SEPTEMBER, 1956

The journal of the Limb and Brace profession

Orthopedic and Prosthetic Appliance Journal

Metal Heat Treatment

Splints for the Upper Extremity

The Prosthetic Schools

published jointly by
Orthopedic Appliance & Limb Mfrs. Association
American Board for Certification

DATES TO REMEMBER

What • When • Where

1956

OCTOBER

15 - 17	NATIONAL REHABILITATION ASSOCIATION—Annual Conference	*Denver, Colo. Shirley-Savoy Hotel*
19 - 20	CERTIFICATION EXAMINATION FOR ORTHOTISTS AND PROSTHETISTS	*San Francisco, Cal.*
20 - 24	NATIONAL ASSEMBLY OF THE LIMB AND BRACE PROFESSION—OALMA and Certification Meetings	*San Francisco, Cal. Sheraton-Palace Hotel*
28 - 31	NATIONAL SOCIETY FOR CRIPPLED CHILDREN AND ADULTS—Annual Convention (*Note* Pageant on Prostheses to be sponsored by the American Board for Certification)	*Washington, D. C.*
29	NEW YORK UNIVERSITY—Course No. 743B, "A. K. Prosthetics" begins. (Course 743-C begins December 3)	*New York City*
29	UNIVERSITY OF CALIFORNIA—Course in "A. K. Prosthetics" begins	*Los Angeles*

NOVEMBER

27 - 30	AMERICAN MEDICAL ASSOCIATION—Clinical Meeting (Certification Board report on services to the Physician in the Scientific Exhibits)	*Seattle, Wash.*
28 - 30	EXPOSITION ON REHABILITATION AND EMPLOYMENT—Sponsored by the President's Committee on Employment of the Physically Handicapped (Includes OALMA Exhibit)	*Miami, Fla.*

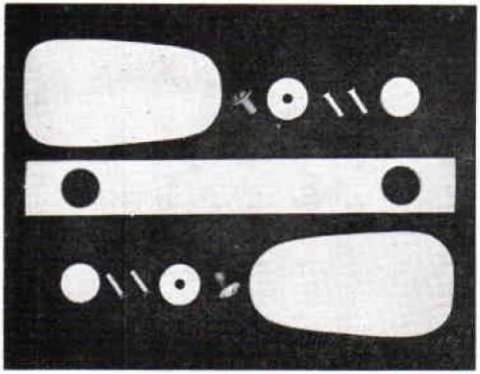
1957

JANUARY

26 - 31	AMERICAN ACADEMY OF ORTHOPAEDIC SURGEONS—Annual Convention	*Chicago, Ill. Palmer House*

JULY

22 - 27	INTERNATIONAL SOCIETY FOR THE WELFARE OF CRIPPLES—Seventh World Congress	*London, England*



"BREMER BREASE"

Gives you fast, trouble-free cutting. Tool edges stay sharp longer. Keeps drills, reamers and taps from sticking or freezing.

Price $3.00 *per can*

Note: Contents of can not less than 5 pounds net.

"DENIS-BROWNE KIT"

All necessary parts for a complete Denis-Browne Splint. Easily assembled — light in weight. 40 different "sure-lock" settings.

New Low Price $1.00 *per kit*

Note: made in 6" - 7" - 8" - 10" length bars (center to center). Other lengths to order at low additional cost.

BREMER BRACE MANUFACTURING CO.

1107 Margaret Street, Jacksonville 4, Florida

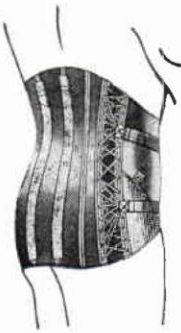
All Prices NET, F.O.B. — Jacksonville, Fla.

With Complete Confidence

DOCTORS PRESCRIBE . . . DEALERS SELL

Freeman

SURGICAL SUPPORTS



MODEL 422
Sacro-Lumbar Back Support for Men

MODEL 423
Sacro-Lumbar Back Support for Women

SOUND BASIC DESIGN—In developing the corset type of support, Freeman has worked closely with the medical profession. The result of this work and cooperation is a sound basic design that can give the exact degree of support or immobilization desired and still retain comfort for the wearer whether he's sitting, standing or reclining.

COMPLETE LINE—When you handle Freeman surgical supports you have available the *right* model for every surgical garment application the doctor may prescribe. You can be sure that each is correctly designed for its job and *will be worn* because it will be comfortable. That's why you can fit and sell Freeman garments with confidence.

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

FREEMAN MANUFACTURING COMPANY, Dept. 809, Sturgis, Michigan

Send me complete literature on Freeman surgical supports ☐. Send on approval, without obligation, a Freeman Sacro-Lumbar Back Support for my inspection ☐.

Men's ☐ Women's ☐ Size_____.

Name_____

Address_____

City_____ State_____

THE MODEL SETS

Sierra leadership is backed up with years of engineering "know-how" . . . high standards of design . . . quality . . . and performance. For the finest prosthetic devices specify Sierra products all the way . . . from hangers to fingers, they're the best parts to combine with your good work.

Write for prices and specifications

Your assurance of quality is the Sierra label . . . be sure it's on every part you buy.

Sierra ENGINEERING CO.

SIERRA

123 E. Monteci

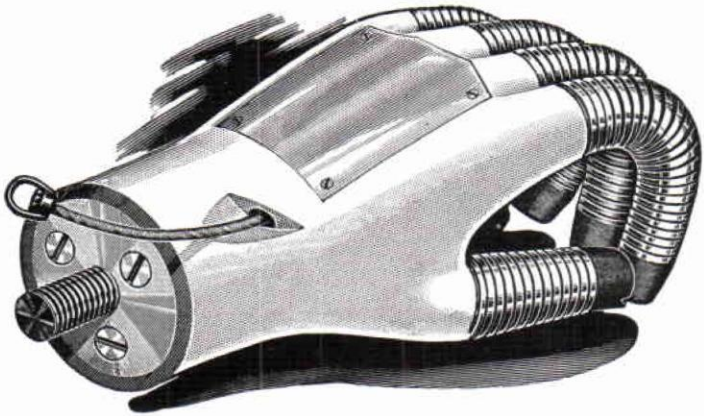
FOR SALE

Well known and established Artificial Limb and Orthopedic brace manufacturing business with profitable volume sales. Well stocked.

Machinery and equipment in A-1 condition. Staffed by well trained management and employees with years of service. This business is centrally located in the heart of Metropolitan Toronto, Ontario, Canada.

For further particulars write to Mr. Don Dewar, 4891 Dundas Street, West Toronto 18, Ontario, Canada.

SEE THE NEW LOCKGRIP HANDS



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

WITH naturally shaped and molded rubber finger tips.

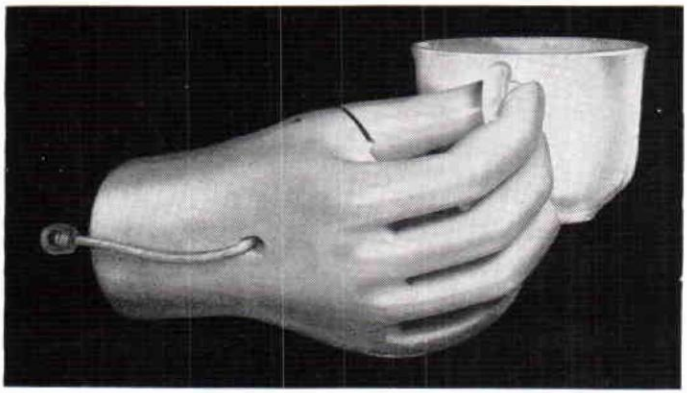
WITH Finer gauged and stronger flat finger spring wire, adding to the jointed fingers flexibility.

NEW Realistic cosmetic gloves exceedingly lifelike in sizes 7½—8—8½.

A lighter, stronger and the most useful of all mechanical hands, in sizes from 6 to 10, all wrist styles.

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

LOCKING



SNAP THUMB

D. B. BECKER CO.

152 WEST STEVENS STREET **ST. PAUL, MINNESOTA**

ACCO TRU-LOC Prosthetics Kit

Makes Swaging Easy... Saves Time... Eliminates Soldering... Permits Re-Use of most ACCO Tru-Loc Terminals and Fittings without the Fuss and Muss of Unsoldering!

The ACCO Precision Swaging Tool pictured in the Kit makes swaging easy with ACCO Tru-Loc Fittings and Terminals...eliminates soldering. Swaging is unquestionably best...provides 100 per cent bond between cable and terminals... and there is no acid to corrode the cable...no heat to weaken it.

This Kit contains a full range of the Finest Stainless Steel ACCO Tru-Loc Terminals, Fittings, Assemblies, Cable and Housings. Everything has been carefully designed to permit maximum re-use of Fittings *...without the fuss and muss of unsoldering.*

All of the parts, and the Precision Swaging Tool supplied in this ACCO Tru-Loc Prosthetic Kit, have been tested, approved *and adopted* by the Army Prosthetic Research Laboratory at Walter Reed Hospital and by Government Hospitals and Centers throughout the U. S. For further details see the following pages.

Portable Swaging Tool

The suction cup mounting pictured here makes ACCO's Precision Swaging Tool portable. It can be used on any flat surface.

for complete information write to—

ACCO

TRADE MARK

Automotive and Aircraft Division
AMERICAN CHAIN & CABLE

601 Stephenson Bldg., Detroit 2
2216 South Garfield Ave., Los Angeles 22 • Bridgeport 2, Conn.

Shown Here are the Stainless Steel Terminals, Fittings, Assemblies, Cable and Housings furnished to Limb Shop Operators in

ACCO's TRU-LOC Prosthetics Kit

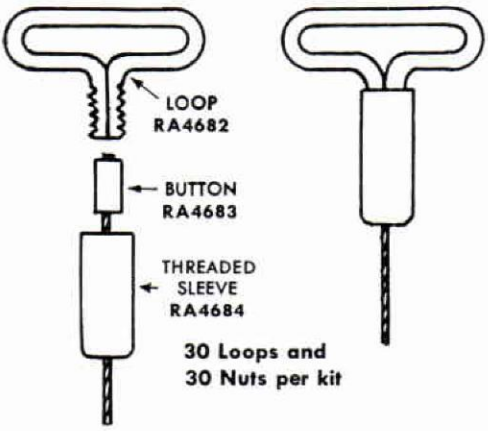
• Quantities of parts or assemblies furnished with each kit are shown with each set of drawings. And, of course, each kit also contains the ACCO Precision Swaging Tool and Suction Cup Mounting shown in the pictures on the preceding page.

ACCO BUTTON

100 Buttons per kit

To assemble—
Insert Cable and Swage

ACCO STRAP "T" HANGER



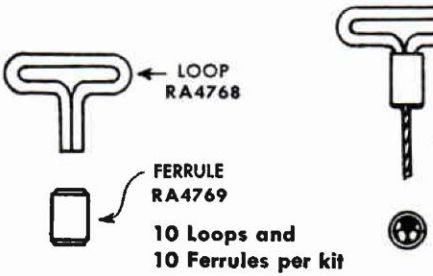
30 Loops and
30 Nuts per kit

All drawings approximately actual size

To assemble—
Thread Cable thru Nut—
Swage Button to Cable—
Screw Loop into Nut

***NOTE** • Loop and Nut can be re-used*
No unsoldering involved

ACCO ELBOW "T" HANGER



10 Loops and
10 Ferrules per kit

To assemble—
Insert Cable and Loop into Ferrule—then Swage

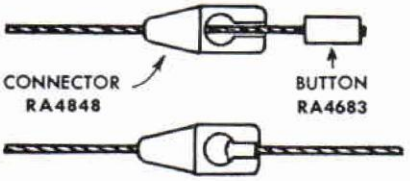
ACCO BALL-AND-CABLE ASSEMBLY

SA-6007-A64

15 assemblies 64″ long per kit

Stainless Steel Balls are on each end of these 64″ assemblies. Cut in half, each of these 64″ assemblies makes two full length 32″ cable assemblies. The Balls fit ACCO Connectors and other devices. Cut ends can be connected to ACCO Strap, Connector or similar devices.

ACCO CONNECTOR

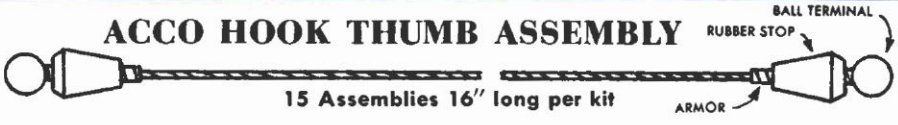


65 Connectors per kit

Ball Terminal drops easily into Connector. This Button and Ball assembly is ideal for quick disconnects on Hook and Hand exchanges.

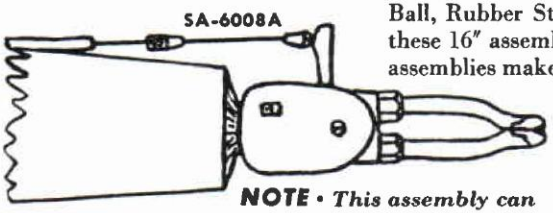
***NOTE** • Connector can be re-used There is no unsoldering*

ACCO HOOK THUMB ASSEMBLY



15 Assemblies 16″ long per kit

SA-6008A



Ball, Rubber Stop and Armor are on each end of these 16″ assemblies. Cut in half, each of these 16″ assemblies makes two Thumb Assembly units. Ball end is designed to fit thumb of a hook. Rubber stop holds Ball in position. Armor prevents Cable wear and reduces Cable fatigue.

***NOTE** • This assembly can be furnished to any length required for other types of installations*

ACCO CABLE HOUSING

5 lengths of 10 feet each per kit **RA4806**

Stainless Steel—Designed for use with Standard Retainers

SPECIAL **ACCO Lubricating Stick . . . will not soil clothing . . . lubricates Cable sliding through Housings . . . eliminates grunts and operating noises . . . insures smooth operation**

for complete information on ACCO TRU-LOC Prosthetic Kit and equipment, write to

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AMERICAN CHAIN & CABLE

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Orthopedic and Prosthetic Appliance Journal

(Title registered U. S. Patent Office)

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CONTENTS

'56 Assembly Features Famous Faculty; Technical and Scientific Exhibits Listed for San Francisco Meeting by Program Chairman

HERBERT HART, C. P. & O.

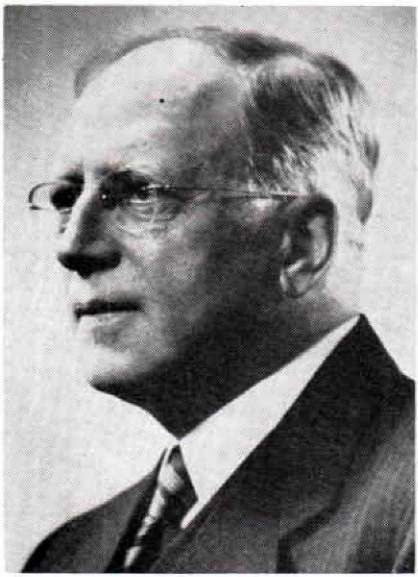
Acclaimed as one of the world's great cities, loved and enjoyed by everyone is worldly San Francisco. Our headquarters for this year's conclave is the Sheraton-Palace Hotel, steeped in traditions, world famous and renowned.

San Francisco is a city of 800,000 inhabitants with the friendliness and cordiality of your own home town. To say that this wonderful city has character and personality, that it ranks with New York and New Orleans as one of the three great cities in the United States that rise in their own uniqueness, is not enough.

Let's look more closely at this great metropolis, a little over one hundred years old, the gateway to the Pacific, the city that has everything to enchant the visitor.

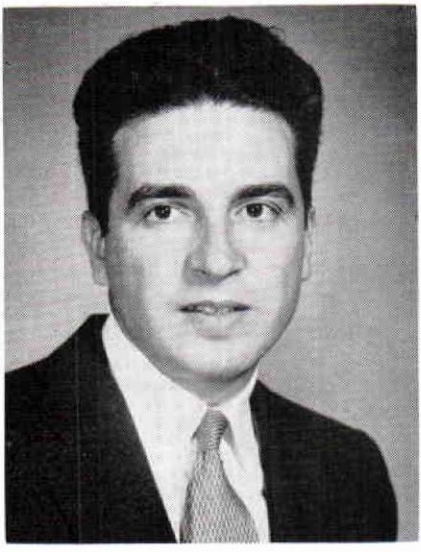
A mean average temperature of 56.6 degrees, it misses the panorama of the seasons. Warm days, yes; but a cover of refreshing fog from the Pacific air conditions the city assuring pleasant, cool evenings. A friendly, cosmopolitan area where peoples of every race, color and creed live, worship and work peacefully side by side. The largest Chinatown outside of the Orient with its unusual night clubs and interesting shops; the North Beach area known as "Little Italy" with its fisherman's wharf and quaint restaurants are two of the outstanding attractions.

To whet the appetite of the most discriminating gourmet San Francisco's myriad array of cafes, bistros and pizzarias is truly unequalled anywhere in the world. Whatever your fancy in the way of cooking: Chinese, Japanese, Italian, French, Swedish, Armenian, Russian, Polynesian, German, Mexican, Indian, etc., are yours to be enjoyed. You can even get a delicious 19c hamburger with all the trimmings or a succulent hot dog at the drive-in of your choice should your wife overextend her budget at I. Magnin & Co., Gumps, Ransohoff's or Sak's Fifth Avenue.



Sterling Bunnell, M.D., noted hand surgeon who will teach Seminar on "Hand Splints" (with H. Winiger)

All this, plus a well planned, diversified assembly should cause you to make every effort to attend. The value of our technical and scientific meetings is received by knowledge acquired in attending the various seminars and exhibits. Discussions with fellow members from all parts of our



VA Officials to Discuss Limb and Brace Contracts

Dr. Robert E. Stewart (left) is Director of the VA's Prosthetic and Sensory Aids Service. Joseph J. Pitrone (right) is Supervising Purchasing Agent for the Service Contracts Section. Both will take part in the question-and-answer session Monday evening.

country as to how they conduct their successful operations will broaden your sights and raise your business and ethical horizons.

All of our local members join me in extending to you a most cordial and warm invitation to come to San Francisco and join with us in making our 1956 National Assembly a most successful and outstanding event.

Exhibitors

Lloyd Brown, Chairman of the Scientific and Technical Exhibits Committee of the National Assembly, announces the assignment of the following booths. Familiar faces and new friends among the suppliers and manufacturers will be found at the display booths in the Rose Room of the Palace. This large room immediately adjoins the Concert Room where meetings are to be held, and all traffic into the meeting room passes through the Rose Room.

The *Abbott Orthopedic Supply Co.* of Los Angeles has been assigned Booth No. 23 immediately inside the entrance. This company will exhibit ready-made Williams Braces and hyperextension braces.

Mr. and Mrs. Howard Emery will represent the *American Rawhide Manufacturing Co.* in Chicago at their Booth No. 18. American Rawhide Co. was organized in 1928 and specializes in the manufacture of fine rawhide for artificial limbmakers. The firm also supplies other fine quality leathers.

Dr. Verne Inman and Associates will have an exhibit on Medical and Prosthetic Problems of the Lower Extremity Amputee. This will describe their research work underway at the University of California at Berkeley. It will be closely tied in with the report which is to be given at the Tuesday morning (October 23) session of the Assembly.

Dr. Edwin R. Schottstaedt (left) and George Robinson, C.P. (right) will present a demonstration of Functional Arm Bracing Tuesday morning.

A. H. Bosworth of Wichita, Kans., for many years a member of OALMA, is exhibiting this year for the first time. His firm will have Booth No. 14.

The adjoining Booth No. 15 has been assigned to the *S. H. Camp Co.* of Jackson, Mich. Mr. Charles Yesalis reports that the Camp booth will feature arm slings, abduction splints, elastic hose and other orthopedic supports.

The *D. W. Dorrance Co.* has Booth No. 22 immediately to your left as you enter the Rose Room. The *A. J. Hosmer Corp.* has the companion Booth No. 21. Lloyd and Noel Brown and Jerry Leavy will be up from San Jose for the duration of the Assembly.

Florida Brace Corp. has taken Booth No. 19. Terry Moore of that company will be at the booth to exhibit the Jewett Brace and the Myo Cervical Collar.

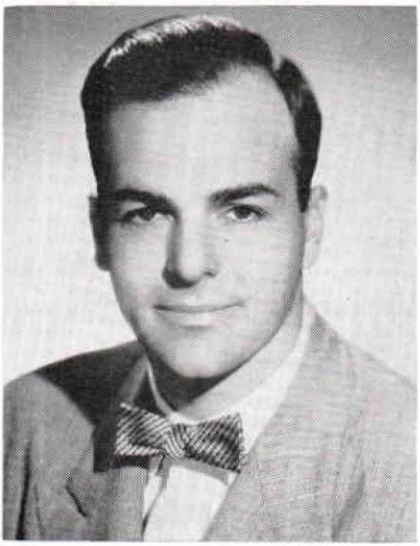
Mr. G. F. Freeman of the *Freeman Manufacturing Co.* will be at Booth No. 17. This company, located at Sturgis, Mich., is a well-known manfacturer of surgical supplies.

Leo Waller will be at the *Hersco Arch Products Corp.* booth. This is Booth No. 36 directly opposite the entrance to the meeting room.

Booth No. 29 has been assigned to the *Knit-Rite Co.* of Kansas City, Mo. Lee Fawver, Ted W. Smith and T. R. Reynolds are attending the Assembly and will be in charge of displaying the famous Knit-Rite Stump Socks, other artificial limb supplies and several of the braces which this well-known firm offers.

Mr. Kenneth C. Kingsley, President of the *Kingsley Manufacturing Co.*, reports that his display will be at Booth No. 16. This company makes the APRL Cosmetic Glove and also offers the Kingsley Plastic Cuff, leather coating and color mixes for laminating resin.

To give "How to Do It" session on Cosmetic Appliances. C. O. Anderson of San Francisco (above) and Karl Nielson, A.P.R.L., will demonstrate latest procedures.



Dr. Charles G. Hutter will teach "Anatomy for Brace and Limb Technician." This Seminar will hold two sessions.

The *John J. McCann Co.*, one of the pioneer OALMA exhibitors is to be located in Booth No. 26. The motto of this company is "If we don't have it and it is available, we'll gladly try to get it for you."

Mr. E. E. Fuener of the *Joint Manufacturing Co.* will be at Booth No. 31. This company was one of the first to exhibit when OALMA began presenting exhibit display facilities at its National Assembly.

Mr. Edwin Arbogast sends word that the exhibit of the *Ohio Willow Wood Co.* will be in Booth No. 33.

A newcomer from across the Atlantic will be at Booth No. 1. The firm of *Maschinen-Schmid* of Oberau/Loisach, Germany, has taken this booth and Mr. Schmid will be on hand for the Assembly.

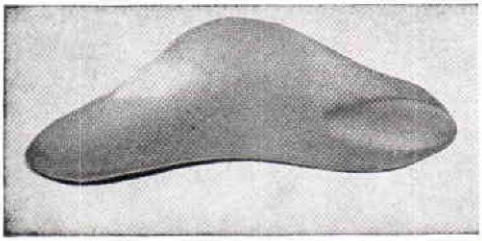
The *Otto Bock Agency* of Salt Lake City, Utah will display in Booth No. 11. Harry D. Fahrenholz, Mr. and Mrs. Eugene Wagner and Mr. and Mrs. Max Nader of the Agency will attend the Assembly.

Kessler Associates of Newark, N. J. and Salt Lake City, Utah, have chosen booth No. 8. Sanford Kessler of the Salt Lake City branch, Western Division at Salt Lake City will have charge of the exhibit.

Booth No. 7 will be headquarters for the *Bennington Stump Sock Corporation* of Bellmore, N. Y. Milton Katz, president of the company, and Mrs. Katz plan to stop off at Denver for the NRA meeting before continuing on to San Francisco.

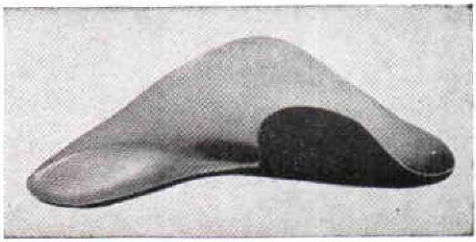
Medic Shoe Manufacturing, Inc. of Philadelphia will have on display what is said to be the largest line of children's unbranded prescription shoes in the world. This will be at booth No. 2. Stop by and meet this newcomer to OALMA Assemblies.

Sierra Engineering Co., again has two booths for its display—Nos. 32 and 34, which are adjoining. Arthur Ritterrath promises some new surprises, for the "booth-hopper."



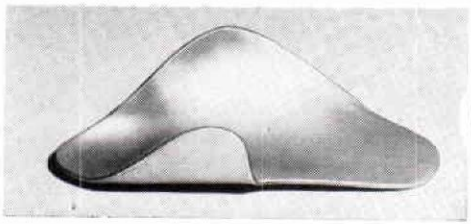
Style 600S (Schaeffer)

Combination longitudial and metatarsal arch support. Flexible with a sponge rubber metatarsal pad and a concealed highly tempered spring. Base of support is constructed of a high grade sole leather, moulded on individual lasts, the top finished with a fine calfskin and the bottom a high grade suede. Available with 1, 2, 3 or 4 springs.



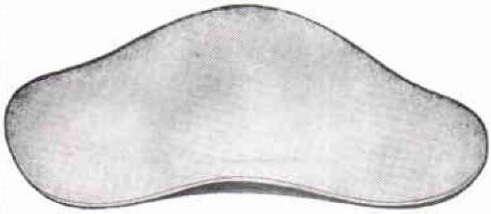
Style 903 Leather (Whitman)

A combination support with both inner and outer flanges designed especially to hold the heel firmly in position. In addition provides support for both inner and outer longitudial arch. Made with one or more springs. Used in cases where a metal Whitman would be too rigid as this support is flexible and light in weight.



Style No. 900

Most popular metal Whitman—stainless steel scientifically designed and precision made to give you a perfect product. Stock sizes: Children 4 to 3 medium; Women's 4 to 10 wide and narrow; Men's 6 to 13 wide and narrow. Also made after cast or print. The above style also available in Anodized Dural.



Stainless Steel, Dural Support No. 803

Stainless steel support with moderate inner flange to assure the utmost comfort, Metatarsal and cupped heel, made in sock sizes, after cast or print. Women 3 to 10, wide-narrow. Men's 6 to 12, wide-narrow. Children 6 to 2, meduim. This support is available in both Stainless steel and Dural. This is one of the most popular supports in the Surgical field. All supports made from plaster cast, foot prints or stock sizes. Also made in Anodized Dural.

MOULDED LEATHER SHELLS STYLE A
FOR WOMEN, MEN AND CHILDREN

MOULDED LEATHER SHELLS STYLE B WITH MET
FOR WOMEN AND MEN

MOULDED LEATHER SHELLS STYLE D (WHITMAN)
FOR WOMEN, MEN AND CHILDREN

All Leather Shells Can Be Had with One or More Attached Steel Springs

RUBBER SHELLS WITH OR WITHOUT MET
WOMENS AND MENS SIZES

PEDIC SPONGE RUBBER
IN THICKNESS OF 1/16" TO 1/2" MEDIUM AND FIRM DENSITY

ORTHOP. AIR-FOAM HI-TEST
1/8" TO 1" SOFT, MEDIUM, FIRM AND EXTRA FIRM

FOAM ON COTTON
1/8" 3/16" 1/4"

RUBBER-CORK
1/16" TO 1/2"

ORTHOPEDIC CORK
1/16" TO 1/2"

CORK BLOCKS FOR ELEATIONS
12x4" 1/8 TO 4"

RUBBER-SCAPHOIDS
SMALL, MEDIUM, LARGE AND EXTRA LARGE

RUBBER METATARSAL PADS

CELASTIC MOULDING FABRIC
No. 45 No. 75 No. 115 No. 125

VINYL LEATHERETTE
IN WHITE AND NATURAL COLORS

HERSCO Arch Products Corp.
MANUFACTURERS
137 East 25th St., New York 10, N. Y.

"Don't miss our Exhibit at the San Francisco Assembly. Booth No. 36."

Above left: Herbert Hart, Program Chairman. Upper right: Woodrow T. Yamaka, teacher of "Harnessing." Lower right: C. D. Denison, in charge of "C. P. Bracing" Seminar.

Pope Brace Division will show the latest developments in prefabricated brace parts at booth no. 30. Ralph Storrs reports that the new cerebral palsy brace will be of special interest.

Robin-Aids Co. has booth No. 6. George Robinson and George Gage now have reprints of the monograph on Functional Arm Bracing which attracted so much attention.

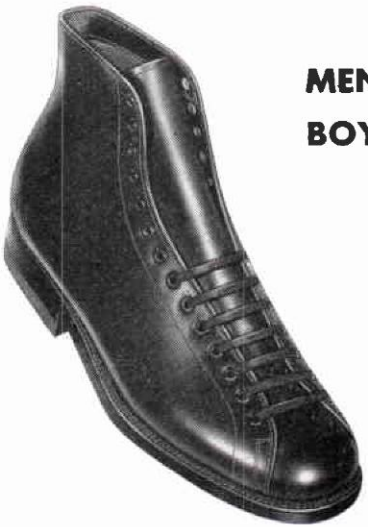
Prosthetic Services of San Francisco will have booth No. 20. However, C. O. Anderson sends word that the firm will also operate a full-time "Coffee Bar" in their office at 175 Jessie Street, just a few doors from the Hotel.

Truform Anatomical Supports—and it wouldn't be an Assembly without them—are displaying in booth No. 24.

The Ward Surgical Specialty Co. at booth No. 25 will show braces for mechanical flexion and hyperextension of the spine—developed to reduce delivery time.

The U. S. Manufacturing Co. has two booths this time, Nos. 3 and 4. J. Morgan Greene, president, reports that the exhibit will have items of interest to both prosthetists and orthotists.

The *Rancho Los Amigos Hospital* of Hondo, Calif., has booth No. 5. The exhibit will demonstrate the research program of functional arm bracing at the Poliomyelitis and Rehabilitation Hospital.



MEN'S
BOY'S

SURGICAL

FOOTWEAR

Lace-to-toe construction enables free adjustment to accommodate swelling . . . can be used where certain contracted foot conditions are too extreme for the restricted area in an ordinary shoe.

The uppers are soft and mellow leather. A heavy steel shank gives important support underfoot. The sturdy leather sole will accept bracework. Carried in-stock for fast delivery.

BOY'S: 2 to 6 **MEN'S: 6½ to 12**

- EQUINO-VARUS
- PLUMB LINE
- SURGICAL

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A Report from The President of OALMA

The time for our pilgrimage to the Sheraton-Palace Hotel in San Francisco, for the October 21-24 sessions of the National Assembly, is rapidly approaching. At this writing, Headquarters report reservations coming in rapidly and numerous inquiries being received about exhibit space and the seminars. If you haven't made your room reservation with the hotel and sent in your advance registration form to OALMA Headquarters, I urge you to do so now. The San Francisco Assembly is shaping up to be one of the biggest and best annual meetings we've ever had.

You can readily see why when you take a look at the top-notch talent which Chairman Herbert Hart and OALMA Headquarters have assembled for your benefit. There are five seminars offered you—all taught by national authorities. Where else, for instance, could you hear Dr. Bunnell and H. Weniger on Hand Splints? Or hear Dr. Schottstaedt and George Robinson describe Functional Arm Bracing? And you will have first-hand word on brace contracts and the artificial limb revisions from Dr. Robert E. Stewart, Director of the VA Prosthetic and Sensory Aids Service. Joseph J. Pitrone, Supervising Purchasing Agent of the VA Service Contracts Section, will also be there.

And I don't need to say anything about San Francisco's entertainment features—only this word: They put New Orleans 'way at the back.

This is the meeting you won't want to miss!

W. Frank Harmon
President

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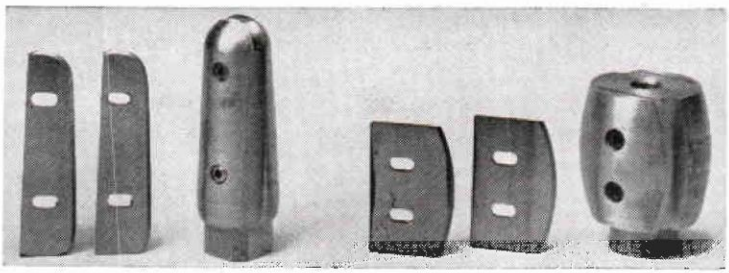
The greatest time and money saver since the "Set-up" was introduced. You can pull sockets in one third the average time. In today's high-cost economy, you can't afford to have a high-salaried man spend hours with the pulling tool. Gives you more time for your patients.

An indispensable Aid for the One-man Facility — the answer to the labor shortage. Two sizes of cutters available —other sizes coming soon.



Cutters are now in daily use at leading facilities in Cleveland; New York; Davenport, Iowa; Hartford, Conn.; Denver; Houston; Minneapolis and Los Angeles.

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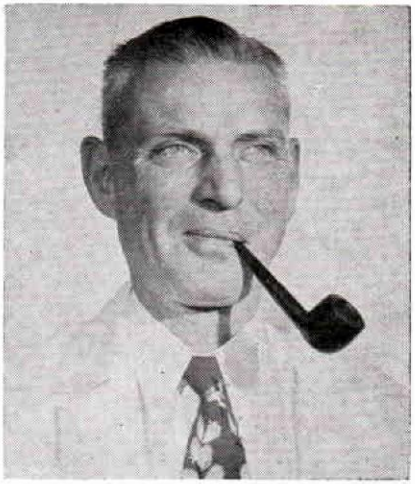


A Message from The President of the Certification Board

TO ALL CERTIFIED ORTHOTISTS AND PROSTHETISTS:

We hope you're planning to be with us for the National Assembly of the Limb and Brace Profession and for our own Annual Meeting, which is an important part of the Assembly. I am sure you will enjoy the program which Herbert Hart and National Headquarters have arranged. You will benefit from "rubbing elbows" with hundreds of your colleagues—and we will benefit from your presence and participation.

You will be particularly interested in one feature of our meeting—"How Certification Works." This will be a series of five minute interviews of the Chairmen of our Subcommittees, which plan the examinations, check the credentials of applicants, and investigate the facilities which are applying for Certification. In the business session which follows you will hear reports on the year's activity, the Board's financial status and the plans for the years ahead. Two members of the Board are to be elected this year at the meeting. We will have nominations from the American Academy of Orthopaedic Surgeons and from the Board of Directors of OALMA.

General F. S. Strong, Jr., Chairman of the Prosthetics Research Board, with Mrs. Strong, will be our guest at the annual Certification Luncheon.

General Strong this year completes his tenth year as guiding light of the National Research Program in artificial limbs. To mark this important anniversary, we are arranging to present a Testimonial Volume of Letters to General Strong. At the same time Dr. Miles Anderson will be honored for his work in revising our methods of examination and the assistance he has given in conducting these for the past several years.

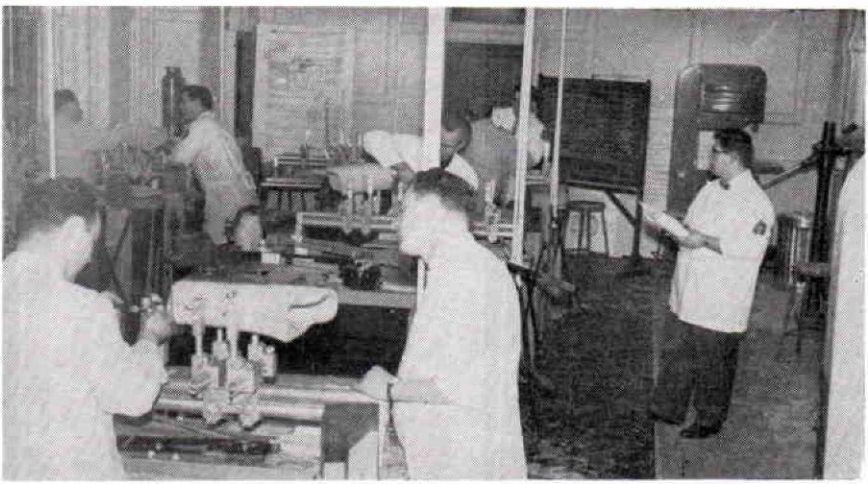
Our National Advisory Council will hold a Luncheon Meeting on October 23.

You will be interested also in the changes in the annual Certification examination, scheduled for October 19 and 20. We believe they will result in better evaluation of the candidate. E. W. Snygg of San Francisco, who is in charge of local arrangements, reports that a record class of approximately 50 candidates is expected. Of these approximately 30 are orthotists and the remainder prosthetists.

—ROBERT MAZET, JR., M.D.

NYU Prosthetic School Meets Long-Felt Need

Schedule for 1956-1957 Announced



Following his demonstration of duplicating a limb on the alignment duplication jig, Instructor Ed. Hitchcock guides the class through the procedure with help of Instructor George Scoville.

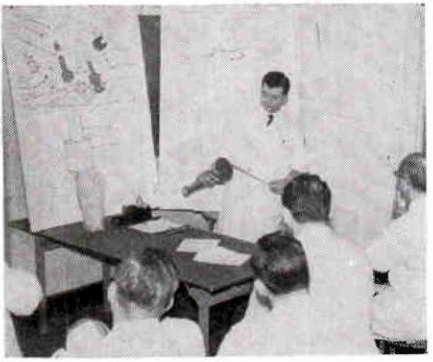
Early in 1955, the Prosthetic Devices Study at New York University was asked to offer a series of courses in above-knee prosthetics for prosthetists, physicians, surgeons and therapists. Following a pilot school last summer at the U. S. Naval Hospital, Oakland, Calif., for the training of faculty personnel, preparation was begun for the New York schools. Some 5,000 sq. ft. of space were obtained in the NYU Dental School at the corner of First Avenue and East 26th Street. This space was completely remodeled and redecorated and fully equipped for the proposed courses.

On Monday, March 5, the first course began with an enrollment of 10 prosthetists from the Metropolitan New York area. On March 8, 11 therapists began the first section of the therapists' course. On March 12, the initial group of 13 physicians and surgeons began their course.

The courses for all three groups were completed on March 16. In evaluation sessions held on the final day with each of the three groups, considerable enthusiasm for the courses was expressed. Apparently, the courses had met a long-felt need for all those participating.

The course is known as "No. 743, Above Knee Prosthetics for Prosthetists." It covers eleven days (two weeks, including the middle Saturday) and includes both classroom instruction and practical laboratory experience in making limbs.

Technical instruction will be given in such topics as 1. Biomechanics of above-knee fit and alignment. 2. Socket shape as related to functional anatomy. 3. Dynamic alignment. 4. Use of the adjustable leg and the alignment duplication jig. 5. Problems of auxiliary above-knee suspension. 6. Survey of experimental devices. In addition, the course will include functional anatomy, surgery.



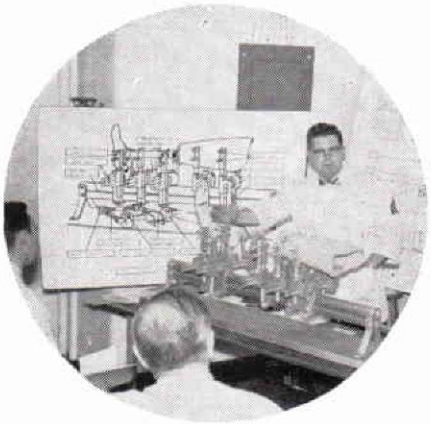
Right: Instructor George Scoville reviews the nomenclature and function of all parts of the adjustable leg.

pre- and post-graduate training, and prescription principles.

The second course in the series began April 2. It had an enrollment of 12 prosthetists, 23 therapists, and 24 physicians and surgeons, the students being drawn from the New England States, Upper New York State, Chicago, and Washington, D. C. Again considerable enthusiasm was expressed concerning the course.

Noted Faculty

These courses and others to be offered in the series are sponsored jointly by the College of Engineering and the Post-Graduate Medical School of New York University. The participating faculty included Ernst W. Bergmann, M.D., Associate Clinical Professor of Orthopedic Surgery, Post-Graduate Medical School, New York University; Donald A. Covalt, M.D., Associate Professor of Physical Medicine and Rehabilitation, College of Medicine, New York University; Sidney Fishman, Ph.D., Project Director, Prosthetic Devices Study, College of Engineering, New York University; Charles Fryer, M.A., Supervising Physical Therapist, Beekman-Downtown Hospital, New York City; Henry F. Gardner, Certified Prosthetist, Veterans Administration Regional Office, New York City; William E. Hitchcock, Certified Prosthetist, Boston Artificial Limb Company, Boston, Mass.; Alvin Hulnick, M.D., Associate Clinical Professor of Orthopedic Surgery, Post-Graduate Medical School, New York University; Hector W. Kay, M.Ed., Assistant Project Director, Prosthetic Devices Study, College of Engineering, New York University; Allen S. Russek, LRCPS (Edinburgh; Glasgow), Associate Professor of Clinical Physical Medicine and Rehabilitation, College of Medicine, New York University; Warren P. Springer, B.S., Assistant Engineering Scientist, Prosthetic Devices Study, College of Engineering, New York University; George A. Scoville, Certified Prosthetist, Winkley Artificial Limb Company, Hartford, Conn.; Walter A. L. Thompson, M.D., Professor of Orthopedic Surgery and Chairman, Department of Orthopedic Surgery, Post-Graduate Medical School, New York University; William A. Tosberg, Certified Prosthetic, Institute of Physical Medicine and Rehabilitation, New York University-Bellevue Medical Center; M. Larry Villalobos, M.A., Staff Physical Therapist, Institute of Physical Medicine and Rehabilitation, New York University-Bellevue Medical Center; and Irene E. Waters, M.A., Instructor, Physical Therapy Department, Institute of Physical Medicine and Rehabilitation, New York University-Bellevue Medical Center. In addition there were several visiting lecturers.



Right: Instructor Hitchcock demonstrates the use of the alignment duplication jig.

Those prosthetists whose responsibilities do not include the actual construction of a prosthesis may wish to register *only for the lecture and demonstration sessions* of Course No. 743. Enrollment for either the complete course, or the lecture sessions only will be limited to Certified Prosthetists or those with equivalent qualifications.

Class Schedule

This course will be given six times in the period between September 24, 1956 and June 14, 1957 as follows:

Series A—Sept. 24-Oct. 5, 1956

Preference will be given to applicants from Delaware, Maryland, Southern New Jersey, Pennsylvania, Virginia, North Carolina, and South Carolina. Course No. 743A—Prosthetists—Sept. 24-Oct. 5. Course No. 741A—Physicians—Oct. 1-Oct. 5). (Course No. 742A—Therapists—Sept. 27-Oct. 5.)

Series B—Oct. 29-Nov. 9, 1956

Preference to applicants from Florida, Georgia, Alabama Mississippi, Tennessee, and Arkansas. Course No. 743 B—Prosthetists—Oct. 29-Nov. 9. (Course No. 741B—Physicians—Nov. 5-Nov. 9). (Course No. 742B—Therapists—Nov. 1-Nov. 9.)

Series C—Dec. 3-Dec. 14, 1956

Preference to applicants from Iowa, Missouri, Minnesota and Wisconsin. Course No. 743 C—Prosthetists—Dec. 3-Dec. 14. (Course No. 741C—Physicians — Dec. 10-Dec. 14). (Course No. 742 C—Therapists—Dec. 6-Dec. 14.)

Series D—Mar. 25-Apr. 5, 1957

Preference to applicants from Kentucky, Southern Ohio, Indiana and Illinois. Course No. 743D—Prosthetists—Mar. 25—Apr. 5. (Course No. 741D—Physicians—Apr. 1-Apr. 5). (Course No. 742D—Therapists—Mar. 28-Apr. 5.)

Series E—Apr. 29-May 10, 1957

Preference to applicants from Michigan, Northern Ohio and West Virginia. Course No. 743E—Prosthetists—Apr. 29-May 10. (Course No. 741E—Physicians—May 6-May 10). (Course No. 742E—Therapists—May 2-May 10.)

Series F—June 3-June 14, 1957

No geographical preference. Course No. 743F—Prosthetists—June 3-June 14. (Course No. 741F—Physicians—June 10-June 14). (Course No. 742F—Therapists—June 6-June 14.)

Requests for more information about these courses and applications should be made to The Post-graduate Medical School, New York University, 550 First Avenue, New York 16, N. Y.

Graduates of the first two schools were as follows:

FIRST SCHOOL

PROSTHETISTS

Course 743A—March 5 through 16: Gerhard Beil, Newark, N. J.; Arthur L. Boland, Patterson, N. J.; Martin Durec, New York City; Fred J. Eschen, New York City; John Gallo, New York City; Fred Greimel, Brooklyn, N. Y.; Konrad Hoehler, New York City; Louis Iuliucci, New York City; Joseph A. Martino, New York City; William Spiro, Hempstead, N. Y.

PHYSICIANS AND SURGEONS

Course 741A—March 12 through 16: John Clinton Allen, M.D., West Hartford, Conn.; Howard D. Balensweig, M.D., New York City; Sigmund Chessid, M.D., Brooklyn N. Y.; Bernard Chromow, M.D., Teaneck, N. J.; Roy R. Ciccone, M.D., Passaic, N. J.; George D. Dorian, M.D., Short Beach, Conn.; Alfred Ebel, M.D., Bronx, N. Y.; Earl F. Hoerner, M.D., West Orange, N. J.; Jerome Lawrence, M.D., Brooklyn, N. Y.; James McAteer, M.D., New York City; Camillo Mueller, M.D., Chevy Chase, Md.; Ralph G. Rohner, M.D., Newark, N. J.; Bernard Stoll, M.D., Bronx, N. Y.

THERAPISTS

Course 742A—March 8 through 16: David S. Bilowit, East Orange, N. J.; Theodore F. Childs, Brooklyn, N. Y.; Sister E. de St. Pierre, Port Jefferson, N. Y.; G. A. Di Nubila, New York City; Herbert H. Jones, Rocky Hill, Conn.; Alan Kamenshine, Brooklyn, N. Y.; Florence S. Linduff, Washington, D. C.; Josephine McCarthy, Port Jefferson, N. Y.; Morris Peckerman, Newark, N. J.; Morris Vogel, Bronx, N. Y.; Oscar C. Walker, New York City.

SECOND SCHOOL

PROSTHETISTS

Course 743B—April 2 through 13: Clifford Anthony, Braintree, Mass.; Joseph C. Aveni, Melrose, Mass.; Raymond Beales, Fairfax, Va.; Roland Daniel, Buffalo, N. Y.; Ralph DeGaetano, Bronx, N. Y.; Alfred Denison, Cicero, Ill.; William Dickinson, Watervliet, N. Y.; Jerome S. Kessler, Cranford, N. J.; Joseph Martino, Boston, Mass.; Waldemar Schoene, Chicago, Ill.; Joseph W. Traub, Buffalo, N. Y.; Ewald Unterburger, Middle Village, N. Y.

PHYSICIANS AND SURGEONS

Course 741B—April 9 through 13: Samuel Bridgham, M.D., Rumford, R. I.; Leon R. Burnham, M.D., Augusta, Me.; Bradley W. Carr, M.D., Evanston, Ill.; Bennett W. Caughtan, M.D., Fayetteville, Tenn.; Bernard J. Doyle, M.D., Newton, Mass.; Otto A. Engh, M.D., Alexandria, Va.; James D. Fisher, M.D., Springfield, Mass.; William H. Georgi, M.D., Buffalo, N. Y.; Otto G. Goldkamp, M.D., New Haven, Conn.; Everett J. Gordon, M.D., Washington, D. C.; Edward Harding, M.D., Brookline, Mass.; Thomas F. Hines, M.D., Branford, Conn.; Robcliff V. Jones, Jr., M.D., Fairfield, Conn.; Leon M. Kruger, M.D., Springfield, Mass.; James F. Kurtz, M.D., LaGrange, Ill.; John J. Lorentz, M.D., Boston, Mass.; Colman J. O'Neill, M.D., LaGrange Park, Ill.; Eugene E. Record, M.D., Boston, Mass.; Anna K. Rossiliano, M.D., Rocky Hill, Conn.; Louis Schwartz, M.D., Chicago, Ill.; Edward Scull, M.D., Hartford, Conn.; George A. Sotirion, M.D., Springfield, Mass.; Arthur A. Thibodeau, M.D., Boston, Mass.; John Trapuzzano, M.D., Hartford, Conn.

THERAPISTS

Course 742B—April 5 through 13: James Ardizzone, Washington, D. C.; Sally Bassett, Boston, Mass.; Robert

(Continued on page 31—bottom)

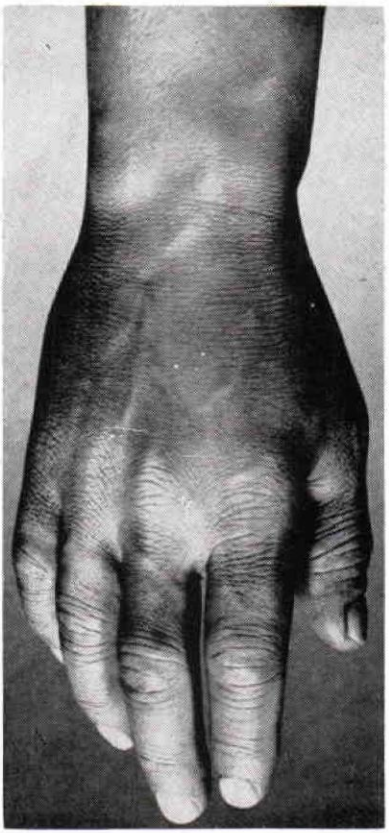
Arms School Opens January 28

A five-week course, "Upper Extremity Prosthetics for Prosthetists" will be offered by New York University with the first lecture January 28, 1957 and a concluding examination March 1, 1957. Companion courses for physicians run from February 25 to March 1, and for therapists from February 18 to March 1.

The course for prosthetists includes classroom instruction and laboratory practice in the making, fitting and harnessing of prostheses. Each prosthetist will make a minimum of six prostheses for various types of amputees. The lectures include such topics as "Bio-Mechanics of the Upper Extremity," "Anatomy," "Surgery," "Plastic Lamination Techniques," "Principles of Harnessing and Control Systems," and "New Devices and Components." Application for the course should be sent to the Postgraduate Medical School, 550 First Avenue, New York 16, N. Y. at least three weeks before the course opens.

(Continued from page 30)

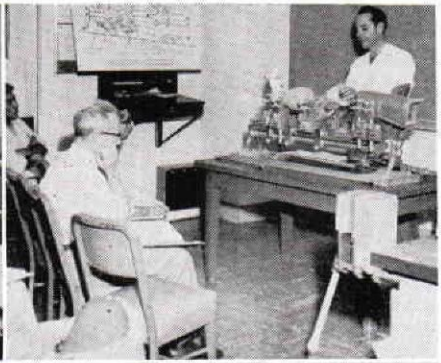
Becker, Arlington, Va.; Dorothy Brownell, State of Rhode Island; Jeanne Cleverly, Jamaica Plains, Mass.; Baela Drach, Montreal, Can.; Marian A. Eiden, Boston, Mass.; Hazel Grigsby, Boston, Mass.; Irja R. Hofschire, Springfield, Mass.; Charlotte A. Hoppe, Hartford, Conn.; Carmen Julien, Hartford, Conn.; Prudence M. Kuhrt, Newington, Conn.; Wilfred A. MacNeil, Saranac Lake, N. Y.; Nancy Maher, Springfield, Mass.; Natalie A. McFee, Hines, Ill.; Hildegarde Myers, Chicago, Ill.; Edith L. Nyman, New Haven, Conn.; Robert F. Schaefer, Malone, N. Y.; Robert B. Scherf, Hartford, Conn.; Mary M. Shorey, Chicago, Ill.; Florian Surdyk, Chicago, Ill.; Louis M. Tinghino, West Orange, N. J.; Rowena Walden, Portland, Me.

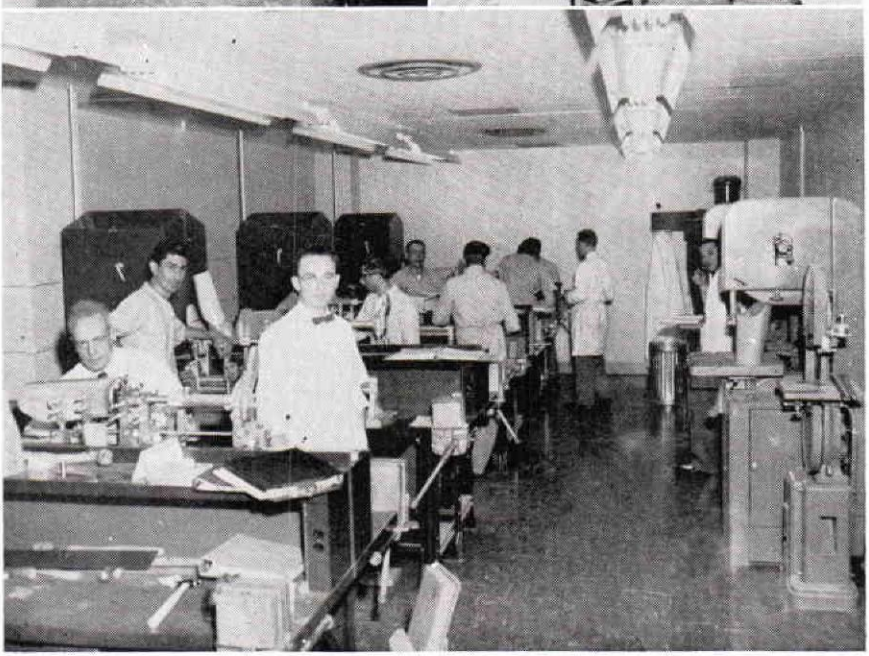


A "Plastiskin" Seamless Glove

Shown above is a typical "Plastiskin" seamless glove, made by Tenenbaum Prosthetics. The Journal regrets that the "Gremlins" made their appearance in the production of the Tenenbaum advertisement in the June issue, so that an accidental smudge line on page 49 gives the impression of a seam where there is none. The Tenenbaums have been consistent supporters of the Journal since it first appeared, and we regret this mishap—Editor.

The Prosthetics School at UCLA





Top left: Alvin Muilenburg, Houston, instructing class in Socket Layout.

Top right: Charles A. Hennessy, instructiong class in use of Alignment Duplication Jig, during May 29 to June 8 course in "Clinical Prosthetics: Above Knee Amputations" conducted by the University of California Center at Los Angeles.

Lower: View of the teaching shop in the Prosthetics Education facilities at the University of California Medical Center in Los Angeles. John Bray in white coat in foreground.

The December issue of this Journal will contain a detailed study of the A/K Prosthetic Schools at the University of California, Los Angeles, with a list of the students enrolled from the beginning of the course.

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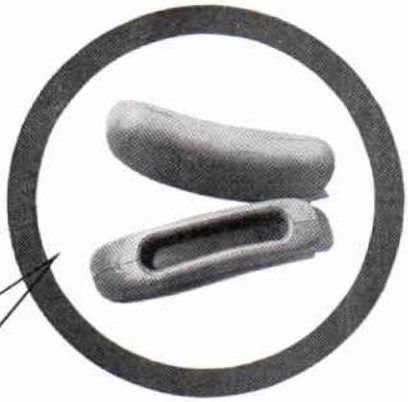

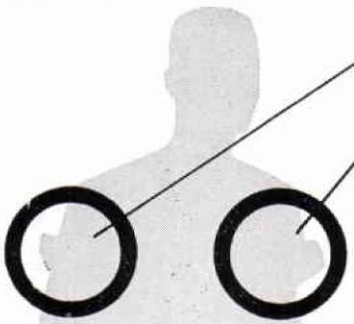

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Metal Heat Treatment in Prosthetics

by NOEL J. BROWN

President—D. W. Dorrance Co.
Secretary-Treasurer—Hosmer Corp.

The knight in olden times depended on his "trusty sword of Damascus." These swords were famous because of their careful forging and heat treatment. However, the heat treatment was a mysterious art. Today thermal treatment of metals is a very exact science.

To the orthotist-prosthetist, knowledge of the possible conditions of metals is very valuable. The manufacturer can increase strength and decrease weight of component parts by using the correct materials and heat treatment. The fitter also needs to know if heat can be applied to a certain metal, and, if so, how much.

Let us consider first the iron alloys. The manufacturer finds considerable use for the straight carbon steels. Cold rolled steel cannot be hardened by heat treatment unless extra carbon is added by carburizing. This process adds carbon to the surface and produces a hard "skin" or "case" on the steel. If the orthotist-prosthetist heats a carburized part above 400° the part begins to lose hardness.

Higher carbon steels such as spring steel are hardened by heating to about 1450° F. and quenched in oil or water depending on the steel. They are then drawn or tempered at temperatures between 400° and 600°. If the part is polished and heated in an open flame, temper colors ranging from straw to blue result from these temperatures. Blue clock spring is tempered at about 570°.

The alloy steels have been developed to serve specific purposes and are hardened at 1450° to 1850° and are drawn at 350° to 1100°. Stainless steels are divided into two

Noel J. Brown was born in 1909 in New Zealand. He settled in San Jose after World War I. After his father's death in 1926, he learned the machinist trade. About 1932 he entered San Jose State College and worked for Mr. D. W. Dorrance to pay his way. Upon graduation, with a degree in education, he decided to stay with the prosthetic profession rather than going into teaching. He is now partner-in-charge of D. W. Dorrance Co. and Secretary-Treasurer of the A. J. Hosmer Corp. His home is in Los Gatos with his wife, Agnes, and three children, Patricia, Robert and Glenn.

TABLE

Material	Main Elements in Composition	Heat Treatment	Strength (Tensile)
Cold rolled steel S.A.E. 1020	iron 0.20% carbon	Not possible in "as-is" condition. Additional carbon can be added to surface by carburizing. Then steel can be case hardened by heating to 1450° F. Quenching in water and drawing at 400° F.	60,000 p.s.i.
Spring steel	iron 0.95% carbon	Heat to 1450° F. Quench in oil or water (depending on the exact kind of steel). Draw at 400°-570° F.	80,000 p.s.i. annealed up to 300,000 p.s.i. depending on heat treatment.
Type 302 Stainless Steel	18% chromium, 8% nickel + iron, etc.	Cannot be hardened by usual heat treatments. Hardens by working and rolling.	90,000 p.s.i. annealed to 200,000 p.s.i. severely cold worked
Type 416 Stainless Steel	12% chromium + iron, etc.	Heat to 1800° F. Quench in air blast or oil. Draw at 900°-1200° F.	75,000 p.s.i. annealed. 180,000 p.s.i. hardened drawn at 900°
24ST4 Aluminum Alloy	4.5% copper, 1.5% magnesium, 0.6% manganese + aluminum	Heat 2-3 hrs. at 920° + 20°. Water quench.	27,000 p.s.i. annealed 60,000 p.s.i. hardened
14ST6 Aluminum Alloy	4.4% copper, 0.8% silicone, 0.8% manganese, 0.4% magnesium + aluminum	Solution heat treat 2-3 hrs. at 940° + 20° F. Water quench. Follow by precipitation heat treatment 10 hrs. at 340°. Water quench.	27,000 p.s.i. annealed 70,000 p.s.i. hardened

groups. The chromium-nickel group is generally non-magnetic and does not harden with heat treatment. It does work-harden as many will testify who have tried to drill it with a dull drill. Type 410 or 416 is hardened to 1800° and quenched in oil or air. Tempering if necessary is done at about 1,000°. The cutlery grade of stainless, 440C, attains a hardness near that of tool steel. It is hardened at 1850°, quenched in oil or air, and drawn at 400°-600°. An interesting new development is the P.H. stainless which hardens by heating to only 900°.

The orthotist-prosthetist cannot, therefore, heat carbon steels such as springs or cables above the melting point of solder, applied with an iron, without softening the material. Non-magnetic stainless steel and hardened magnetic stainless steel are not affected greatly by heat up to 1000°. However, heating to red hot will result in some loss of strength.

Aluminum alloys generally are supplied in the hardened or "ST" condition. The much-used 24S alloy has been solution heat treated at 920° for three hours, quenched and precipitation treated for ten hours at 375° when supplied in the 24ST86 condition. The alloy designation, 24ST4, indicates a naturally aged solution heat treated alloy. The forging alloy, 14ST, would be designated as 14S0 in the annealed condition, 14ST4 in the solution heat treated condition and 14ST6 after both solution and precipitation heat treatment. A temperature of 775° will

anneal most aluminum alloys and temperature above 400° will seriously affect the strengths of most hardened alloys.

In conclusion, many books are necessary to supply the manufacturer with all the information he needs. In general, the orthotist and prosthetist would do well to remember not to heat hardened carbon steels, cutlery grades of stainless steel or hardened aluminum alloys above the melting point of 50-50 solder (about 400°) and the hardened stainless steels of low carbon content should not be heated above 1000° if the strength of the part is important. Often adjacent parts such as ball bearings are ruined if temperature above 400° are allowed to reach them.

SEPTEMBER, 1956

SUPPLIERS SECTION: PAGE INDEX

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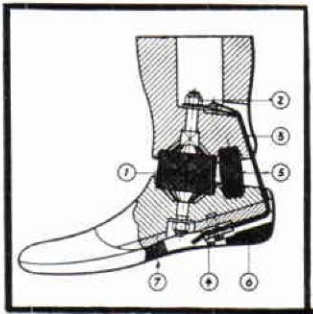

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Florida DVR and OALMA Members Confer

Rehabilitation leaders and OALMA members in Florida at a joint conference August 16, discussed mutual problems in providing prosthetic services for the vocational rehabilitation of amputees.

The success of this Florida conference would seem to point the way to the holding of similar conferences in other states. For this reason we are listing below the arrangement of the sessions as a help to others who may be planning state meetings.

The Florida State Department of Vocational Rehabilitation was joint host with the Orthopedic Appliance and Limb Manufacturers Association. All sessions were held at Hillsboro Hotel in Tampa.

Mr. Claude M. Andrews, Florida Director of Rehabilitation, and OALMA Director Glenn Jackson agreed on the major subjects for discussion: Examination for prostheses, measuring and fitting prostheses, training the amputee in the use and care of prostheses, factors in the cost of constructing and servicing limbs, and suggestions for improving prosthetic services for amputees.

After a review of current developments in prosthetic service, there was a panel discussion on "The Minimum Requirements, Including Personnel and Facilities, for Adequate Prescriptions for Prostheses for Amputees." This panel included Doctors Fred H. Albee, Jr., and Philip O. Lictblau, and Messrs. McCall, McKown, Tallant and Orsini, with Clarke Ketzle presiding.

The conference next turned to discuss the selection of various types of prostheses for unusual amputations or for those likely to present problems. Mr. Dodd Pace was Presiding Officer, and his panel included: William S. Hatt, M.D.; Eugene L. Jewett, M.D.; Avery Pearsall; Howard Thranhardt; Mrs. Louise Able; Earle H. Daniel; T. L. Pittard.

Other problems discussed included:

"Should All Prosthese for Amputees Be Prescribed and Fitted in Clinics or May Some Cases Be Served Adequately Through Other Procedures? Who Should Make the Decision Regarding the Appliance and Services Needed by the Amputee?" *Presiding*—William J. Miller; *Panel*—Richard J. Miller, Jr., M.D.; Ulysses A. Young, M.D.; Joseph A. Corn; Bert L. Able; Jack L. Caldwell; D. W. Bremer; Don L. Hay.

"To What Extent is Specific Training in the Use of Prostheses Necessary for Amputees? Whose Responsibility Is This? How Long Should It Take in Ordinary Cases? What Does It Include?" *Presiding*—F. M. Richardson; *Panel*—George P. Beach, M.D.; Irwin S. Leinbach, M.D.; Earle H. Daniel; C. F. England; O. E. Fann; Andrew Orsini; Glenn B. Calmes.

"What Should Be the Criteria for Selecting and Serving Amputees with Circulatory Diseases Such as Buergers, Diabetes, and Arterio-Sclerosis?" *Presiding*—Ralph K. Hood; *Panel*—Eugene L. Jewett, M.D.; W. C. Blake, M.D.; Richard G. Connar, M.D.; Clarke Ketzle; W. T. Bridges.

"A Discussion of the Factors of Cost in Constructing and Servicing Limbs for Vocational Rehabilitation Agencies." *Presiding*—Craig Mills; *Panel*—W. R. Stinger, M.D.; Wilmore Bremer; F. H. Rising; Glenn E. Jackson; Nicholas M. Treuhaft; Howard Thranhardt; Earle H. Daniel; Avery Pearsall; Bert L. Able; C. F. England; R. T. MacDonald; Dodd Pace.

The day's conference was concluded with a summary and suggestion period for improving services to amputees. The panel for this session consisted of: Jennings A. Rehwinkel, Presiding Officer, Glenn E. Jackson, R. A. Lassiter and Dr. Eugene L. Jewett.

We Must Know Our Costs

Guest Editorial by WARREN S. MILLER, C.O.

San Jose, Calif.

The Orthopedic and Prosthetic Appliance Industry is taking its place in the field of Specialists in the Medical profession. The Limb and Brace shop in the dingy back alleys are disappearing. Today shops are located in professional buildings and downtown shopping centers. Also a great amount of our time is spent attending special courses in the latest techniques of Brace and Limb fabrication.

If we are to take our place in this fast moving time we must raise our standards. This only can be accomplished by adequate fees for our services. Inasmuch as we are selling our services we should know what and how to charge for them. In the eyes of the lay person all types of artificial limbs or braces mean the same. They are not aware each patient is a separate problem and each individual requires a different accessory for his appliance, and of the hours spent fitting and adjusting these.

The average businessman is well aware of the high cost to operate a business. With numerous taxes, insurance and high wage scales his profit is soon depleted. The only way to overcome this problem is to raise prices. By making a cost survey one may determine as to where and how much prices should be increased. In some phases of operation we may be charging enough, but over the entire picture we are rendering services far below cost.

Most Limb and Brace shops set a price for their product figuring only the cost to make it, forgetting the accessory costs. For instance: Ischial Ring, Drop Foot Joints, Knee Caps. etc., for braces. Soft Socket, SACH Feet Suction Sockets, etc., for limbs. All these accessories cost a great amount more than we realize.

Our next big problem is realization of the time spent fitting, adjusting and taking measurements and repairs. We are all prone to forget these important items not being aware this is the difference between success or failure of the enterprise.

In the past OALMA tried to enlist the aid of the industry in making a National cost survey. This I believe is a step in the proper direction, however, the real need is smaller shops having an adequate accounting system then a survey. The average small shop is not aware of the hourly cost of operation. This is dangerous for the economic health of the business.

In order to raise our standards we must understand our cost problems, maintain neat and clean establishments, send our technicians to special schools, pay adequate salaries to attract young personnel with talent, understanding and a good personality.

We complain about VA Contracts, State contract prices, yet we can do nothing to correct this situation because lack of facts on costs. This is the direct result of ignorance of operational costs. The large firm is in the minority, yet they are usually aware of these problems but are unable to do anything without the cooperation and education of smaller firms.

Closer cooperation with OALMA will furnish important statistics. This should enable the Industry to elevate itself to the proper place in the Medical profession, and benefit each and every member throughout the entire Nation.

—Warren S. Miller.

Nylon vs. Control Cable Fricton

By GERALD GWYNNE

Associate Engineer, Engineering Artificial Limbs Project, College of Engineering, University of California at Los Angeles*

Sliding friction, with its consequent loss of efficiency and resultant wear of components, has long been a serious problem for prosthetic teams in their attempts to restore a measure of function to amputees. This has been especially true in the field of upper extremity prosthetics, where the complex functional requirements impose a heavy burden on limited physical resources. Upper extremity control cables have given trouble in various ways for many years. A search through patents related to the science of upper extremity prosthetics revealed many early attempts to cope with the relatively long sliding motions required for elbow flexion and terminal device operation. For instance, Thomas Uren[1] discloses an ingenious arrangement of catgut and rollers for easy flexion of the elbow of an AE arm. A somewhat different arrangement of leather thong and rollers is used in an Irish arm of uncertain but venerable vintage in the museum of the Engineering Artificial Limbs project. This arm was a gift by Chester C. Haddan, of Denver, Colo., and bears the inscription "P. K. Arm L'td., Belfast, No. 2;" it is believed that the wrist and elbow mechanisms were patented during the nineteenth century. Additional examples may be found in Marks[2]; all serve to give the background of the problem.

The early work cited seems to have been largely based on empiricism. It seems that the first analytical approach to the problem might have been made by the Northrop Artificial Arm and Leg Research and Development project as reported by Motis[3]. Here we read on page 92, ". . . Much of the general use and acceptance of an arm by an amputee is dependent upon the efficiency and reliability of the control system power transmission. The majority of the early systems of power transmission used leather thongs or gut cords operating through leather or metal guides and reaction points to transmit the power. Generally, devices using this means of power transmission had a very short service life and a great amount of re-adjustment was necessary to compensate for the stretching or deformation of the flexible transmission system. Friction losses were very high and reduced the efficiency of the over-all control so much that the amputee lost power which should have been available to operate the hand or hook. Average efficiency approximated 25%, measured around a fully flexed elbow in the case of an above-elbow arm which meant that 10 pounds of pull applied at the shoulder harness resulted in a 2½ pound load to open or close the hand or hook. This did not prevent the amputee from operating his device, but meant merely that he lost so much power that the arm accomplished no more for him than could be done by a unilateral who depended solely upon his good arm to do his work."

This Northrop study resulted in the application of flexible steel cable of the aircraft type to prosthetic controls. Further study developed the flexible steel housing to give reaction points and fairing around bends in the cable path. Although no specific data are given by Motis, a minimum satisfactory efficiency of 50% is specified in the section on tests of

* This project is sponsored by the Prosthetics Research Board, National Academy of Science. National Research Council, through contract with the Veterans' Administration.

AE arms in the Manual[4]. From this figure and the figure given by Motis it appears that a relative gain of 100% in control system efficiency was made by use of steel cable. Further gains were realized in elimination of stretch and increase of transmission life.

With resumption of basic research into upper extremity prosthetic problems at the close of the School for Upper Extremity Prosthetics in February, 1955, one of the subjects looked into was that of the short above-elbow prosthesis. It appeared that the 50% efficiency figure would need to be increased if amputees using these prostheses were to be given useful control forces. Previous attempts to use nylon cable and nylon-coated steel cable had not been satisfactory because of cable stretch and excessive wear; however, experience by the author with nylon bushings in small mechanisms indicated that the right grade of nylon or teflon in the form of a tubular lining for a steel housing might give satisfactory service in the present application. It was hoped that the steel housing would support a rather thin tube and retain the advantages of the steel housing with additional advantages due to the resiliency and good frictional characteristics of the nylon. This hope was largely realized by results.

The Mechanical Theory

Before discussing these results it is necessary to give the mechanical theory on which they are based. The principal factor is belt friction, commonly used in power transmission belts and pulleys, winches, capstans, and related applications in machinery. For these applications it is desirable that friction be as large as possible to minimize slipping. In an ideal mechanism belt friction depends on the coefficient of friction, u, and the angle of wrap-around o, as commonly expressed in texts of Engineering Mechanics by the following equation:

$$Fo = Fie^{uo} \qquad (1)$$

where, Fo is the force being acted against, Fi is the force acting, e is the base of the system of natural logarithms, and the exponents are the terms already described.

The force acted against in most machine applications would be a load due to such a factor as work being done in a machine tool or tide pull on a ship; from the nature of the exponential relationship given in eq. (1) it is apparent that both u and o should be made large for those applications.

Prosthetic applications, in contrast with most other machine applications, require that the ratio between Fo and Fi be as nearly unity as possible. From eq. (1) it appears that this could only be achieved by making either u or o be equal to zero. Since the angle of wrap-around is fixed by the realities of prosthetic practice, the coefficient of friction is the only variable left open for investigation. If o be arbitrarily fixed at two radians, (115°), u be selected as 0.35, (a reasonable value for semi-lubricated steel surfaces), and eq. (1) be solved for efficiency the following equations result:

$$E = \frac{F_o}{F_i} = \frac{1}{e^{\mu\theta}} = \frac{1}{e^{(2)(0.35)}} = 0.502 \qquad (2)$$

$$E(\%) = 50.2\% \qquad (3)$$

In these solutions, Fi has been considered due to terminal device or lift loading, while Fo has been considered as the necessary muscle force. If, now, the value of u be reduced to 0.10, (a conservative value for nylon or teflon against dry steel), eq. (2) becomes

$$E = \frac{1}{e^{(2)(0.10)}} = 0.826 \qquad (4)$$

$$E(\%) = 82.6\% \qquad (5)$$

By comparison between eqs. (3) and (5) it can be seen that a relatively

small reduction in the value of u yields a relatively large increase of efficiency.

Computations of the previous section were based on simplified theory which ignored compliance of the nylon tubing due to surface loading, as well as deformation of the tubing due to flexure. As a check on the validity of the procedure a test was run in two parts: the first part consisted of efficiency measurement on a typical AE prosthesis transmission with steel cable housing, while in the second part the same cable and housing were used, with a commercially available nylon tubing added between cable and housing. Both cable and housing were degreased with carbon tetrachloride for the second part. At 115° flexion the efficiences were 54% and 86% for steel housing and nylon lining, respectively, with a six pound load at the hook thumb. These figures indicate that addition of the nylon liner gives a relative increase of efficiency of 59% as shown by the following:

$$I = \frac{86 - 54}{54}(100) = 59\% \qquad (6)$$

This result agrees closely with theory; details of the method of application, size of tubing used, and source of tubing are given in the Manual of Upper Extremity Prosthetics, second edition.[5]

Results of amputee trials of this system have been generally favorable. with the exception of a very few bilaterial amputees who give cables extra hard use. The nylon liner has not given trouble itself, but the small (3/64) diameter cable has been broken a few times. Currently available housing does not leave room for a liner around the larger cable, although a suitable nylon tubing is available. Possibly one of the cable manufacturers will develop a heavy duty system.

Fortunately for the majority of amputees, the hard users comprise a small minority; for instance, of over 100 amputees fitted, six or seven have accounted for 9/10 of the broken cables. On the credit side of the ledger is the experience of the remaining 100, who are being benefitted by increased efficiency and decreased wear. From the standpoint of wear, cable replacements for all amputees in the group have been reduced from an average of more than one per month to less than one in ten months. An additional benefit comes from the smoother action possible when the steel housing is nylon-lined; BE amputees using biceps cineplasty are especially enthusiastic concerning the finer grading of prehension they can achieve with both voluntary-opening and voluntary-closing terminal devices.

From the foregoing it seems apparent that all UE amputees can benefit from universal application of this simple procedure. Additionally, it would appear that this is another opportunity for the Prosthetics Profession to gain by increased amputee acceptance of UE prostheses, thereby filling more of the many empty coat sleeves, as well as giving improved user satisfaction through improved reliability and increased life of cable power transmissions.

REFERENCES

[1] United States Patent Office Letters Patents nos. 46,158, 46,159 and 48,000; January and May, 1865

[2] Marks, A. A., *Manual of Artificial Limbs*, New York, (1931)

[3] Motis, Gilbert M., *Final Report on Artificial Arm and Leg Research and Development, Northrop Aircraft* ,(1951)

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New York Meeting Features Katz and Glaubitz

Mr. Harry Katz of the New York Division of Vocational Rehabilitation was guest of honor at the May, 1956 Meeting of MOALMA. Mr. Katz rescribed the referral system used at the new brace clinic, sponsored by DVR and MOALMA. Alfons Glaubitz, head of the brace facility at the Pennsylvania State Crippled Children's Hospital at Elizabethtown delivered a paper on brace design. Shown above are: Standing left right—Richard Gottheimer, Treasurer; David E. Stolpe, Past President; Victor Massi, Secretary; Milton Tenenbaum, President; Adolph Margoe, Vice President; John McCann, Regional Director and Second Vice President of OALMA. Sitting left to right—Alfons Glaubitz; Harry Katz, New York Division of Vocational Rehabilitation.

"WHAT'S NEW(S)"

• William B. Christy, Secretary-Treasurer of the *Horn Surgical Co.* of Philadelphia, announces that the Petersen-Daniels Inc., Manufacturers' Agents of Montebello, Calif., have been appointed to represent the Horn Surgical Co. in eleven Western states, and also in El Paso, Tex. The five agents of Petersen-Daniels who will be carrying the Horn Company's line of trusses, abdominal supporters, seamless stockings and other surgical appliances are: Eli Price, Fred J. Petersen and Dave Carroll of Montebello, Calif., Gene Daniels of Danville, Calif. and Fred E. Brigg of Albany, Ore.

• The Seventh World Congress of the International Society for the Welfare of Cripples will be held in London the week of July 22-27, 1957. Held each third year, this conference brings together from every corner of the world doctors, artificial limb experts, social workers, surgeons, physical and occupational therapists, employment counselors, psychiatrists, and others interested in services for the physically handicapped.

• *Richard Pecorella*, Certified Orthotist of Buffalo, has joined the staff of the Daniel Rehabilitation Institute of Florida at Fort Lauderdale.

Poliomyelitis: Splints for the Upper Extremity

By C. E. IRWIN, M.D.

Atlanta, Ga.

The splints to be discussed in this presentation are designed and used for therapeutic reasons only. They are in no sense recommended as permanent assistive or supportive equipment. The author through experience has learned that a patient with upper extremity involvement will develop ingenious substitution patterns and will of his own accord discard the equipment. It is conspicuous and often a hindrance rather than a help to him in carrying out the necessary every-day activities. We, as orthopedic surgeons, should thoroughly evaluate these individuals and carry out the necessary operative procedures to make them as independent and dextrous as possible without the need of any apparatus.

A therapeutic splint may be classed as supportive, assistive and corrective. A single splint may fulfill one or a combination of two or more of these basic needs. A splint used preoperatively may be used for support and assistance postoperatively as the need for assistance and support remains the same as it was prior to surgery.

Splints may be static or dynamic in use and design. Dynamic splinting should be used when possible. This principle provides both support and assistance for a weakened muscle or a weakened segment and allows motion and use of a weakened or transferred muscle in a manner approaching that for which it was normally intended. The splint should be simple in design, light in weight and constructed so that it can be easily applied and removed for necessary physical therapy. Rigid supports or plaster casts worn twenty-four hours a day are definitely contraindicated, particularly for the hand.

This discussion will be concerned with splints for the thumb, for the intrinsics of the digits other than the thumb, the long finger extensors and flexors, the wrist, the elbow and the shoulder.

The Thumb

In the presence of weakness or paralysis of the thenar intrinsic musculature, the thumb will assume a position of adduction, hyperextension and external rotation or supination (fig. 1). Unless the thumb is properly splinted during convalescence, the following deformities will result: It will become contracted in adduction and external rotation or supination. Second, prolonged hyperextension of the thumb metacarpal will result in attenuation of the palmar portion of the capsule of the carpometacarpal joint. This important joint becomes unstable (fig. 2). Third, in the adducted and externally rotated thumb the long extensor will gradually migrate into the web space between the thumb and index metacarpal, resulting in ulnar deviation of the phalanges on the metacarpal. The patient uses the long extensor as an adductor and not as a true extensor of the distal phalanx (figs. 3, 4, 5, 6, 7 and 8).

* The majority of this material and photographs was previously published in the American Academy of Orthopaedic Surgeons, Instructional Course Lectures, Vol. IX, Ann Arbor, J. W. Edwards, 1952, under the title "Apparatus for the Upper Extremity Disabled by Poliomyelitis," by C. E. Irwin, M.D. This is being reproduced with the permission of the American Academy of Orthopaedic Surgeons and J. W. Edwards, Inc.

Intrinsic Musculature of the Digits Other Than the Thumb

The important intrinsic muscles provide both an extensor and a flexor component for the fingers. (The abduction component will be discussed with the index finger.) (fig. 9)

For the purpose of discussing splints, one may say that the intrinsic muscles initiate and are the chief extensors of the distal two phalanges. The extrinsic flexor profundi and sublimi are the moderators of this component. For the same reason one may say that the intrinsic muscles initiate and are the chief flexors of the proximal phalanges. The extrinsic common extensors are the moderators of this component (fig. 10).

The extrinsic extensors are not the primary extensors of the distal phalanges, nor are the extrinsic profundi and sublimi the primary flexors of the proximal phalanges.

Skilled function of the fingers depends on proper balance between these two moderated groups of muscles. Appropriate dynamic splinting is important for these muscles both during the convalescent stage of the disease and for postoperative support and assistance following certain muscle transfers (figs. 11, 12, 13, 14 and 15).

Instinsic Musculature of the Index Finger

The function of the intrinsic muscles of the index finger differs from that of the other digits (figs. 16 and 17). The abductor function of the first dorsal interosseus muscle is highly developed and plays an important part in increasing the horizontal inter-tip space between the index and fifth fingers. Unlike the other intrinsics, it inserts chiefly into bone rather than into the lateral band.

LEGENDS

THUMB

1. Typical position assumed by the thumb in the presence of paralyzed or weak intrinsic musculature. The thumb assumes a position of external rotation, adduction and extension. Unless properly splinted, the thumb will become contracted in this position.

2. A typical long-standing thumb deformity due to paralysis of the thenar musculature. Note attenuation of the palmar portion of the capsule of the carpometacarpal joint and migration of the long extensor tendon into the web space. Patient has been using the long extensor as an adductor. There is ulnar deviation of the phalanges on the thumb metacarpal. Early proper splinting would have prevented this deformity.

3. A short opponens splint with a C spreader between the thumb and index metacarpal. This splint will prevent external rotation and adduction but will not fully restore pronation. The wrist musculature must be well balanced for the use of a short splint.

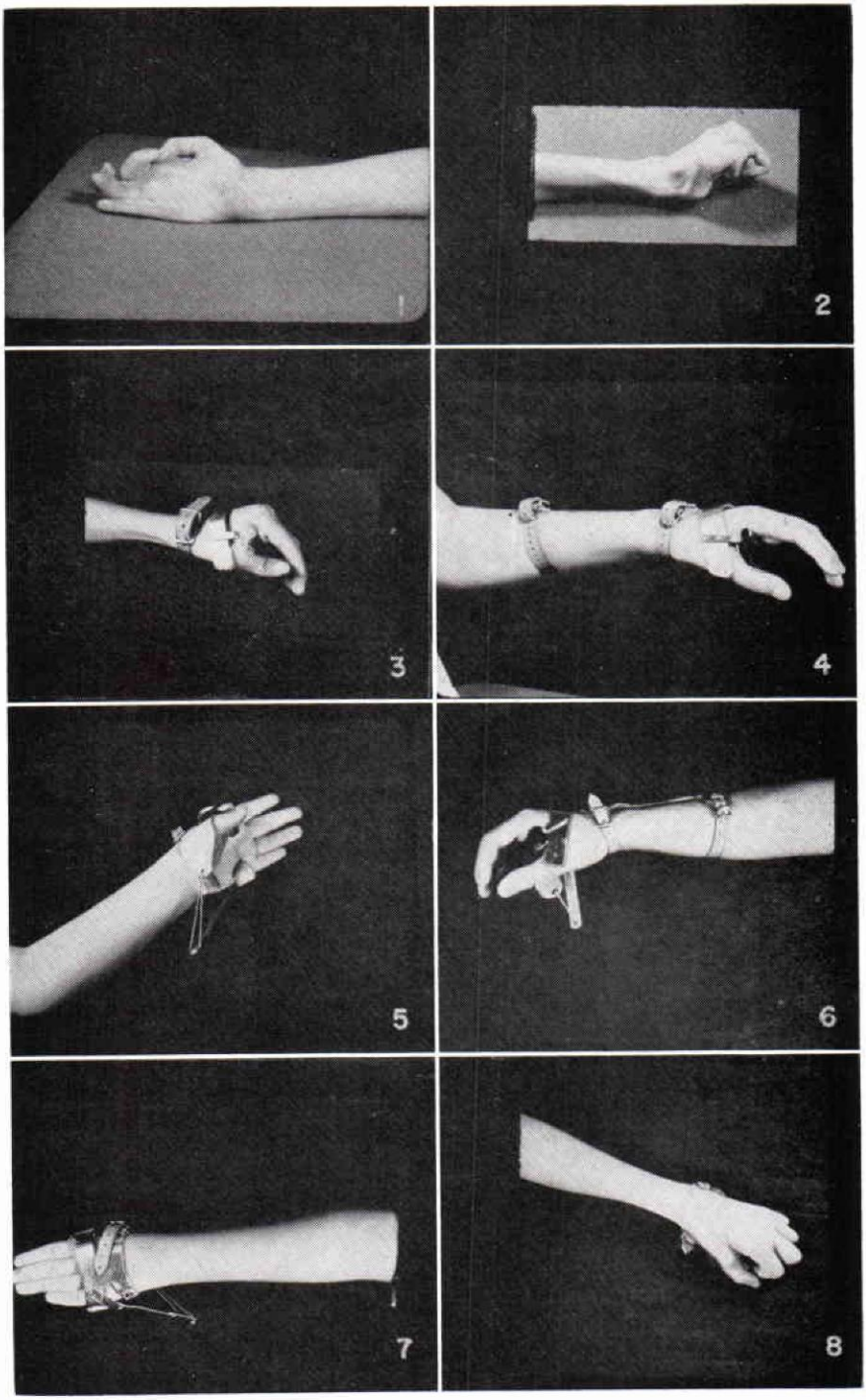
4. The same splint shown in figure 3 except it has an extension for support of the wrist. This is a basic opponens splint on which any other assistive or supportive apparatus may be attached.

5. Palmar view of an opponens splint with traction on the metacarpophalangeal joint. This is designed to stretch out contractures underlying the web space. Traction is motivated by rubber bands.

6. Radial view of an opponens splint with traction on the proximal phalanx. It is forcing the thumb in abduction and some flexion at the metacarpophalangeal joint. This is the splint routinely used following surgery as patients have a tendency to develop limitation of motion, particularly in flexion, of the metacarpophalangeal joint. The splint is applied seven days after surgery, at which time physical therapy is instituted.

7. Dorsal view of the same splint showing the method of attaching the traction bar. Note that the line of pull is in the direction of the pisiform bone parallel to the transferred tendon to the thumb.

8. A plastic splint used for postoperative immobilization of the metacarpophalangeal joint following arthrodesis. Motion in the carpometacarpal joint and in the interphalangeal joint may be instituted three weeks after surgery if the arthrodesis has been immobilized by a Kirschner wire.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It does not ordinarily aid in extending the distal phalanges but is a strong abductor, a flexor, and an important stabilizer of the metacarpophalangeal joint, important for effective pinch.

Supportive and assistive splinting for this finger should be dynamic (fig. 18).

Long Finger Extensor

When the wrist is extended 180 degrees or more, the common extensor extends only the proximal phalanges (figs. 19 and 20). The distal phalanges are extended by the intrinsics when the wrist is in this position. When the wrist is flexed or dropped, the long extensor can extend the distal phalanges by tenodesis action through the central slips.

Long Finger Flexors

The flexor profundi and sublimi are flexors of the distal phalanges and augment the flexor component of the intrinsics on the proximal phalanges (figs. 21, 22 and 23). Grasp is strongest when the wrist is extended or slightly hyperextended.

Fixed Deformities of the Digits

Weak intrinsic muscles which have been neglected as regards proper splinting will develop fixed flexion contractures of the distal phalanges and hyperextension contracture of the proximal phalanges—fixed claw hand (fig. 24). These contractures must be overcome prior to intrinsic transfers. Continuous corrective force by a rigid plaster cast cannot be tolerated due to painful pressure on the palmar surfaces of the distal phalanges. The following figures demonstrate an effective corrective splint attached to the basic opponens splint (figs. 25, 26 and 27). It can be easily removed for periods of rest, manual stretching, and other physical therapy measures.

The Wrist

Splints for the wrist present no problem and nothing of particular interest (fig. 28). Dropped wrist is fairly common and may be associated with radial or ulnar deviation, depending on the distribution of muscle weakness. A static splint for support only is ordinarily used for convalescent care in our clinic and is shown in the following figures (figs. 29, 30, 31 and 32).

LEGENDS

INTRINSICS

9. This is the position the fingers assume at the end of forceful contraction of the intrinsic musculature. The long extensors and flexors, the moderators of the intrinsic function, are at their maximum resting length.

10. This is the position the fingers assume at the end of forceful contraction of the extrinsic musculature. The intrinsics, the moderators of the function of these muscles, are at their maximum resting length.

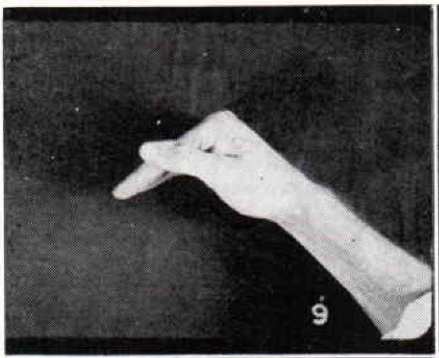
11. A basic opponens splint with wrist extension, the frame of which serves as the foundation on which one may attach an out-rigger for splinting the intrinsic musculature or for splinting the flexion or extension of the extrinsic musculature.

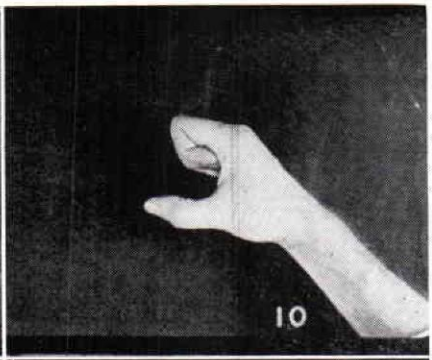
12. The intrinsic or extrinsic assembly which can easily be snapped into position on the dorsum of the basic opponens splint. The dynamic portion of the splint is motivated by rubber bands. Note the bar which prevents hyperextension at the metacarpophalangeal joint.

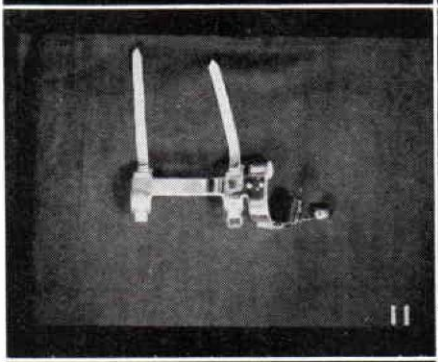
13. The apparatus in figures 11 and 12 assembled as one piece. The flexion component of the splint represented by the bar is static. The extension component motivated by the rubber bands is dynamic.

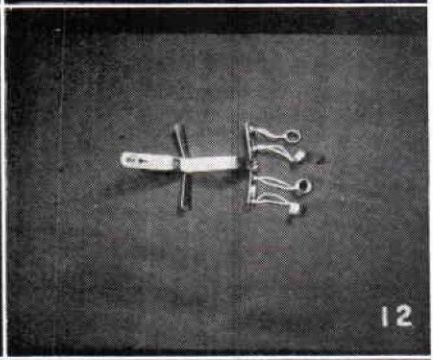
14. Dorsal view of an intrinsic splint in position on a patient. Notice the transverse bar maintaining the metacarpophalangeal joints in a flexed position and the traction on the extension component of the intrinsics distally.

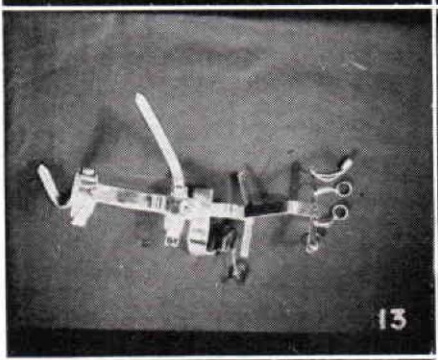
15. Radial view of the splint just described. In addition, traction has been provided for the long thumb extensor, which is dynamic in character. This entire apparatus can be dissembled and reapplied very easily.

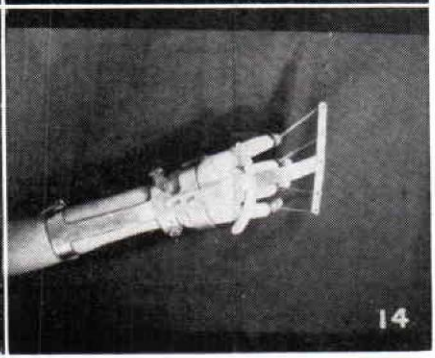


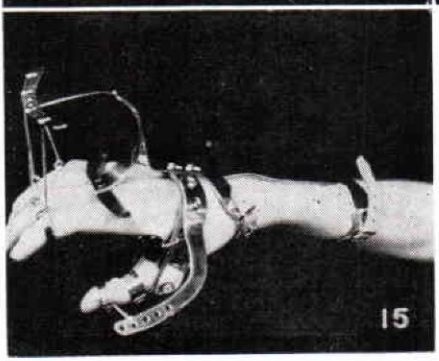












Figs. 9-15, Intrinsics. See captions, bottom page 54.

The Elbow

Inability to flex the forearm on the arm constitutes a real handicap, particularly for the patients with bilateral involvement (fig. 33). These individuals may be able to use the hands on flat table surfaces for most anything they wish, but, being unable to get their hands to their face level, they cannot feed themselves, brush their teeth, shave, and comb their hair, and are deprived of many other functions ordinarily taken for granted.

The following figures show a very efficient assistive piece of apparatus which enables the patient to get his hand to the face level although he has no muscles to flex the forearm on the arm. With the apparatus the forearm can be flexed by depressing the shoulder or shifting the body weight toward the involved side. The principle may be used on a flat table surface or as a part of an assistive overhead sling (figs. 34 and 25).

Some of these patients may be freed of apparatus by a Bunnell modification of the Steindler flexorplasty.

The Shoulder

Splinting of the shoulder weakened by poliomyelitis is a controversial subject.

Three possible component disabilities of a weakened shoulder must be considered. These components are: (1) the abductors, (2) the rotator cuff, and (3) the shoulder depressors. If one keeps in mind the above three possible component disabilities and will accept the premise that a weakened muscle is done no harm if it is supported at a point of its maximum resting length, then the time-honored use of abduction or airplane splints for all weakened shoulders is not always applicable (figs 36 and 37).

LEGENDS

INDEX FINGER

16. The position assumed by the index finger due to loss of power in the first dorsal interosseus muscle. Note the ulnar deviation of the phalanges on the index metacarpal.

17. Ineffective pinch in the presence of weakness of the first dorsal interosseus. Here again, note the ulnar deviation of the proximal phalanx on the metacarpal. The index finger also lacks the flexion component of the intrinsic musculature. There is also loss of opposition.

18. A dynamic splint or support for first dorsal interosseus weakness or following transfer to restore function of the first dorsal interosseus muscle. The flexion component of the intrinsics is weak. The splint can be made to pull in radial adduction and flexion.

LEGENDS

EXTRINSIC EXTENSION

19. A basic opponens splint with an out-rigger for support of weak common extension, or for stretching out contractures of the profundi or sublimi.

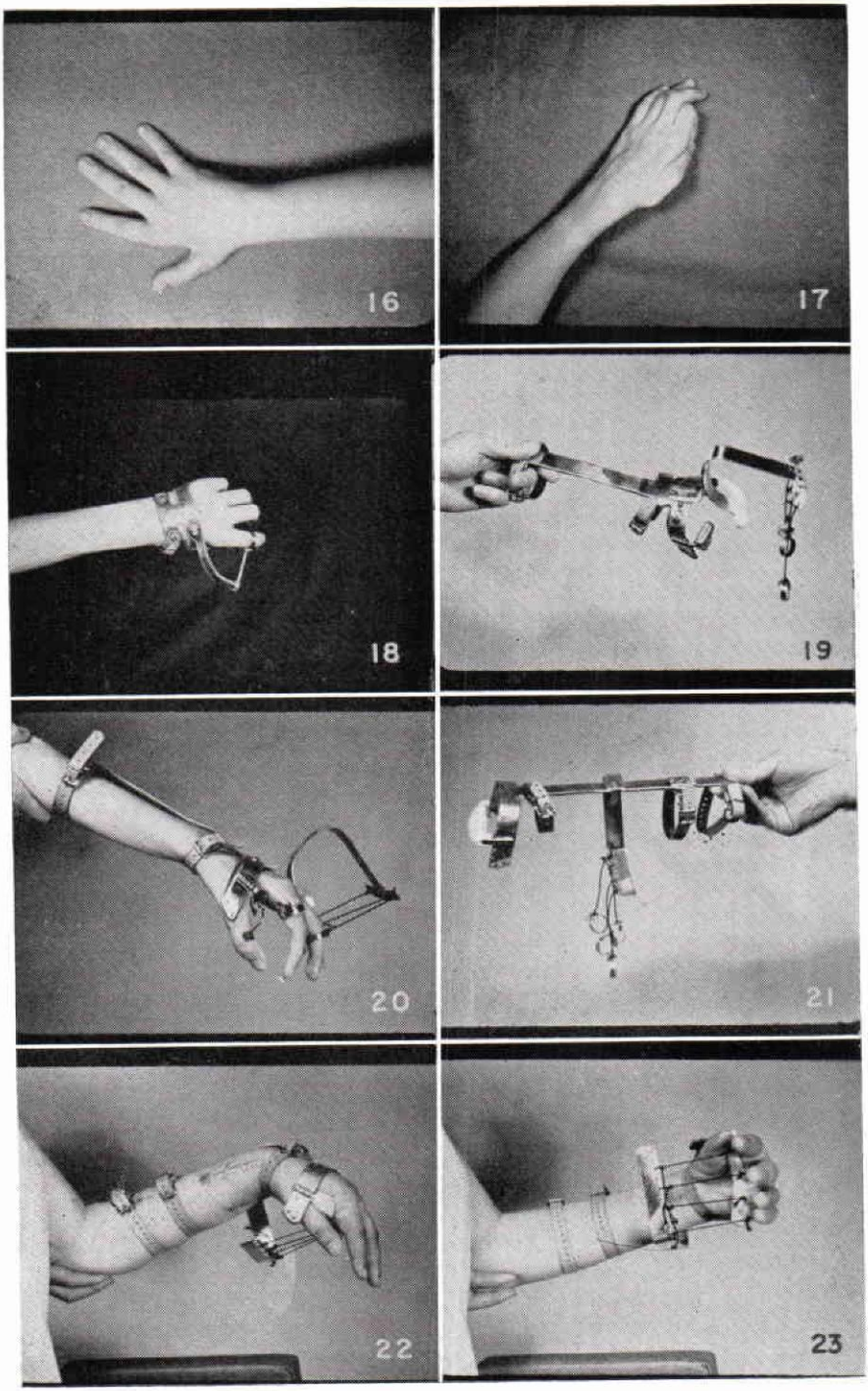
20. The apparatus in position on the patient. Note the cross bar to prevent hyperextension of the metacarpophalangeal joints. The line of pull is from a point to stretch the sublimi.

EXTRINSIC FLEXION

21. The foundation that fits on the dorsum of the forearm, wrist and hand for support of weak finger flexion, or for overcoming contractures of the long extensors.

22. A patient in the splint just described following transfer of the brachioradialis into the profundi.

23. Palmar view of the same splint. Note the curved bar under the metacarpal heads.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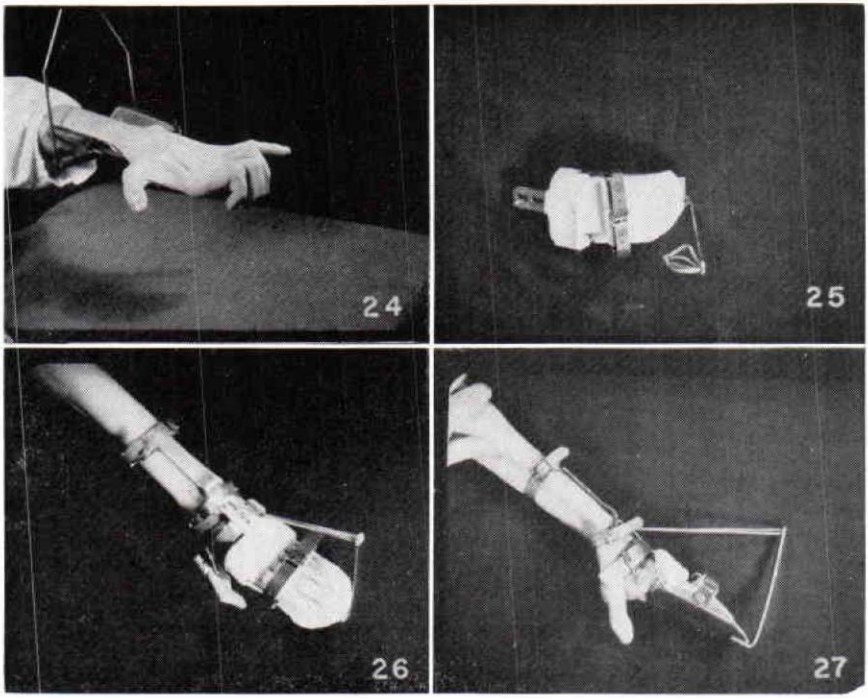


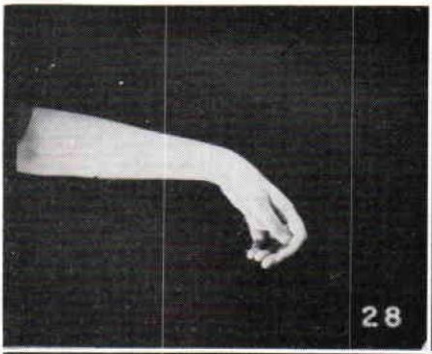
CONTRACTURE OF LONG FLEXORS

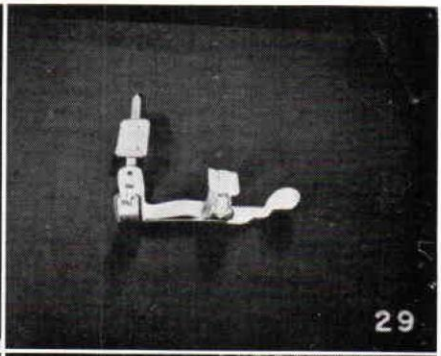
24. Contracture of the long finger extensors and the long finger flexors in the presence of paralysis of the intrinsic musculature.

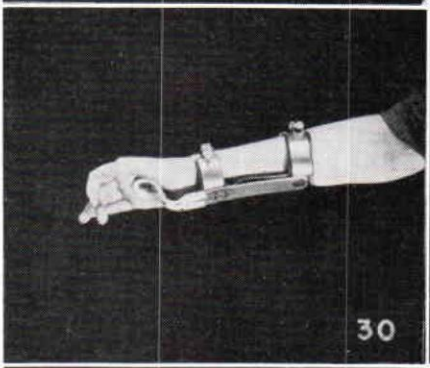
25. Finger portion of a corrective splint to overcome contractures of the sublimi and profundi.

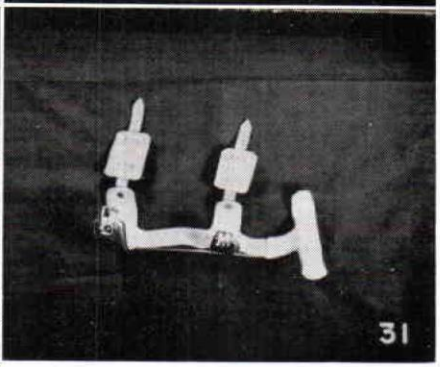
26. Dorsal view of the splint in position. The counter-thrust bar on the proximal phalanges fits the contour of the fingers. Note the residual flexion contracture in the profoundi.

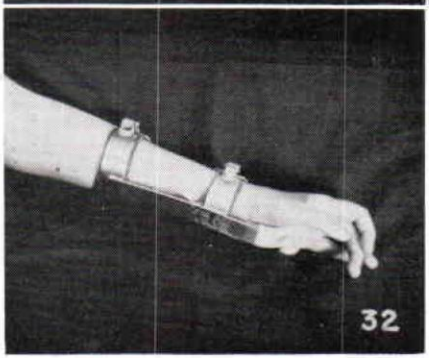
27. Radial side view of the same splint in position on the patient. This splint can be easily removed and reapplied for the necessary daily physical therapy.











LEGENDS

WRIST DROP

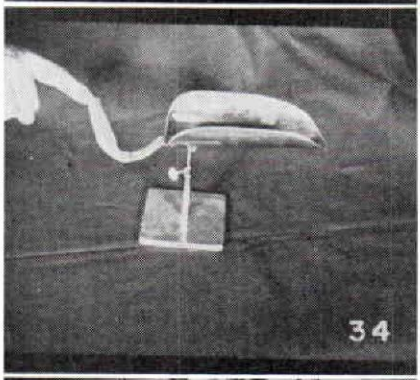
28. A typical drop wrist due to absence or weakness of all musculature on the extensor aspect of the forearm and hand.

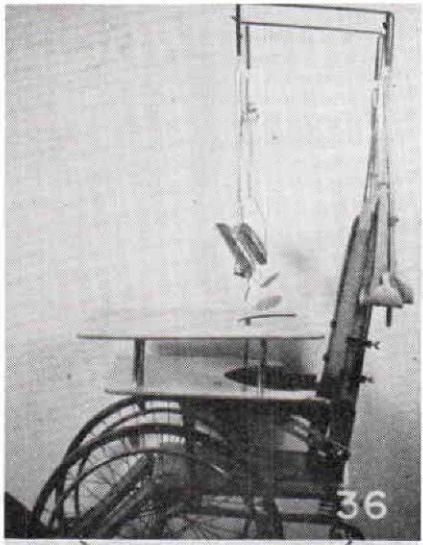
29. A simple cock-up spint with palmar support that fits the contour of the normal palm.

30. Palmar view of the cock-up splint in position on the patient.

31. A supportive drop wrist splint with transverse bar, which can be molded to fit the contour of the palm and turned up into either the radial or the ulnar side to prevent radial or ulnar deviation.

32. Splint in position on the patient.





STAND FEEDERS

33. Patient with insufficient musculature to flex the forearm on the arm. She can use her hand very well on the flat surface of a raised lap board, but is completely helpless for functions at face level.

34. A stand feeder. The forearm rests in a trough portion of the apparatus, the flexed elbow projects backward. The hinge at the upright allows the apparatus to tilt upward or downward. Free movement between the rod and tubing allows inward and outward motion.

35. Patient shown in figure 34 using the stand feeder. The apparatus is operated by elevating or depressing the shoulder or shifting the upper trunk away from or toward the apparatus.

OVER-HEAD SLINGS

36. A side view of the raised lap board, bilateral over-head slings, suspension feeder all assembled on an ordinary wheel chair. This apparatus makes it possible for a patient with weak forearm flexors to carry out many functions otherwise impossible.

37. Over-head slings in position on the patient. For weak anterior shoulder the forearm is suspended at a point distal to the upright. For posterior shoulder weakness it is suspended at a point more proximal to the upright.

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ASSEMBLY TIME—MONEY!

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- Side bars and slotted pull bars. All holes drilled. Bars shaped and highly polished.
- No plating needed. Slotted pull bars are stainless steel. Side bars are bright nickel plated steel.
- Necessary steel burrs and 5/32" Monel rivets for assembly included.

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- All necessary screws for assembly.
- Fitting instructions.
- All exposed metal is polished to a high professional finish.

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complete, ready to fit
our price $22.50

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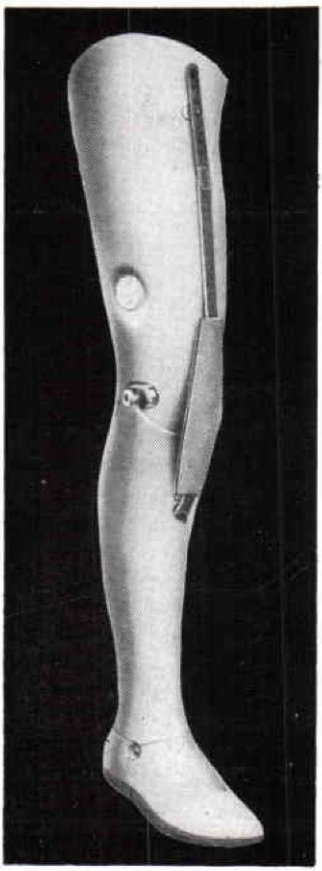

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The Prosthetic and Sensory Aids Service of the Veterans Administration

By WILLIAM H. TALLEY
Chief, Plans and Policies Division, P & S Service, VA

Some members of the industry have indicated a desire for more information regarding the Prosthetic and Sensory Aids Service of the Veterans Administration. This article is written in an effort to provide such information, and, we hope, to dispel some misunderstandings with regard to our activities.

The Prosthetic and Sensory Aids Service is a specialized service in the Department of Medicine and Surgery, and in the present organization of that Department it functions under the direct supervision of the Assistant Chief Medical Director for Planning.

Doctor Robert E. Stewart is the Director of the Prosthetic and Surgery Aids Service. He carries full responsibility for a double-barrelled program whose functions are: (1) To plan for and provide the best possible prosthetic appliances and sensory aids for some 250,000 eligible disabled veterans; and (2) To improve existing devices and develop new ideas through a continuous program of research, development, and education in this specialized field.

Central Office Organization

In order to accomplish the two basic functions outlined above, the Prosthetic and Sensory Aids Service in Central Office is broken down into two major divisions.

Mr. William H. Talley is the Chief of the Plans and Policies Division. He and his small staff of five full-time employees are responsible to the Director of the Service for planning and conducting an over-all field service program to provide direct prosthetics services to eligible veterans—the first basic function mentioned above. This Division recommends and establishes the broad, over-all policies governing the fabrication, procurement, issuance, replacement, and repair of prosthetic appliances, sensory aids, and/or medical accessories throughout the Veterans Administration; is responsible for the development of standards and specifications for all appliances to be fabricated in VA shops or procured from commercial sources; is responsible for over-all staff supervision of all VA field activities involved in the Prosthetic and Sensory Aids Program; and recommends to the Supply Service the basis for award or rejection of contracts for all appliances. The Division does not become involved in the mechanics of negotiation and award of contracts with approved commercial vendors, except in an advisory capacity on specific problems, since that is a function of the Supply Service.

Eugene F. Murphy, Ph.D., is the Chief of the Research and Development Division. He and his staff of six full-time employees are a part of the Prosthetic and Sensory Aids Service in Central Office, but are physically located in the New York Regional Office. They are responsible to the Director of the Prosthetic and Sensory Aids Service, for planning and conducting a broad program of research, development, and education in the fields of prosthetic appliances and sensory aids. This is the second basic function mentioned above. This Division recommends the broad, over-all policies governing the conduct of research, development, testing, and evaluation in the fields of prosthetic appliances and sensory aids, and for the conduct of prosthetics

educational projects, conferences, or courses within the Veterans Administration. It is responsible for over-all supervision and coordination of these activities as conducted by contractors and/or the VA Prosthetics Center. It is also responsible for reviewing and recommending for approval all proposals for research or development presented to the Service, and for review and approval of all vouchers submitted by research contractors.

Field Service Program

To carry the Prosthetic and Sensory Aids Program directly to the disabled veterans for whom it exists, some 680 full-time and part-time employees are directly involved in providing direct prosthetics services to veterans through regional offices and hospitals throughout the United States, Alaska, Hawaii, and Puerto Rico.

The majority of our full-time employees (approximately 190) are located in Prosthetic and Sensory Aids Units or Sections in regional offices and in certain hospitals having outpatient medical activities. The Chiefs of these units, who are all amputees or otherwise seriously disabled, are generally referred to as Prosthetic Representatives, and are primarily responsible for the prosthetic and sensory aids program within their areas. They are the ones who have most direct contact with individual members of the orthopedic and prosthetic appliance industry.

The next largest group of full-time field employees (approximately 160) are assigned to the 28 VA Orthopedic Shops in operation throughout the United States and Puerto Rico. These shops are all located in VA hospitals with medium to large orthopedic patient loads, and are intended primarily to provide orthopedic braces and supports, and repairs thereto, for hospital patients. It is an established policy that these VA shops are to be utilized by field stations only in those instances where local commercial sources are not available or are unable to meet the demands of the stations concerned, where the quality of appliances furnished by commercial vendors is not satisfactory to prescribing physicians, and/or where the prices charged by local vendors are excessive. *It is the prerogative of local field station Managers to determine whether these conditions exist.*

Prosthetic Clerks are assigned in each of the 176 VA hospitals in operation, but many of these employees spend only part of their time on prosthetics activities because of the small numbers of appliances required in the majority of hospitals. These clerks normally have direct contact with local members of the industry, and handle all necessary administrative paper work involved in furnishing appliances.

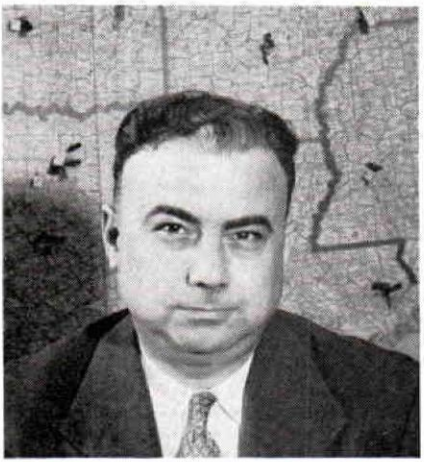
New York Prosthetics Center

The newly organized VA Prosthetics Center in New York City, headed by Mr. Anthony Staros, has a total of 68 employees. The Limb and Brace Section of that Center (formerly the Orthopedic Shop) has now been reduced to 35 employees. As the industry is aware, this is the only VA shop where artificial limbs are fabricated (except for the shop in Puerto Rico, which is a special situation). The primary functions of the Limb and Brace Section under the VA Prosthetics Center, as now established, are:

(1) To fabricate and repair experimental artificial limbs and/or other appliances required in shakedown or service testing under the VA Prosthetics Research and Development Program;

(2) To fabricate and repair artificial limbs and/or other appliances for problem cases referred to the shop by the New York Regional Office or by other VA field stations throughout the United States and Puerto Rico;

WILLIAM H. TALLEY



A disabled veteran of World War II, William H. (Bill) Talley has been in the VA Prosthetic and Sensory Aids Program since his retirement from the Army in October, 1946, when he was assigned to the Richmond, Virginia, Branch Office. In July of 1947, he was transferred to Washington, and in December of 1953 assumed his present duties as Chief, Plans and Policies Division, Prosthetic and Sensory Aids Service.

Mr. Talley was born in Malden, Missouri, in 1917, but spent most of his life in Paducah, Kentucky, which is still considered "home". Prior to his entry into military service, Mr. Talley was a Construction Estimator and Salesman for a building construction company in Paducah. He volunteered for military service in the Army as a Private, was sent to the European Theater as a Captain assigned to the 3rd Armored Division, and was retired for disability as a Lieutenant Colonel after losing both legs below the knees in combat during the ill-famous "Battle of the Bulge."

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(3) To conduct pilot studies, as requested, on the use of materials or fabrication techniques for use in developing standards or specifications, to determine whether prices charged by the industry for specific appliances or repair operations are within reason;

(4) To fabricate and repair artificial limbs and/or other appliances for veterans residing within the New York metropolitan area who refuse to utilize local commercial sources of supply;

(5) To constantly train technicians in the latest approved techniques of limb and brace fabrication so as to provide a nucleus for immediate, temporary expansion of the Veterans Administration shop program in the event of war or national disaster.

Other Special Field Activities

A total of 13 Plastic Eye and Restorations Clinics, employing a total of 37 technicians, are operated by the Veterans Administration in selected field stations throughout the United States. These clinics fabricate plastic artificial eyes, eye implants, plastic cosmetic restorations of all kinds (including *partial* cosmetic hands, but *not* including complete cosmetic hands except in unusual cases), metal or plastic skull plates, plastic ear inserts for fitting of hearing aids, and other special plastic appliances.

Orthopedic or general surgeons are employed on a Consultant basis to head each of the 30 Orthopedic and Prosthetic Appliance Clinic Teams located in selected field stations throughout the United States. As the industry well knows through its valued participation in these Clinic Teams, they were established for the primary purpose of providing proper appliances for problem cases where previous difficulty has been encountered, and to assist in field evaluation projects conducted under the Prosthetics Research and Development Program.

The reorganized Prosthetic Distribution Center, located at the Denver Federal Center, Denver, Colorado, and headed by Mr. Clarence O. Cherry, will employ approximately 15 people. The two Prosthetic Distribution Centers previously operating were consolidated at the one Center in Denver effective June 1, 1956. This one Center will handle the procurment and distribution of stump socks and hearing aid batteries for all disabled veterans throughout the United States and its territories or possessions, as well as for eligible veterans residing or traveling in foreign countries.

Last, but certainly not least among the field employees in the Prosthetic and Sensory Aids Programs, are the seven Area Chiefs, Prosthetic and Sensory Aids Service, employed in the seven Area Medical Offices supervising all VA field activities. These Area Chiefs, who are all amputees, are directly responsible for prosthetics field activities within their respective areas, and report through their Area Medical Directors to the Prosthetic and Sensory Aids Service in Central Office. One of their primary responsibilities is to maintain good relations between the VA field stations and members of the orthopedic and prosthetic appliance industry located within their areas. They are responsible for inspecting artificial limb and brace shops in their areas, and their reports have great influence upon the rating of such shops in Central Office. They supervise the work of all Prosthetic Representatives within their areas, and have administrative control over the activities of Orthopedic Shop Supervisors and Chiefs of Plastic Eye and Restorations Clinics. These men are the "eyes and ears" of the Prosthetic and Sensory Aids Service, and are among our most important employees.

Prosthetics Research, Development, and Education Program

The Prosthetics Research, Development, and Education Program is conducted primarily through selected universities, and other non-profit organizations under contract to the Veterans Administration. For that reason, there is only one specific VA field activity, the Testing and Development Laboratory of the VA Prosthetics Center, primarily involved in the program. *All* the field activities outlined above, however, are involved to some extent in the program, primarily in the testing and/or field evaluation phases.

The Prosthetics Research Board of the National Research Council operates under contract to the Veterans Administration, and is primarily responsible for coordinating the work of VA contractors and the laboratories of the Army, Navy, and Veterans Administration engaged in research and development of artificial limbs. The Board also serves as an advisory body to the Veterans Administration on all matters pertaining to research, development, and education in the field of artificial limbs, and recommends the acceptance or rejection of all experimental limbs, terminal devices, or components developed and/or evaluated under the prosthetics research program.

The Prosthetic Education phase of the program is the primary responsibility of Mr. William M. Bernstock, under the direct supervision of Doctor Murphy in New York. Prosthetics education is considered to be an integral part of the over-all Prosthetics Research and Development Program, since it is of little value to develop improved devices or new techniques unless people can be trained in their fabrication or use. For that reason, much effort and money has been expended under this program, not only for training of our own Veterans Administration personnel, but also for training of members of the industry, private physicians and therapists, and employees in other Government agencies. Although members of the industry have been required

to pay small tuition charges for attendance at certain courses conducted at New York University and the University of California, these fees cover only a very small percentage of the total cost of establishing and operating such courses. The major portion of the costs, in all such courses, has been paid for by the Veterans Administration. Such education and training will be continued as long as the need exists and money is available.

Statistics

In order for the industry to have a better understanding of the scope of the over-all Prosthetic and Sensory Aids Program, a few statistics might be helpful.

The total over-all cost of the Prosthetic and Sensory Aids Program, including research and education, the salaries of all Central Office and field personnel, the cost of travel for employees and beneficiaries, the cost of appliances and repairs fabricated and procured, etc., is approximately $9,500,000 annually. At first thought, this may seem a little high, but when you consider that we are serving approximately 250,000 veterans, most of whom are seriously disabled, it can be seen that the average cost per veteran served is only about $38.00 per year—and we consider this extremely low for the type of service rendered.

Of the above amount, the Veterans Administration has expended an average of about $900,000 per year for research, development, and education during the past ten years. Practically all this money has been spent under research contracts with universities and/or non-profit organizations or institutions, and for operation of the former Prosthetic Testing and Development Laboratory in New York (now a part of the VA Prosthetics Center).

The following statistics on the numbers and costs of those appliances and repairs procured by the Veterans Administration from members of the orthopedic and prosthetic appliance industry should be of interest. Figures on other items, such as hearing aids, batteries, equipment for blind, wheelchairs, and miscellaneous appliances are not included. Such figures are available, however, to anyone who may be interested. Since Fiscal Year 1956 does not end until June 30, 1956, figures for that year are not yet available.

ORTHOPEDIC AND PROSTHETIC APPLIANCES AND REPAIRS THERETO PROCURED FROM THE COMMERCIAL INDUSTRY

Fiscal Years 1947 through 1955

1. *NEW ARTIFICIAL LIMBS*

Fiscal Year	Number Furnished	Average Cost	Total Cost
47	9,724	$166.91	$ 1,623,000
48	10,455	176.47	1,845,000
49	8,555	196.96	1,685,000
50	7,565	200.92	1,520,000
51	6,520	207.82	1,355,000
52	5,935	218.20	1,295,000
53	5,940	232.32	1,380,000
54	6,404	241.41	1,546,000
55	6,169	256.44	1,582,000
	67,267	$205.61	$13,831,000

Fiscal Year	Number Furnished	Average Cost	Total Cost
	2. *STUMP SOCKS*		
47	157,521	$ 1.10	$ 173,000
48	172,401	1.25	215,000
49	206,771	1.44	298,000
50	218,695	1.43	312,000
51	163,534	1.56	255,000
52	132,816	1.84	245,000
53	114,968	1.89	217,000
54	115,741	1.79	207,000
55	120,850	1.64	198,000
	1,403,297	$ 1.51	$ 2,120,000
	3. *NEW ORTHOPEDIC BRACES*		
47	11,981	$ 19.11	$ 229,000
48	21,600	19.44	420,000
49	23,900	16.32	390,000
50	24,600	13.66	336,000
51	19,923	16.21	323,000
52	19,657	16.38	322,000
53	18,822	16.90	318,000
54	18,293	18.09	331,000
55	17,782	17.55	312,000
	176,558	$ 16.88	$ 2,981,000
	4. *NEW ORTHOPEDIC SHOES (Pairs)*		
47	3,413	$ 43.07	$ 147,000
48	6,393	41.45	265,000
49	8,525	45.75	390,000
50	9,166	50.07	459,000
51	9,041	49.55	448,000
52	8,594	52.83	454,000
53	8,399	48.22	405,000
54	8,341	48.63	410,000
55	8,512	43.23	368,000
	70,474	$ 47.48	$ 3,346,000
	5. *MISCELLANEOUS NEW ITEMS* (Arch Supports, Belts, Elastic Hose, special minor appliances)		
47	95,103	$ 7.24	$ 689,000
48	94,428	6.87	649,000
49	139,239	4.68	652,000
50	111,406	6.24	695,000
51	76,401	7.12	544,000
52	112,420	6.13	689,000
53	124,232	5.96	741,000
54	110,510	6.48	716,000
55	112,276	6.86	770,000
	976,015	$ 6.30	$ 6,145,000

Fiscal Year	Number Furnished	Average Cost	Total Cost
	6. REPAIRS TO ARTIFICIAL LIMBS		
47	7,432	$ 13.07	$ 97,108
48	17,032	13.28	226,206
49	19,942	15.33	305,638
50	20,952	16.38	343,206
51	24,354	16.50	401,892
52	26,611	18.88	502,324
53	28,324	18.45	522,665
54	29,293	18.22	533,378
55	29,027	18.53	537,911
	202,967	$ 17.10	$ 3,470,328
	7. REPAIRS TO BRACES		
47	2,196	$ 7.48	$ 16,437
48	2,283	7.98	18,232
49	3,298	8.16	26,926
50	3,243	8.22	26,658
51	3,606	9.13	32,915
52	4,268	9.33	39,821
53	5,345	9.14	48,862
54	5,325	9.02	48,027
55	5,654	9.36	52,926
	35,218	$ 8.82	$ 310,804
	8. REPAIRS TO WHEELCHAIRS		
47	45	$ 14.11	$ 635
48	462	14.39	6,647
49	533	8.71	4,645
50	550	12.93	7,113
51	646	14.14	9,136
52	862	14.55	12,542
53	1,125	13.77	15,487
54	1,275	14.09	17,962
55	1,625	13.69	22,247
	7,123	$ 13.53	$ 96,414
	9. MISCELLANEOUS REPAIRS TO APPLIANCES		
47	2,899	$ 4.86	$ 14,093
48	11,083	3.29	36,513
49	13,497	3.41	46,024
50	16,803	3.48	58,441
51	11,259	4.66	52,450
52	12,432	5.16	64,113
53	13,123	5.24	68,759
54	17,284	4.72	81,626
55	19,304	4.82	93,080
	117,684	$ 4.38	$ 515,099

10. *TOTAL NEW APPLIANCES AND REPAIRS*

(Total only of those items listed in 1 through 9—Grand total of *all* appliances and repairs procured from commercial sources during period—$46,750,000.)

FY	Number New Items	Cost	Number Repairs	Cost	Total Cost
47	277,742	$ 2,861,000	12,572	$ 128,273	$ 2,989,273
48	305,277	3,394,000	30,860	287,598	3,681,598
49	386,990	3,145,000	37,270	383,233	3,798,233
50	371,432	3,322,000	41,548	435,418	3,757,418
51	275,419	2,925,000	39,865	496,393	3,421,393
52	279,422	3,005,000	44,173	618,800	3,623,800
53	272,361	3,061,000	47,917	655,773	3,716,773
54	259,379	3,210,000	53,177	680,993	3,890,993
55	265,589	3,230,000	55,610	706,164	3,936,164
Totals	2,693,611	$28,423,000	362,992	$4,392,645	$32,815,645

VA TRAINING COURSE

Reviewed by Joseph H. Martino, C. P. & O., Boston

• A technical training course for *Prosthetic representatives of the VA* was held in New York City January 9 to 20, with *William M. Bernstock* serving as course coordinator.

The purpose of the course was to give prosthetic representatives technical knowledge relating to their activities. It was realized that the extent of such knowledge varies greatly. The needs of the representatives as they express them were given careful consideration in planning the curriculum for this course.

Through the courtesy of Mr. Bernstock the OALMA Headquarters Library has obtained a copy of the teaching materials used in the class. William H. Talley, Chief of the Plans and Policies Division of the Prosthetic and Sensory Aids Service who was in attendance at the School, expressed satisfaction over the results obtained. It is his hope that similar schools may be held for other prosthetic representatives at other points in the country. Mr. Talley indicated that members of OALMA may be called upon to assist in giving such courses.

Students in the pilot course were: Voigt W. Baker, Area Chief, Prosthetic and Sensory Aids Service, St. Paul, Minn.; William R. Bouldin, Chief, Prosthetic and Sensory Unit, Regional Office, Philadelphia, Pa.; James Cohen, Asst. Chief, Prosthetic and Sensory Aids Unit, Regional Office, New York, N. Y.; James C. Higgins, Chief, Prosthetic and Sensory Aids Unit, VA Hospital, Albany, N. Y.; Wilfred G. Holsberg, Area Chief, Prosthetic and Sensory Aids Service, Area Medical Office, Boston, Mass.; James T. Kenny, Chief, Prosthetic and Sensory Aids Unit, VA Regional Office, Pittsburgh, Pa.; Harry D. MacBird, Area Chief, P&SAS, Area Medical Office, San Francisco, Calif.; Leonard J. McCarthy, Area Chief, P&SAS, Area Medical Office, Trenton, N. J.; Nelson McFarland, Area Chief, Prosthetic and Sensory Aids Service, Area Medical Office, Atlanta, Ga.; Jack Miller, Chief, P&SAS Unit, VA Regional Office, Brooklyn, N. Y.; Donald W. L. Smith, Area Chief, P&SAS, Area Medical Office, St. Louis, Mo.; Albert S. Zuidema, Chief, Prosthetic and Sensory Aids Unit, VA Regional Office, Boston, Mass.

Certification Booth at Medicine Session

Left to right: Charles Wright, C.P., Manager of the J. E. Hanger Co. of Philadelphia; Dr. Machek of St. Louis; Mr. James Foort, University of California Prosthetics Research Project, Aid; Dr. Henry E. Loon; Cosmo Invidiato of Paterson, N. J. and Lester Smith, Assistant Director, American Board for Certification. Mr. Karl Buschenfeldt, Vice President of the American Board for Certification, was in attendance at the Congress and taught a seminar on Bracing, but was not available when this picture was taken. Dr. Machek has just finished writing the new OALMA textbook on "Anatomy for the Limb and Brace Technician."

REVIEWS—

THE CANADIAN TYPE HIP DISARTICULATION PROSTHESIS

By J. Foort and C. W. Radcliffe

(Published by Prosthetics Research Board, National Research Council, March, 1956. Series II, issue 28 from the Prosthetic Devices Research Project, University of California, Berkeley. 40 pages.

Reviewed by Ralph R. Snell, Nashville, Tenn.

At a glance of the table of contents, you can see that it is probably one of the best books of this type to be put at the disposal of the Limb Industry. It contains seven general titles of contents, with most having several sub titles. The first is entitled, "*Introduction,*" and deals with present and previous type hip disarticulation prosthesis with which we are all familiar.

The Introduction also has a general description of the Canadian type hip disarticulation with mechanical diagrams and setches pointing out the advantage of this type of prosthesis. The diagrams show location and alignment of socket, joints and so forth.

The second section "*Fitting the Socket Waistband,*" gives all of the information necessary for obtaining the required measurements for socket construction, including stump examination, body measurements, markings and so forth, as well as other information necessary for making the plaster

(Continued on page 89)

new SOLID FOOTING AND SAFETY FOR CRUTCH USERS!

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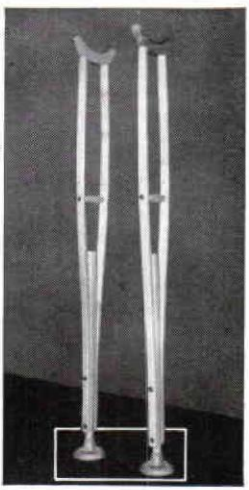

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Especially amputees and elderly people, who often are obsessed with the fear of falling, or slipping. It's the "Saftee-Crutshoe".

THE ENTIRE "SAFTEE-CRUTSHOE" IS MADE OF NATURAL RUBBER

Because it's made of natural rubber, it will retain its original resilience—throughout the entire life of the crutshoe.

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THE DESIGN INSTILLS A FEELING OF SECURITY—"SOLID FOOTING"

It instills such a feeling of confidence in the patient that fears are dispelled with the very first step taken—for faster recovery.

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When pressure is applied, each finger acts as an individual "squee-gee", to insure the utmost in safety for the user.

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Pilot Course for Prosthetists and Orthotists in the Basic Medical Facts Pertinent to the Field

By CONSTANTINE G. PSAKI, M.D.

Pilot Class at Philadelphia. Left to right, back row: Basil Peters, Frank Malone, Jr., Albert Fialkovich, George Anderssen, Thomas Nawn, Charles Wright. Center row: Joseph Botkins, Edward Sulima, Frank Malone, John McCann, Jr., John Cocco, Albert Sulima. Front row: Instructors V. T. McGrath, J. V. R. Logan, C. G. Psaki, M.D., Robert J. Doman, M.D., and Carl H. Delacato, Ed.D. (Students not shown: Anthony Cocco and Hans Christoph.)

Following the attendance of several upper and lower extremity prosthetic courses in conjunction with physical therapists and prosthetists, we realized the weak points on behalf of the prosthetists. After several years of considerable thought, consideration, experience and several discussions with various prosthetists and orthotists, we arrived at a conclusion that the prosthetists were good mechanics but seem to lack the knowledge of fundamental, functional anatomy; particularly Kinesiology of the extremities, patho-Kinesiology and post operative Kinesis. Another basic important subject is that of Innervation of important muscles, blood supply and relationship reference to pressure areas required by prostheses.

The orthotists have an excellent knowledge of the manufacture of various types of braces and back supports from experience, but they seem to lack the fundamental knowledge of anatomy as to proper rigidity and required relaxation of advantageous muscles and anatomical supportive areas, for stability and ambulation. This is perhaps due to lack of knowledge of late developments in the field of bio-mechanics, bio-physics and biochemistry as applied to both classes.

We therefore, undertook a step forward and outlined a course as a pilot program for both prosthetists

and orthotists and one which we considered adequate for their needs. The course entailed a period of over fifteen hours at weekly sessions from 8 to 9:30 P.M. as follows:

1. Osteology
2. Muscle function of upper extremity
3. Muscle function of lower extremity and back
4. Innervation of upper extremity
5. Innervation of lower extremity
6. Circulation of upper and lower extremities including the body
7. Kinesiology en masse
8. Patho-Kinesiology and amputation sites
9. Psychological aspects pertinent to amputees
10. General review, panel discussion, questions and answers and a final test with certification.

As far as we are concerned and from the results of the tests by all (total 15) who participated, we are elated and feel confident that the course was well planned and very elementary with less technical terminology in order to be well absorbed and remembered. A folder was given to each student with photostatic material with names of muscles of upper and lower extremities, nerves, blood vessels, causes of edema, various extremity positions, the importance of gluteus medius and pathological gait causes by same and a few others for their future reference. The students demonstrated outstanding interest, enthusiasm and attendance. Their expression, at the conclusion, was of highest regard and satisfaction for the knowledge which they had gained and the valuable material supplied to them for their reference with a list of comprehensive text books. Another desire which they expressed was for the continuation of a course on a higher level to the same group; in other words, two such courses should be given, one on an elementary basis and the other more advanced covering some pathological conditions and orthopedic corrections.

We feel that this course has been very valuable to the group and to us. There is no doubt that these courses if instituted throughout the country will render valuable assistance to these outstanding men and make them more valuable in their consultations with members of the medical profession. This will render a closer relationship with the physician in charge for a better team approach with the ultimate result of a more useful prosthesis and a happier patient. Again, we wish to express our appreciation, on behalf of the teaching staff, to all the students for their courtesy, attendance, cooperation and interest.

Philadelphia Stages Pilot School

By BASIL PETERS, CP&O

On February 2, 1956, fifteen prosthetists and orthotists received a Certificate from "The Rehabilitation Center at Philadelphia," attesting to the fact that they had satisfactorily completed an authorized fifteen-hour course in Anatomy.

This pilot course, the first of its kind in the Pennsylvania area, was proposed and instigated through the efforts of several of the certified prosthetists and orthotists attending the local clinics in the Philadelphia area as consultants, Dr. C. G. Psaki, Chief of Physical Medicine at the Veterans Administration Regional Office and Dr. R. J. Doman, Consultant to the Veterans Administration Regional

Office and Medical Director of "The Rehabilitation Center at Philadelphia." It was felt at these clinics, that due to advanced methods and techniques in fabricating and fitting of prostheses and orthopedic braces that we would all derive benefit and achieve a degree of mutual understanding from such an anatomy course.

Credit is due both Dr. Psaki and Dr. Doman for outlining an excellent instructive and well planned program, as witness the results of the test by all who participated. The course was scheduled for one evening a week for fifteen weeks. Lectures were of one hour duration, supplemented with visual aides, slides and movies. After each lecture, there followed an open discussion period. We were hard put to place a time limit on these discussions as we found the lectures had awakened many questions that had arisen in our daily work. Since it would take too much space to give an outline of each lecture, the following is an outline of a lecture that we found most interesting and absorbing.

Psychology and the Prosthetist

I. Background (definitions)
   - a. Ego
   - b. Unconscious
   - c. Trauma
     1. psychological
     2. physiological

II. Effect of loss of limb
   - a. Change in "Body Image"
     1. Phantom pain
     2. Altered reactions
   - b. Change in ego structure
     1. Conscious effect
     2. Unconscious effect
   - c. Acceptance of disability
     1. Complete
     2. Partial
     3. Indications of hostility
   - d. Effect of the prosthesis on the disabled person
     1. Acceptance of the individual
     2. Acceptance by the family
     3. Acceptance by society

III. Implications of Recent Research (Stanford 1944-45 Study)

IV. The psychological role of the prosthetist
   - a. Teacher
   - b. Evaluator
   - c. Additional services

V. Children and prostheses
   - a. Unique problems of "Body Image"
   - b. Relationship to developmental ego factors
   - c. Importance of family

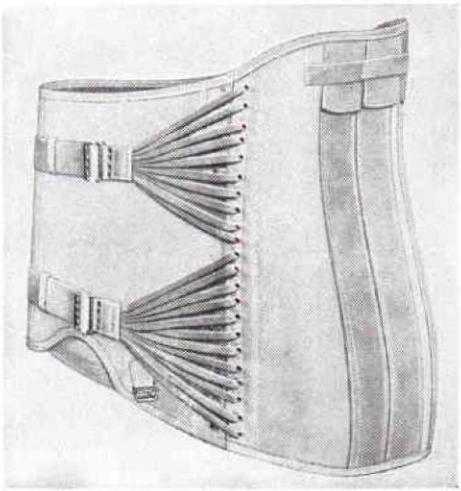
VI. Practical psychological implications for the prosthetist in relation to the patient and to the medical profession

The complete course was well absorbed and remembered. All students showed interest and enthusiasm. All expressed at the conclusion, their high regard and satisfaction for the knowledge gained and for the valuable material supplied them for reference. There was an unanimous desire expressed for the continuation of a second course, more advanced, covering some of the pathological conditions and orthopedic corrections.

As we have had numerous requests, we are at present making plans to repeat the first course. After this course has been completed, we will plan for the advance course.

The firms represented by those attending the course were as follows: Modern Limb & Brace Co., J. E. Hanger Co., Cocco Bros., George S. Anderssen Co., Hans W. Christoph Inc., John J. McCann Co., B. Peters Co.

The course and lectures were given by the following: Constantine G. Psaki, M.D., Robert J. Doman, M.D., Carl H. Delacato, Ed.D., J. V. R. Logan, B.S., M.A., Glenn J. Doman, R.P.T. and V. T. McGrath, B.P.E.



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Arranging a Program for Physicians
The W. E. Isle Company is Host

(Editor's Note: From time to time, every OALMA member is faced with the problem of arranging a program for a group of physicians or other specialists. We think this note by Ted W. Smith of Kansas City, describing such a meeting will be helpful. Members may also want to refer to an earlier article "Planning Regional Meetings" by Fred J. Eschen, which appeared in the March, 1953 issue.)

Doctors Dickson, Diveley, Kiene and Meyers' clinic here in Kansas City is a nationally known group of orthopedic doctors, and has quite an extensive practice. In their clinical set-up, they have quite a large group of residents in orthopedic surgery. Since we have been doing their orthopedic appliance work for years, we conduct regular meetings for these residents, usually on the basis of once a year. A meeting in which the VA film was shown was held at our facility Monday evening, April 2nd. Doctor Paul W. Meyer attended this meeting with the following group of residents: Doctors Samuel Osborn, John L. Barnard, W. H. Keener, G. M. Hoover, James E. Jameson, Donald D. Hobbs.

Our program started promptly at 7:00 P.M. with a tour of our complete facility. During this period we would have discussions in each of our fabricating departments covering principally the methods and ways of fabricating different appliances.

Upon the completion of this tour, the film on Upper Extremities was shown and this was followed with a discussion of upper extremity amputations and prostheses which was moderated by Ivan A. Dillee.

This was followed by a discussion on lower amputations and prostheses which was moderated by Mr. W. H. McCluskey.

The next thing on our program was orthopedic appliances and this covered principally a very detailed discussion of spinal braces such as the Milwaukee Brace, Williams Spinal Brace, Hyperextension Braces, Taylor and Chair-Backs; with a detailed discussion of the variance in types as supplied in different sections of the country. This was purposely included on our program as a majority of these resident physicians will locate in other areas outside of Kansas City when they enter the practice of orthopedic surgery. Since I have travelled extensively in the past 10 years or so, I moderated this part of the program. The first part covered types of orthopedic appliances and was moderated by our Mr. Kenneth F. McConnell.

Doctor Paul W. Meyer and Ted R. Reynolds acted as leaders and introduced all phases of the program.

The meeting adjourned about 11:10 P.M. Shortly after the meeting adjourned, one of our men commented that we certainly must have had something interesting to present for when you can keep a group of busy doctors in a meeting for hours, you certainly have to have something that they are vitally interested in.

SURGERY OF THE HAND

By Sterling Bunnell, M.D.
Third Edition

Published by J. B. Lippincott Co., Phila., 1956. 1047 illus., 9 color plates. 1079 pages. $22.50.

Reviewed by Herman C. Hittenberger, C. P. & O., San Francisco.

This book is really a masterpiece and veritable "bible" of hand surgery. Fortunate indeed are the members of the medical profession, orthotists and prosthetists to have such a wealth of knowledge in such concise form. Doctor Sterling Bunnell, whose unique skill has done so much to advance the art of hand surgery, has now added to his laurels with this invaluable text.

His main purpose was to aid surgeons in the task of restoration and reconstruction of crippled hands. The book is divided into three parts: 1) The Hand; 2) Reconstruction of the Hand; 3) Injuries and Infections of the Hand. The scope and comprehensiveness of all these subjects is handled in a masterly fashion.

As Civilian Consultant for Hand Surgery to the Secretary of War during World War II, he developed teams of officers at the Army General Hospitals. These men restored to usefulness thousands of hands that otherwise would have been crippled.

Those members of our profession who have had the pleasure and privilege of working with Doctor Bunnell are indebted to him for the many contributions he has made in devising new types of hand splints. Orthotists and prosthetists attending the National Assembly of the OALMA in San Francisco, during October, will have Doctor Sterling Bunnell as a featured speaker in a seminar on "Hand Splints," and this should be one of the many highlights of the coming convention.

Mrs. Florence Kraft
President

Mrs. Ruth Brown
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TO THE LADIES:

from

OALMA's Woman's Auxiliary

This is one last reminder of the Assembly which will be upon us again in a very short time. As the time approaches, everyone seems to be more enthusiastic and anxious for that wonderful time of renewing old friendships and making new. We are sure that this will be remembered as one of the best, so start making your plans to attend right now.

I will endeavor to repeat the social plans of the program as it appears. Sunday, registration all day. In the evening there will be a buffet supper at the hotel for a flat rate and a bar will be set up for sociability for those who care to partake. Music will follow and an informal evening of greetings and friendship renewals will follow. I think everyone will enjoy themselves to the utmost.

Monday morning, as usual, the President's breakfast is scheduled for eight o'clock and immediately following, we will have our meeting which will take in all business as well as the assignment of our big sisters to visitors and new members. This will be our only meeting due to the shorter Convention time this year, so please plan to be with us. At the close of the meeting, we will go to Fisherman's Wharf and have lunch at one of the fine restaurants there after which there will be a tour by boat of the Bay. This should prove most interesting.

Tuesday morning there will be a tour of China Town with lunch there and the afternoon free for shopping or whatever may be your desire. The Banquet and dance will follow in the evening and we are looking forward to a very enjoyable time. This will terminate our social program but there is still much more to see in San Francisco if one cares to stay longer.

I think Mrs. Brown and Mrs. Laurence have done a splendid job in arranging all this for us and I'm sure you will all join me in expressing our gratitude to these ladies.

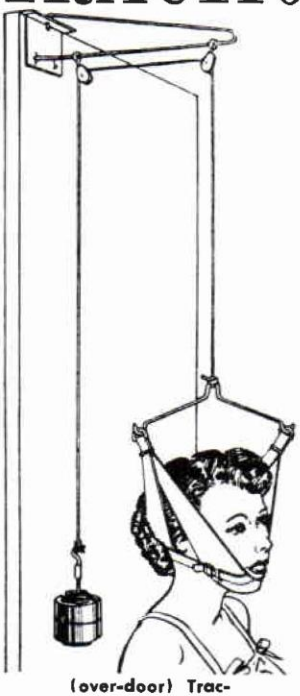
Thank you all for your cooperation and indulgence during this year of my Presidency and I hope you will all meet me in San Francisco and help make this a most enjoyable as well as successful Convention.

Very truly,

Florence Kraft,
President.

New . . .

TRACTION AT HOME METHODS



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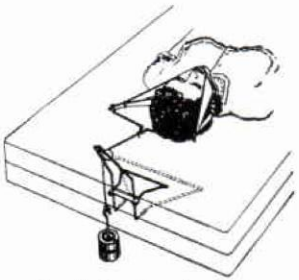
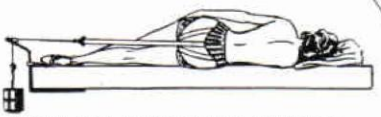
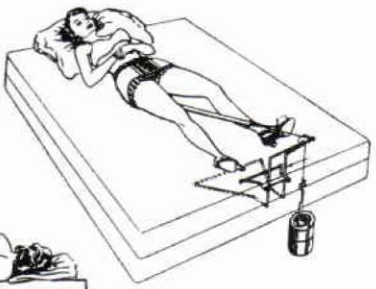


(bed) Traction Support

Special beds are not necessary. TRU-EZE traction supports will fit most any bed.





Pelvic Traction

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(Continued from page 77)

wrap and the construction of the check socket even down to showing how to make any necessary alterations in the check socket.

The section "*Laminating the Socket Waistband*" gives a step-by-step procedure from pouring the test socket all the way through to your finished laminate. There are diagrams showing the whole process of laying on the various materials, such as fibre glass, dacron and so forth, (including a general pattern for cutting your material). The laying on of your p.v.a. bag and even down to the formula used in mixing your resin and finally the introduction of the resin into the p.v.a. bag.

The fourth section, "*Preparation of Components*," gives information on location and attachment of the hip joint to the socket, and thigh section, and suggests that you attach your A/K set up for trial purposes. There is also a brief mention of the necessary straps, such as control straps and so forth.

Section five, "*Assembling and Aligning the Prosthesis*," includes the location of straps on the socket waistband, location of control straps, the location of hip joint and adjustments on trial leg or set up, to correct any malfunction of the prosthesis.

Section six, "*Duplicating, Finishing and Adjusting the Prosthesis*," gives details on finishing the socket, waistband, and structural section, checks for comfort and instructions for covering the thigh section of the prosthesis.

The last section is entitled, "*Time and Material Study Data.*" The time study record is broken down into 21 parts from taking the plaster cast on down to the finished product, with a total production time of about 54 hours. The material is broken down into a pretty exact figure so that together with this and the time study element, you could figure your cost and the time element before construction.

In Memoriam

Joseph Gold, C. P. of Cleveland, died suddenly June 30 at the age of 71 following a heart attack. Mr. Gold had been employed with the Leimkuehler Limb Company the past nine years. In previous years he had been employed with the Knit-Rite Company and the Cleveland Artificial Limb Company. He is survived by his daughter, Mrs. Elizabeth R. Sheehan of Ottumwa, Iowa. Mr. Gold was one of the employees of the Leimkuehler Limb Co. covered under the OALMA Group Insurance Program.

Henry Scheidt died April 14 at the age of 64, following a cerebral hemorrhage. Mr. Scheidt, holder of Certificate No. 19, began his work with the Kant Orthopedic Company. He had been associated with the W. E. Isle Company at Kansas City since 1932.

Zon L. Snyder died June 30 in California after a brief period in the hospital. Mr. Snyder was born in 1885, became affiliated with Truform Anatomical Supports in 1919 and served faithfully until retired with a pension in 1953 because of ill health. For many years, Mr. Snyder attended every OALMA Assembly, where he was a familiar and beloved figure.

C. H. Bennington—As the *Journal* goes to press, word comes of the sudden death of C. H. Bennington, father of Robert N. Bennington. An obituary notice will appear in the next issue.

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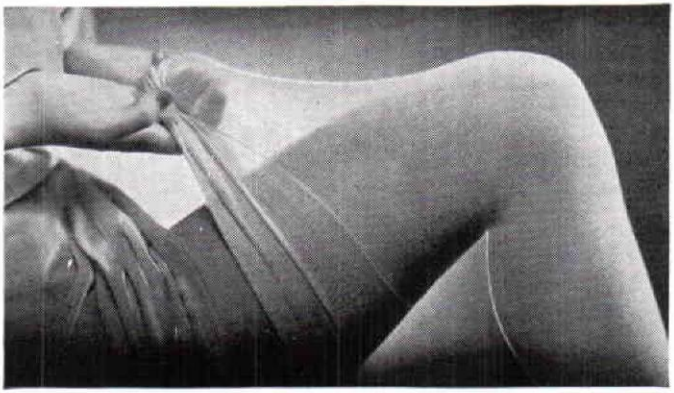

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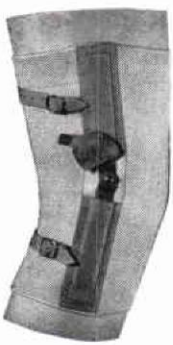

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CODE OF ETHICS FOR THE ARTIFICIAL LIMB AND BRACE PROFESSION

The Federal Trade Commission has approved fair trade practices for the field of artificial limbs and for orthopedic appliances. Both codes have been adopted in their entirety by the American Board for Certification as a guide for the Certified Prosthetist and Orthotist. The full text of the Codes may be obtained by application to the American Board for Certification Headquarters.

The following digest of the rules is printed for ready reference.

It is an unfair trade practice:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

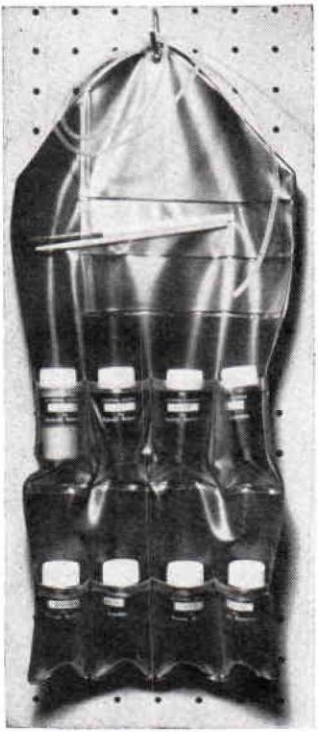
(18) To unduly exploit features of appliances less important than proper fit and alignment.

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

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

Further, the industry desires to be an active and cooperative factor in all progressive developments of improved techniques that will contribute to the welfare and comfort of all who wear its products.

Realastic

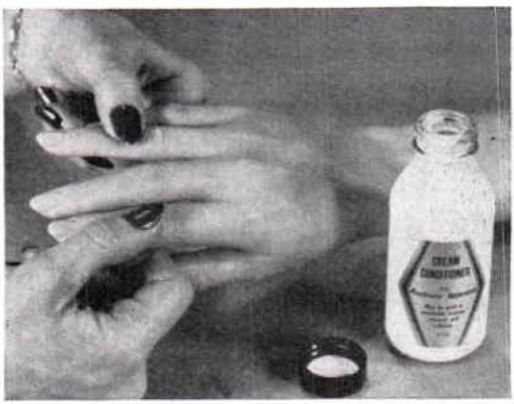


KOLORANT KIT — for toning and characterizing *Realastic* Restorations

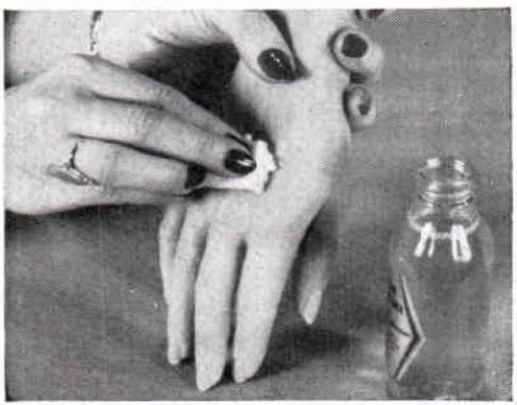
Sample Cleanser and New Booklet "Care of Your *Realastic* Restoration" sent with all cases

ACCESSORIES

For adding to the life and effectiveness of your prosthesis



CREAM CONDITIONER — for maintaining softness and texture of plastic



CLEANSER — for spot and stain removal immediately on occurrence

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"Looks REAL—It LASTS"
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