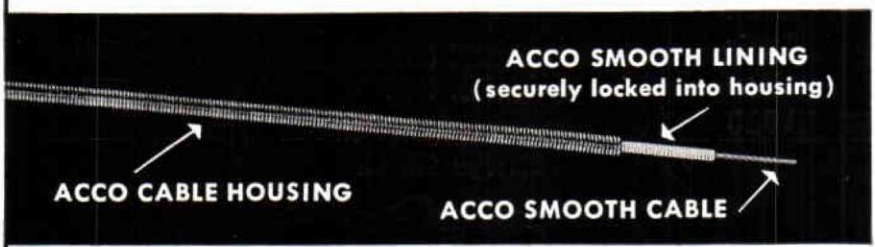
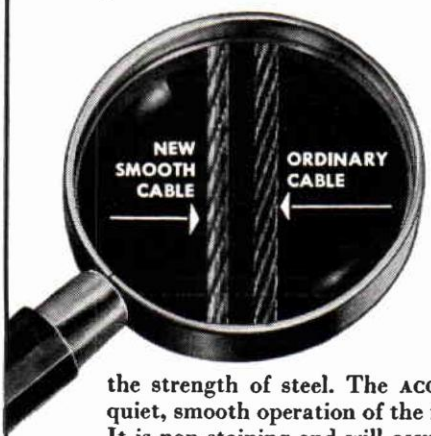
ACCO Lined Conduit and Smooth Cable

provide Quiet, Easy Operation

A complete line of ACCO Tru-Loc cables and fittings is available to help improve prosthetics and limb shop practices. Recommended by the Committee on Prosthetics Research and Development, the various ACCO assemblies feature reclaimable and re-usable major fittings as well as the unique new ACCO smooth lining and smooth cable.



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.

***Write** for complete information on the ACCO prosthetics kit, featuring a complete line of reclaimable and re-usable fittings and smooth cable*

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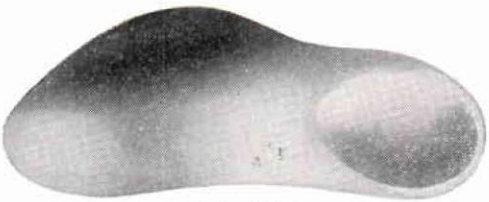

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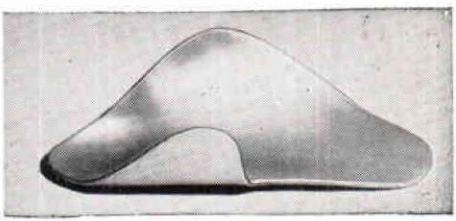

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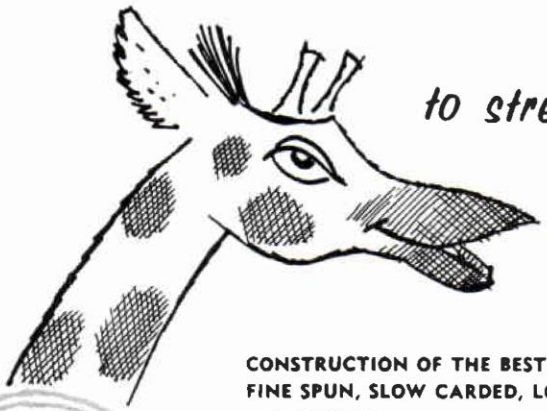

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