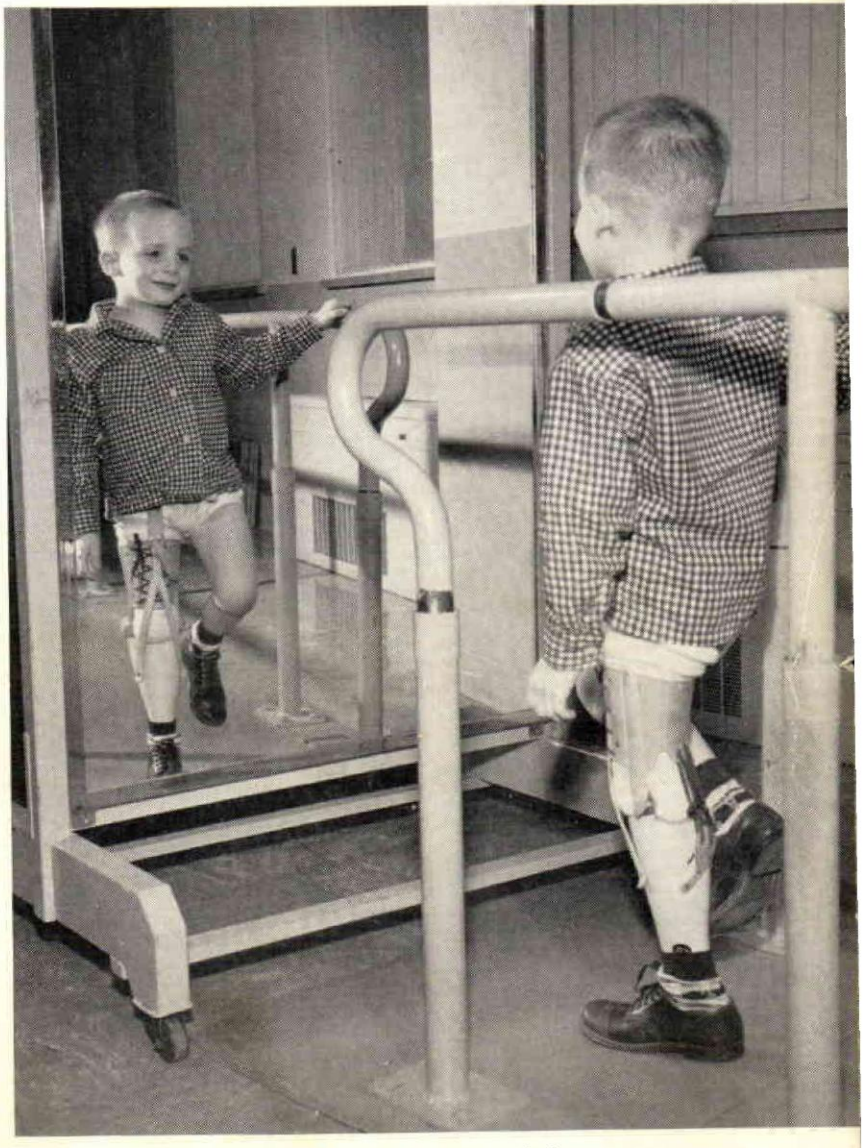
MARCH 1957

ORTHOPEDIC & PROSTHETIC APPLIANCE JOURNAL

The Journal of the Limb and Brace Profession

TRUNK CONTROL

CHECKOUT PROCEDURES



Michael learns to balance

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

DATES TO REMEMBER

1957

What • When • Where

APRIL

27	REGION VII—Meeting.	*Minneapolis, Minn. Radisson Hotel*

MAY

3-4	MOALMA—Technical Seminar	*New York City Hotel Biltmore*
3-4-5	PENNSYLVANIA ORTHOPEDIC AND PROSTHETIC SOCIETY—Meeting	*Philadelphia Broadwood Hotel*
18	REGION V—OALMA Meeting	*Cleveland, Ohio Cleveland Hotel*

JUNE

1	Applications to take the Certification Examinations given in September must be on file in the Washington, D. C. Certification Office by this date.	

JULY

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

SEPTEMBER

8-13	CONGRESS OF PHYSICAL MEDICINE AND REHABILITATION—AMERICAN ACADEMY OF PHYSICAL MEDICINE	*Los Angeles, Calif.*
28	CERTIFICATION EXAMINATION FOR ORTHOTISTS AND PROSTHETISTS	*Washington, D. C.*
29	NATIONAL ASSEMBLY OF THE LIMB AND BRACE PROFESSION—OALMA and Certification Meetings conclude October 2.	*Washington, D. C. Statler Hotel*

THE COVER PICTURE

The boy on the cover is young Michael Purtscher of Bradford, Illinois. He was four years old when the picture was taken at the Institute of Physical Medicine and Rehabilitation, Peoria, Illinois. He was then learning to balance on his prosthesis in the early part of his gait training. His parents report that "he gets along amazingly well and there isn't anything he doesn't do." Michael's prostheses have been made for him by the Certified Facility at Peoria, once owned by the Winkley Company and now operated by J. E. Hanger, Inc., of Missouri.

Orthopedic and Prosthetic

Appliance Journal

(Title registered U. U. Patent Office)

VOLUME 11 • MARCH, 1957 • NO. 1

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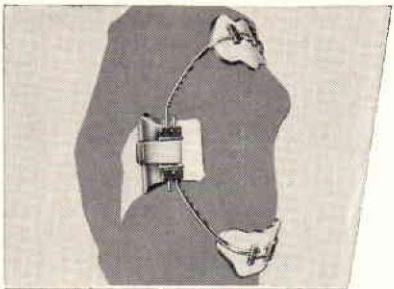
Subscription rate — $4.00 a year (subscription payment at the same rate is included in Certification fees and Association dues.)

CONTENTS

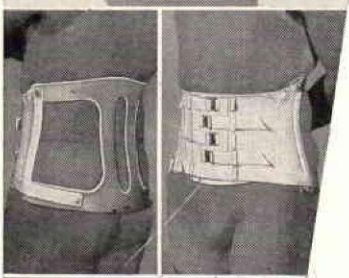
CAMP TRADE MARK braces

CAMP



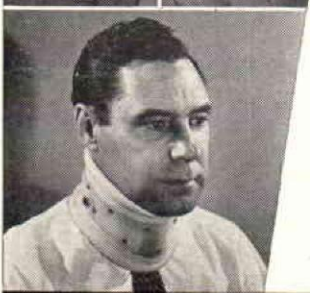
SPINAL HYPEREXTENSION BRACE

A new washable and odorless Camp brace for positive hyperextension in cases of compression fractures, osteoporosis with kyphosis, Marie-Struempell's disease and adolescent epiphysitis. Easily adjusted rotating pads at sternal and pubic areas to eliminate pressure edges.



CHAIR BACK BRACE

One of Camp's fine plastic appliances, the chair back brace is highly recommended for support of the lower lumbar spine as a limit to lateral and rotary motion. All sizes 12 inches high with top and bottom bands increasing with size increases, making it possible for you to stock only three basic sizes for complete service. Shaped by warming under infra-red lamp.

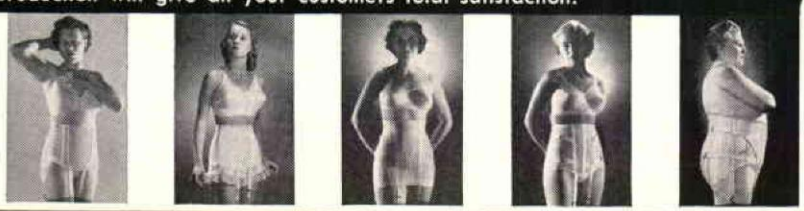


THOMAS PLASTIC COLLAR

A proven intermediate cervical support where prolonged, non-rigid hyperextension is indicated in treatment of cervical myo-radicular syndrome subluxation, arthritis and brachial plexus injuries. This plastic collar is made of non-toxic, washable supporting base, edged with Naugalite-covered foam rubber. Easy-to-use, simply adjusted, fitted with lock buckle and button clasp.

a complete CAMP stock . . .

Gives you flexibility in serving doctors in your area and their patients in every major support need. Camp's wide variety of supports, appliances and apparatus makes fitting patients to specific prescriptions a matter of routine. With representative models of all Camp products you can serve your medical market immediately. And Camp's high standards of scientific design and production will give all your customers total satisfaction.



MATERNITY SUPPORTS | GENERAL SUPPORTS FOR WOMEN

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.

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SIERRA "C" ELBOW THE STANDARD

Often copied, but never duplicated, the Sierra Model "C" Elbow offers several unique advantages to both the prosthetist and the amputee. No other elbow offers all these features:

1. SAFETY—The amount of pull needed to unlock the elbow rises rapidly with the load placed on the arm . . . involuntary motions are less likely to unlock the elbow.
2. EASY LOCKING—Only 1.8 pounds of cable pull are required to lock or unlock the elbow in any position.
3. POSITIVE LOCK—A hardened tool steel bar gives a sure, positive lock in the teeth of the gear sector.
4. SHORT LOCKING CABLE TRAVEL—A Sierra developed feature which results in far greater ease of operation.
5. METAL SADDLE—Gives a strong, dependable forearm connection.
6. PRECISE INITIAL FLEXION—Sierra's exclusive serrated elbow shaft permits easy, precise adjustment of initial forearm flexion to individual amputee's requirements, resulting in a more natural appearance.

Proven in over five years of continuous use, the Sierra Model "C" Elbow has hundreds of satisfied users who constitute our finest endorsement.

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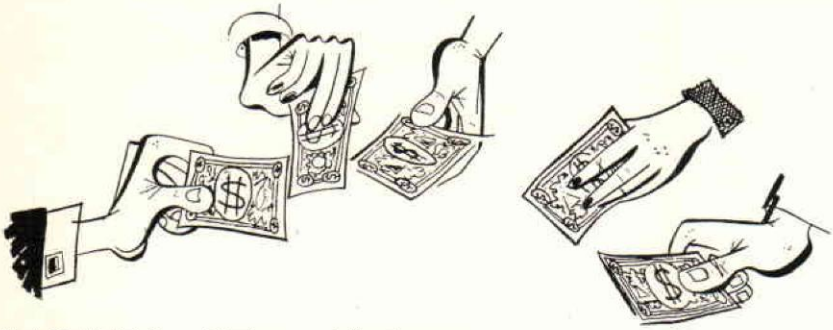

YOU'LL SELL MORE STUMP SOCKS

and your customers will save money

IF YOU FEATURE THE BEST . . .

Bessco SUPERIOR AMPUTEE STUMP SOCKS

Your customers will appreciate the completeness of the BESSCO Amputee Stump Sock line. It includes socks of 100% Virgin Natural Zephyr Wool, 100% Virgin Natural Cotton and 100% Virgin White DuPont Stretch or Staple Nylon and many other fabrics . . .

All are durable, soft and seamless . . . and are laboratory tested periodically to insure uniform top notch quality and perfect fit . . .

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Write immediately for full particulars . . .

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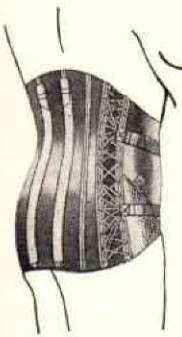
With Complete Confidence

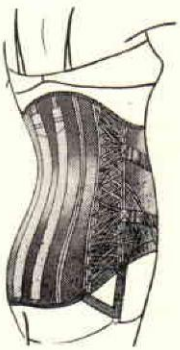
DOCTORS PRESCRIBE... DEALERS SELL

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. 812, 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_____

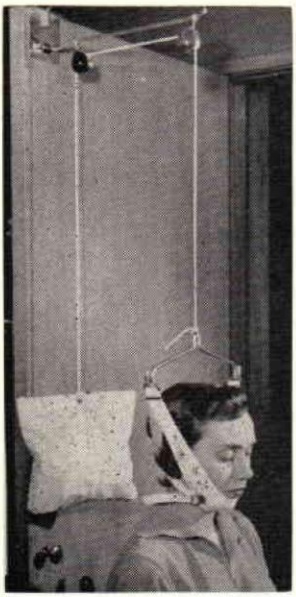
Address_____

City_____ State_____

TRU-EZE TRACTION SPECIALTIES

- **First and Finest in the field of Economical and Simple (over-door) Traction Equipment.**

- **FIRST** to OFFER the medical profession these SUPERIOR FEATURES for providing more EFFECTIVE traction therapy.



OD-5A

TRU-EZE (over-door) Traction Support with 12" Spreader Bar, Head Halter and Weight Bag.

- Scientifically controllable traction to the exact tension prescribed.

OTHER IMPORTANT ADVANTAGES . . .

- **Wide Spreader Bar to obviate pressure on the cheeks.**
- **Traction Sets complete in every detail, including simple instructions to the user, thereby saving YOU valuable time.**

OD-7

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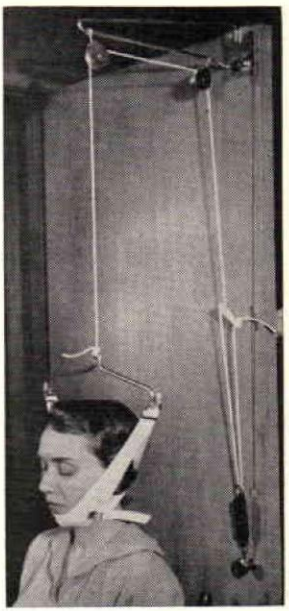
- Provides relaxed intermittent traction with a large amount of pull.

- The ONLY completely VERSATILE Vertical Cervical TRACTION UNIT available. Your choice for any exigency.

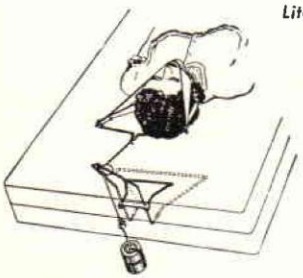


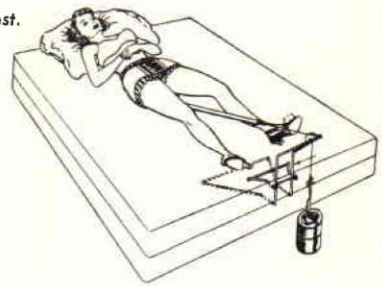
OD-6

TRU-EZE (over-door) Traction Support with Tension Gauge, 12" Spreader Bar and Head Halter.

- Excellent for travelers and as a substiute for expensive weights.

Literature & Catalog on Request.





Tru-Eze Mfg. Co., Inc.

436 BETHANY ROAD
BURBANK, CALIF.

Certified

The American Board for Certification announces that the individuals listed below have met the requirements of the Board as to experience and training. Each one successfully passed the comprehensive written, oral and practical tests given at San Francisco, California, on October 19 and 20, 1956. Their names will appear in the next "Registry of Certified Orthotists and Prosthetists."

CERTIFIED AS ORTHOTISTS

WALTER A. BENECKE, JR., Los Angeles, California
JACK E. CONRY, Hondo, California
WILLIAM D. FRIDDLE, JR., Greenville, South Carolina
MORRIS JACOBS, No. Hollywood, California
STEWART A. JOHNSTON, Oakland, California
MAX LERMAN, Los Angeles, California
G. KYLE LEWIS, Boise, Idaho
WILLIAM M. McDONALD, Oklahoma City, Oklahoma
JACK R. PAVA, Santa Barbara, California
GORDON G. PLORIN, St. Paul, Minnesota
VICTOR TOURLUK, San Diego, California
ALBERT WASILIEFF, Vancouver, Canada
RICHARD R. YOUNG, Whittier, California

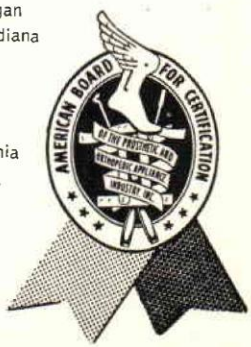
CERTIFIED AS PROSTHETISTS

JULIUS C. ALLISON, Leeds, Alabama
ALBERT E. CORFMAN, JR., Littleton, Colorado
CARL E. GUSTAVSON, Seattle, Washington
HARVEY D. JONES, Boise, Idaho
ROBERT NISSEN, Renton, Washington
J. A. PENTLAND, Vancouver, Canada
WILLIAM H. RICHARDSON, Indianapolis, Indiana
ALPHA O. ROGERS, Anchorage, Alaska
WALTER J. STOKOSA, Farmington, Michigan
VLADIMAR TOMANIVICH, Beech Grove, Indiana

CERTIFIED AS PROSTHETISTS

(Upper Extremity)

CHARLES W. CHILDS, San Jose, California
GEORGE S. GAGE, JR., Napa, California



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.

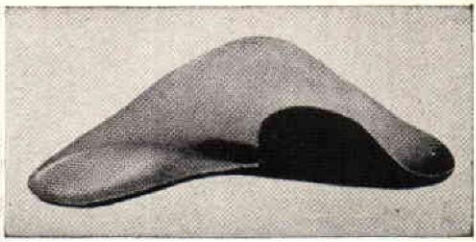
(19) To fail to recognize that the interest of the amputee and the handicapped is the first concern of this craft and therefore any failure to make available to all of its members and the general public any improved technique that may be used as to making, fitting, aligning or servicing of industry products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

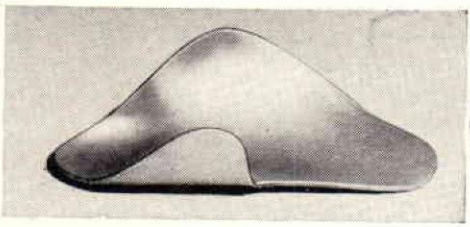
Style 600S (Schaeffer)

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 and 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.

'57 Assembly Theme—

"Education for Better Service to the Handicapped"

PLANNING THE 1957 ASSEMBLY

Our photographer catches Dr. Roy M. Hoover, OALMA President Hennessy and Dr. Robert Mazet discussing the 1957 Assembly with Program Chairman Gruman (note: the figure standing back of Mr. Hennessy is not Gruman's twin, but his image reflected in a hotel mirror—perhaps symbolic of his approach to the program "Ask, Listen and Plan.")

This year's National Assembly will offer a variety of technical seminars and management clinics for the limb and brace field. These are intended to exemplify the official theme of "Education for Better Service to America's handicapped millions."

Robert Gruman of Minneapolis, who has been named Program Chairman, reports that plans are well along for the sessions of this 1957 Assembly of the Limb and Brace Profession. The Assembly convenes on Sunday, September 29 in the Statler Hotel in Washington and continues through Wednesday, October 2.

This year's program theme of "Education" was selected at a planning conference held in Chicago January 29. The suggestions and requests were studied by a committee made up of OALMA President Charles Hennessy, Program Chairman Gruman, Exhibits Chairman Ralph Storrs and OALMA Assistant Director Lester Smith. Sitting in on the commitee session was Certification Board President Carlton Fillauer.

Results of a recent questionnaire survey of limb and brace firms will be most helpful to the Program Committee. Mr. Gruman reports that the sur-

vey shows a desire for sessions on such topics as:

1. *Orthopedic Appliance Techniques* including Brace Design and Balance; Bracing for the Arthritic and for the Hemiplegic and Paraplegic case; Scoliosis; Ambulation following Hip Dislocation; Cast Modifications; Hand Splinting; Pre-fabricated Parts; New Procedures in Welding, Newer Materials, etc.

2. *Prosthetic Appliance Techniques* including Problems of the Aged Amputee; the SACH Foot; New Developments in Upper Extremity Prosthetics; the Below Knee Suction Socket; Age and Peripheral Vascular Amputation; Shoulder Disarticulation; Correction of Alignment Faults, etc.

3. *Rehabilitation Problems* including Instruction Gait for the Amputee who has no access to a Training Center; Working Relations with the new Rehabilitation Centers; DVR Procurement Problems; Working with Foundations and Societies for the Handicapped; Clinic Procedures, etc.

4. *Professional Problems* including Ethical Conduct in the Clinic; Handling Amputee Subjects; Patient "Follow-Up"; The Unethical-Uncertified "Shoe-String" Establishment and its Salesmen.

5. *Management Problems* including Remodeling vs. Building a New Facility; Personnel-Incentive Plans; Record Systems; The Cost of Doing Business; Bank Loans and Credit Problems.

1. **What:** The annual scientific and technical convention of the Limb and Brace Profession.
2. **When:** September 29-30; October 1 and 2.
3. **Where:** The Statler Hotel, 16th and K Sts., N. W., Washington, D. C.
4. **Exhibits:** To be housed in the Hotel's famous Congressional Room; showing the latest in Supplies, Techniques, Research, and Services.
5. **Features:** Instructional Courses; Management Clinics, Technical Sessions; Certification Examinations.

The Program Committee and its Chairman will fit as many as possible of these subjects into the four-day session. In addition to formal sessions, round-tables, and instructional courses, the final schedule will allow time for conferences with suppliers; visits to the Scientific and Technical Exhibits, and "Shirt-sleeve get-togethers" with old friends and trusted experts of the prosthetic-orthopedic field.

Washington Features

The Program will take full advantage of Washington's unique features as the capital city. Among the resources in talent and personnel to be drawn on are those of (1) The Department of Health, Education and Welfare; (2) The Veterans' Administration including the Rehabilitation Service; the Prosthetic and Sensory Aids Service and the Service Contracts Office. (*Note*—The Hotel Statler Assembly headquarters is only a block away from the VA building housing such authorities as Mrs. Adenia Stearn, Dr. Robert E. Stewart, William Talley, Joseph Pitrone, Joseph Ufheil.)

Tours of the Army Prosthetic Research Laboratory and the Orthopedic Clinic of Walter Reed Hospital are under consideration.

ASSEMBLY EXHIBITS ENLARGED. STORRS REVEALS PLANS FOR SCIENTIFIC AND TECHNICAL DISPLAY AREA

Going over plans for the Assembly Exhibits. Lester Smith, Assistant OALMA Director and Ralph Storrs (right), discuss exhibit plans with Richard Bidwell.

The largest exhibit facilities in the history of OALMA National Assemblies has been arranged for the 1957 session at the Hotel Statler according to an announcement from Ralph Storrs, Exhibits Chairman. Mr. Storrs, Manager of the Pope Brace Division of the Paramount Textile Machinery Company, will serve as Vice Chairman of the Program Committee, in addition to his duties as Exhibit executive for the Assembly.

Mr. Storrs reports that his Committee has made arrangements for a total of 39 booths in the Statler's Congressional Room and entrance passage. These booths are directly in the line of passage through the Congressional Room and to the Presidential Ballroom of the Statler, one of America's famous convention rooms and scene of the Assembly sessions.

Mr. Storrs anounces two innovations which add greatly to the desirability of the exhibit space:

1. *A variety of booths* has been arranged to meet the needs of both small and large exhibitors. While a majority of the booths have a ten foot frontage as in past years, several eight-foot front booths and one twelve-foot front booth have been arranged for suppliers whose display requires more or less space than the average.

2. *The OALMA Ladies' Lounge* this year will be placed inside the Congressional Room. This will utilize any booths which are not taken and will at the same time make a convenient rendezvous for husband and wife attending the convention.

Chairman Storrs reports that at his request OALMA President Hennessy has appointed the following Exhibits Committee:

Region I. John F. Buckley of Providence, R. I.; Region II. Arthur Pomeroy of New York City; Region III. Ernest Warnick of Wilkes-Barre, Pa.; Region IV. Moody Smitherman of Birmingham, Ala.; Region V. D. R. Coon of Detroit, Mich.; Region VI. T. M. Davidson of Indianapolis, Ind.; Region VII. Bruce Scott of Denver, Colo.; Region VIII. Richard H. Terry of Houston, Tex.; Region IX. Jack Vollmer of Los Angeles, Calif.; Region X. Harold Lloyd of Reno, Nev.; Region XI. Vernon Allen of Spokane, Wash.

Members of this Committee will have two functions: (1) to serve as information bureaus so that firms in their Regions can obtain information about available booths, and (2) to see that traffic arrangements for the National Assembly exhibits run smoothly.

University Conducts Economic Surveys

OALMA Arranges New Service for Limb and Brace Field

The lack of adequate cost-accounting figures has long been a handicap to the development of orthopedic appliance and limb manufacturing firms. Almost every observer who has studied this field reports that the many establishments performing good service, do not fully realize all their costs of operation. To meet these needs, American University's School of Business Administration has been selected to conduct periodic studies on the *cost of doing business* in the artificial limb and brace field.

This service is being sponsored by the Orthopedic Appliance and Limb Manufacturers Association for its members. However, the study is to be done by accounting specialists of American University independently of OALMA Headquarters. All reports of operation are being sent directly to American University, where the identity of the firms supplying the figures will be kept confidential.

A preliminary survey of a few firms for the year 1955 has been made. A more complete study of the operations for the calendar year 1956 is now in progress. The 1956 study as well as the report for the year 1955, is being made by these faculty members of American University: Melvin E. Lewis, William C. Pennington and Harry Rosenthal. These men are certified public accountants and members of the faculty of the School of Business Administration.

Artificial limb and brace firms interested in comparing their operating results with those of other averages of firms throughout the United States may secure information by writing to OALMA National Headquarters, 411 Associations Building, Washington 6, D. C. (Of course, detailed reports are sent to member firms which participate.) In every case, once the firms are enrolled, the enrollment forms and the reports of operations are mailed directly to American University. Individual reports are never seen by anyone other than the University's operating staff.

The American University established the first School of Business Administration in the Nation's Capital on April 22, 1955. The School, a full fledged professional School of Business, has almost 1,000 students enrolled in its graduate and undergradute programs. The degrees offered by the School are Associate in Business Administration, Bachelor of Science in Business Administration, Master of Business Administration, and Ph.D. in Business Administration.

The School of Business Administration works closely with the business community in many educational and research areas.

The American University was chartered by Congress in 1893. It is a private institution, receiving no financial support from the government. The University is accredited by the Middle States Association of Colleges and Secondary Schools. Its Uptown Campus at Massachusetts and Nebraska Avenues occupies 75 acres on the highest hilltop in the Nation's Capital. Its Downtown Center is midway between the White House and the Department of State, close to the heart of the Washington business community.

Trunk Control by the Use of Corsets, Girdles or Belts

By CHARLES L. LOWMAN, M.D., Los Angeles

There are three main therapeutic reasons for the use of corsets in orthopedic practice:

1) Support for relief of pain or soreness;
2) Limitation of motion or partial immobilization;
3) Control of faulty posture by preventing the assumption of poor segmental position from fatigue.

1. Pain in the sacrospinal or cervicodorsal areas may be relieved or ameliorated by support of muscles held tense to discouage motions called muscle spasm, that would aggravate a joint or soft tissue lesion. Such spasm is nature's red flag to warn of the need for rest or favor of the sore place. The character and location of the pain may require only bed rest or the discontinuance of activities that provoke pain and spasm. Fixed immobilization by means of a cast or rigid brace may also be needed until the severity of the symptoms can be brought under control. After this, the patient usually cannot be allowed to be completely mobile and a full length, medium or low corset is indicated.

2. When motion of a certain kind or degree causes pain, a corset with or without reinforcement may be of use by restricting back motion to an allowable degree until physical therapy treatment and prescribed exercises can control recurrent symptoms.

3. To maintain correct body balance and prevent relapse to former bad postural habits as well as to relieve so-called postural strain, a corset made to a corrected position of the body and not fitted to the body's habitual incorrect shape, aids in obtaining neuromuscular registration of the new corrected position. It is an arbitrary control, along with treatments and exercises, aimed to stretch tight muscles and ligaments and slacken stretched out opponents. Then, as balance between the antagonistic groups is restored and a relapse to former bad positions is controlled, the patient becomes more comfortable. He says, "I've become used to this harness and it doesn't annoy me any more." This indicates that the sensory registration of muscle states and joint positions has become balanced.

When the postural exercises have obtained balance control of the new or corrected position, the corset is no longer needed but may be used occasionally for heavy work, long standing, on motor trips, etc.

A regular body brace and a corset are used for much the same needs. But requirements differ in the character and degree of the symptoms and the sex and age of the patient. Women are usually horrified at the idea of wearing a brace, even though the surgeon feels that she should have rigid immobilization. The fact that a brace is difficult to cover up by her clothing may make it unacceptable to her. The most tactful solution to the problem is for the surgeon to say nothing about a brace but instead, recommend a surgical corset. In this corset he may put heavy steels in the back and also add side steels of a double T type. The steels are covered with webbing and sewn to the corset.

Phone DUnkirk 7-4211 Appointment Necessary

Edith M.
HILLMAN
Evelyn M.

2713 West 6th Street
(at Rampart)
Los Angeles 57, California

Date_____, 195___

Prescription for_____

By Dr._____

TYPE: Posture_____Surgical _____ Maternity_____Kidney_____

BACK: High_____Medium _____ Low _____

FRONT: High_____ Medium_____Low_____

STEELS: (Molded) Top_____Bottom_____Middle _____

Guage: 14_____16 _____ 18_____ 20_____

Regular_____Wide_____(Over Scapulae) Right_____ Left_____

SHOULDER CONTROL: Narrow_____ Medium_____Wide_____

SKIRT: Regular_____ Short _____

PELVIS: Regular_____ Fenestrated_____

PADS: Abd._____Sacral_____Kidney_____Hernia_____Sit-Pad_____

LACING: Front_____ Back _____Maternity (2-lace)_____

INNER BELT_____ CINCH STRAP_____

GIRDLE TYPE BELT: 6"___8"____10"_____12"_____high.

Sacral Pad_____ Abdominal Pad_____

Lowman Type_____ Side Buckles _____

BELT: Solid front with side buckles_____

SACRO-ILLIAC BELT: (stock) _____

BRASSIERE BACK: Regular_____ Medium _____ Full _____

STRAPS: Straight_____Crossed _____ Narrow_____ Wide _____

Shoulder control _____

REMARKS:_____

_____

_____

_____

TYPICAL PRESCRIPTION BLANK

Dr. Lowman received his degree from the School of Medicine, of the University of Southern California in 1907 and began the practice of medicine that year. He was the founder of the Orthopedic Hospital in Los Angeles, was elected to the American Orthopedic Association in 1921 and is at present Vice President of this Association. In 1934 he was elected to the American Academy of Orthopaedic Surgeons. Dr. Lowman is now Director of the School of Physical Therapy at the University of Southern California. He is Emeritus Chief of Staff of the Orthopedic Hospital and a consultant in education and rehabilitation of the Orthopedic Hospital. Long active on the staff of the Orthopedic Hospital in Los Angeles, he has contributed to the professional growth and training of a generation of California orthotists and prosthetists.

Charles LeRoy Lowman, M.D.

If it is necessary to control scapulae and shoulders, the back steels for the high type corset should be set 5 inches apart instead of the usual 3 inches. This allows the upper end of the steels to be bent enough to lie flat on the scapula without rubbing on the prominent inferior vertebral border.

To obtain adequate control and prevent a forward drag of the head that would make the upper end of the corset protrude under the dress, it is necessary to use shoulder straps or a solid back bra. The former are to be recommended for young girls and flat chested women with poorly developed breasts. These straps should be from one inch to two inches wide; there should be a central section of good elastic on either end of which two sections of tubular stockinette or wide lamp wicking are placed for the axillary area and from in front of the shoulders across the back and down to buckles in front. These are passed horizontally through carriers behind, carried forward and up over the shoulder crossing. They are passed again through the loop or keeper on the opposite side and thence down obliquely to the buckle just above, and two inches in from the anterior spine of the ilia.

On the bottom of the corset, just below the level of the anterior spines, a cinch strap 2 inches wide of non-elastic webbing may be passed through carrier loops and buckled in front. This should be independent of the corset, so that it can be tightened to compress the pelvis laterally without making the rest of the body of the corset uncomfortably tight.

It may be desirable to make a complete metal pelvic ring to take the place of the cinch strap and pass it over the back uprights to which it may be fastened by snaps on loops of webbing. In principle a back brace has been made but, since no metal is exposed and it has been called a surgical

corset, the woman's objections will have been overcome. Later, as a patient improves, the corset can be divested gradually of the reinforcements and made into a regular corset.

Such a corset can easily be converted into a maternity corset. This is done by placing a row of eyelets or hooks from just in front of the anterior spines up to the top of the corset. It is then fastened with three laces, placed about 6 inches apart. The bottom one pulls up tight to grip the pelvis, the next has less tension, as does the top one, as the abdomen enlarges. Shoulder straps or bra control the upper back and shoulders. Thus, the weight of the heavy abdomen is carried by the upper spine and trunk and not in the lumbar area as many maternity corsets place it.

In cases where shoulder girdle control is not needed, the medium height corset is effective. Its upper edge should lie just below the lowest point reached by the tips of the scapulae, so that when the shoulders are held back the lower scapular angle will not impinge. Since this is high enough to bridge over the lumbar area, the lumbo-dorsal junction as well as the sacrolumbar are controlled. It is not sufficiently appreciated that these areas are where the greatest postural stress exists because they are the points where a stiff section of the column joins a movable one. These levels correspond to the location of the solar sympathetic plexus above, and the sacrolumbar or sciatic plexus below. This accounts for the radiation or reflex pains in abdominal intercostal and loin area and those in the legs which so commonly accompany back pain.

This medium height corset, with 16 gauge steels and a pelvic cinch strap, is the equivalent of a short back brace of the chair back type, i.e. a Williams or a modified Taylor brace.

A short, waist high corset is seldom indicated unless there is no lordosis or actually a flat lumbar area. Then it can be used for more localized sacroiliac symptoms as differentiated from sacrolumbar. Such a corset is also useful for part time wear in the convalescent stage for a woman to use for special occasions.

It may be of interest to observe that the use of the so-called sacroiliac belt so commonly used by insurance doctors and surgical supply houses is of questionable value. Since most cases are sacrolumbar in character, they should have the support to the entire lumbar area which can be accomplished only by the bridging support mentioned above. This will require a girdle with a 9 or 10 inch height at the back, with steels of sufficient stiffness to maintain the proper curve into which they may be bent. Consequently the surgical girdle for a man is the equivalent of the medium or medium-short corset described above for women.

Regarding shoulder straps used in connection with corsets or braces, lifting the arms tends to pull up the apparatus, so counter control such as peroneal straps or garter straps should be prescribed. However, when a prominent or pendulous abdomen exists, these may not be necessary.

As to fastenings, there are many opinions and preferences in regard to fixation. Some use front-laced corsets, some back-laced. We prefer the latter when possible since we wish to have the pull toward the spine and not away from it. However, in cases of arthritis or paralysis with hand involvement, the patient may not be able to reach to the back or be strong enough to pull the lacings. In these cases, a front fixation of flat hooks and slide buckles is useful on the side opposite to the best hand.

The length of the skirt can best be left to the patient and the corsetiere. For children and young girls a short type corset without a skirt is sufficient to maintain proper spinal alignment in the anterior posterior plane. It may be held down with leg straps, and to be more positive and to save a mother's time, front fixation with strap and buckle is advisable.

Some accessories such as pads should also be judiciously used as they can be both helpful and comforting. Hernia pads should be placed where indicated by the patient's medical advisor or surgeon, who should also prescribe shape, size, and thickness. The urologist may order a kidney pad placed over one side of the abdomen and attached to the corset. When the corset is put on in the lying position it will depress the abdominal wall and make a shelf support for a floating kidney.

The orthopedic surgeon may prescribe a sacral pad ¾ of an inch thick, 6 inches long, 4½ to 5 inches wide at the top, and 2 inches at the bottom. This will about fit the rhomboid of Michaelis, which is the depression over the sacrolumbar area and between the posterior superior spines of the ilia. This pad should be stitched to one side of the corset, just outside the lacing space in the back-laced type corset, or fixed directly in the solid back type. In either case it makes pressure against the too soft tissues of the area when sitting or lying, and has the effect of a compression pump which helps to deplete congestion and often is a great comfort.

Thin protective pads placed over bony scapulae, or on either side of the spine when posterior spinous processes are so prominent as to be irritated from pressure, are also indicated. Surgeons are not always careful as to where they place pelvic incisions. Often, if they have not taken into consideration the pressure areas from corset or brace, they will find the patient much harassed by pressure over the scars. Over the iliac area the skin incision should be above, and not on or below the crest. Otherwise, the skirt or pelvic band will cause pressure.

CONCLUSIONS

Surgical corsets are important for relief of pain, limitation of undesirable motion and improvement of posture. They bridge the sacrolumbar area and give support to the entire lumbar area. They will be accepted by women who would refuse a body brace. High, medium and short corsets supply varied needs. Lacings, fixation and length of skirt should be suited to the individual cases. Suitable placement of pads in corset contribute to patient's comfort. Care should always be taken that the corset does not press on a scar.

SNELL COMPANY EXPANDS

This is the twentieth anniversary of *Snell's Artificial Limb Co.* in Nashville, Tennessee. The opening of a new Snell Company facility in Louisville, Kentucky this year is a sign of continued growth and efficiency of the firm. The new branch, located at *Madison and Brook Streets in Louisville*, is managed by E. W. Powell, R.P.T.

Snell's now maintains facilities in ten cities. In addition to Louisville, the branches include: Memphis, Tennessee; Nashville, Tennessee; Johnson City, Tennessee; Little Rock, Arkansas; and these five in Louisiana: Shreveport, Baton Rouge, Monroe, Alexandria, and Lake Charles.

The Role of the VA Prosthetic Representative In VA Outpatient Clinics

By WILFRED G. HOLSBERG, Area Chief, Prosthetic and Sensory Aids Service, Boston Medical Area

Editor's Note: This is the third in a series of articles describing the work of the Veterans Administration for disabled veterans. Previous articles include (1) We Buy Hope for Veterans; The Work of the Service Contracts Section, Mrs. Adenia Stearn, June 1955, 19-22; and (2) The Prosthetic and Sensory Aids Service of the Veterans Administration, William Talley, Sept. 1956, 63-75.—We are indebted to the Medical Illustrations Staff of the VA Hospital, West Roxbury, Mass., for the pictures on pages 29 to 34.

There are many unsung heroes in this world, men quietly performing big jobs with hardly any fanfare and seldom any recognition beyond the grateful appreciation of the person who has been served. The sentiments of a group of these men, the Veterans Administration Prosthetic Representatives, could perhaps be best expressed in the following way:

"While we were in the uniforms of the various armed forces, public recognition was the order of the day, and we did our best to defend the freedoms that mean so much. For us, however, the end of the conflict did not mean the end of our efforts; we merely traded our Army, Navy and Marine Corps uniforms for the traditional "Gray Flannel Suit," and instead of destroying we began to rebuild. True, the public recognition was gratifying, but it has now been replaced by a peaceful inner satisfaction that comes from helping to alleviate, by assistance and example, the suffering of the handicapped and the disabled veteran."

Mr. William H. Talley, Chief, Plans and Policies Division, in his excellent article which appeared in the *September, 1956, Orthopedic and Prosthetic Appliance Journal*, (pages 63-75), explained the over-all Prosthetic and Sensory Aids Service Program. One of the many aspects, the role of the Prosthetic Representative—the man who works with the men—will now be discussed, with the hope that members of the Orthopedic and Prosthetic Appliance Industry may thus more fully understand the functional responsibilities of these VA employees who, among other duties, in fancy governmental language, "serve as liaison between the Veterans Administration and the contractors."

Since the principal obligation of the Prosthetic Representative is directed toward the veteran who has been injured or incapacitated as the result of his military service, the Prosthetic Representative must be thoroughly familiar with each and all of the hundreds of various orthopedic and prosthetic appliances, cosmetic restorations, sensory aids, and medical accessories. In short, he is generally the only man in his local organization with information about everything Prosthetic. In this capacity the Prosthetic Representative provides the staff physicians, as a group, and the prescribing physicians individually, with technical and administrative advice on all matters relating to these devices. Any spare time is spent reviewing literature and material concerning new devices, research and development, and other phases of this

THE AUTHOR

Wilfred G. "Bill" Holsberg graduated from Wentworth Institute, Boston, Mass., in 1939 and worked for the B. F. Sturtevant Co. as a machinist assembler in the steam turbine department before becoming an Aviation Cadet. He served with the Army Air Force from April, 1942, and as the Navigator of a B-17 type aircraft flying out of Foggia, Italy, he was wounded in March of 1944 during an attack on the Submarine Base at Toulon, France. Both lower legs were immediately amputated. After eight months of hospitalization, during which time he was fitted with and trained in the use of artificial limbs, Mr. Holsberg returned to active duty as the Air Force Liaison Officer at Walter Reed Hospital until his retirement for disability, as a Captain, in December of 1945.

Mr. Holsberg immediately went to work for the Veterans Administration Regional Office, Boston, as a Contact Representative. When the Prosthetic and Sensory Aids Service was established, he became one of the first Prosthetic Representatives. He served in this capacity until February of 1952, when he became an Area Chief.

"Bill" is presently living in Waban, Mass., a suburb of Boston, in a "specially adapted" house, with his wife and three daughters. His engineering and mechanical background serve him in good stead, both on the job and with his hobbies which include a complete woodworking and metal working shop.

vast relatively unexplored program. For example, changes in the hearing aid field alone have been so tremendous and fast, ranging from the large battery packs and vacuum tubes to the current miniature transistors, that even the electrical engineers have become a little confused.

All veterans who request devices of any type are routinely referred to the Prosthetic Representative and it is his function to counsel the veteran regarding the prosthetic services to which he is entitled. This counsel includes a discussion of the various types and designs of items available for the veteran's particular disability, the sources from which they may be obtained, the method of procurement, the maintenance and repair program, and the replacement policy. When a veteran's need has been determined and the physician, with the technical advice of the Prosthetic Representative where indicated, has prescribed the appliance, the necessary forms for the procurement of the device are then processed by the Prosthetic Representative. He also maintains the necessary records to expedite the manufacture and delivery, inspects or arranges for a medical inspection of the delivered appliance, and in some instances trains or assists the veteran in learning to use or wear his limb or brace.

In working with and advising these handicapped individuals, a thorough knowledge of the conditions under which they live and work must be obtained before advice is given. This better assures that the proper result will be attained so far as rehabilitating these disabled veterans is concerned. Considerable patience and understanding must be exercised in each individual case, almost bordering on the field of Social Service.

The Prosthetic Representative, through mail, telephone or personal contacts, advises the veteran, the veteran's family, service organizations, or

"ORTHOPEDIC AND PROSTHETIC APPLIANCES CLINIC TEAM," VA OUTPATIENT CLINIC, BOSTON, MASS.

Standing in the rear, left to right: Mrs. Mary Ryan, Physical Therapist; Miss Hazel Grigsby, Chief Physical Therapist. Right foreground, rear to front: Dr. Edward Harding, Staff Orthopedist and Assistant Clinic Chief; Mr. Jack Miller, Prosthetic Representative; Mr. Wilfred G. Holsberg, Area Chief, Prosthetic and Sensory Aids Service. Second row, seated, Prosthetists, left to right: Marion Kessler, J. E. Hanger Co.; George Frees, C. A. Frees Co.; and Ted Williams, Anthony and Williams Co. First row, seated, Prosthetists: Joseph Martino, United Limb and Brace Co.; Howard Mooney, Boston Artificial Limb Co.; and Victor Robillard, Massachusetts Limb and Brace Co. Dr. Eugene E. Record, Chief of the O. and P. A. Clinic Team, and Orthopedic Consultant to the VA stands at the extreme right holding the prosthesis under discussion.

other interested persons regarding the services and benefits to which the veteran may be entitled under the various Acts of Congress. If and when the problem involves other programs such as Adjudication, Vocational Rehabilitation and Education, Loan Guaranty, or Insurance, arrangements and appointments are made to afford the veteran and his family the least inconvenience and hardship in his relationship with the VA. Mail in the office of the Prosthetic Representative consumes a tremendous amount of time since it must all be personally answered, and the telephone in these busy offices never seems to stop ringing. The caseload of veterans that the Prosthetic Representative is called upon to serve is constantly increasing. Spanish American War Veterans have been declared service-connected for all of their outpatient clinic needs, including prosthetic devices and sensory aids. Many World War I veterans, who formerly had minor service-connected disabilities, now require supportive and assistive devices due to their advancing years. The World War II and Korean veterans have not yet stabilized as to their needs, and thanks to the advancement of medical science many patients who, in years gone by, would have been lost to their loved ones, through modern medicine, surgery, and advanced therapeutic procedures recently developed, or through greatly improved orthopedic and prosthetic appliances, now are living to a full productive old age.

The Prosthetic Representative is called upon to visit the homes of severely disabled veterans who are not physically able to travel. He talks with the patient and the attendants in order to determine what they may need in the way of medical accessories, appliances or aids, and then consults with the physicians for approval of the recommendations which he has made. In short, if there is a problem, question or fact relating to the Prosthetic and

"THE RECORD IS FIRST EXAMINED"

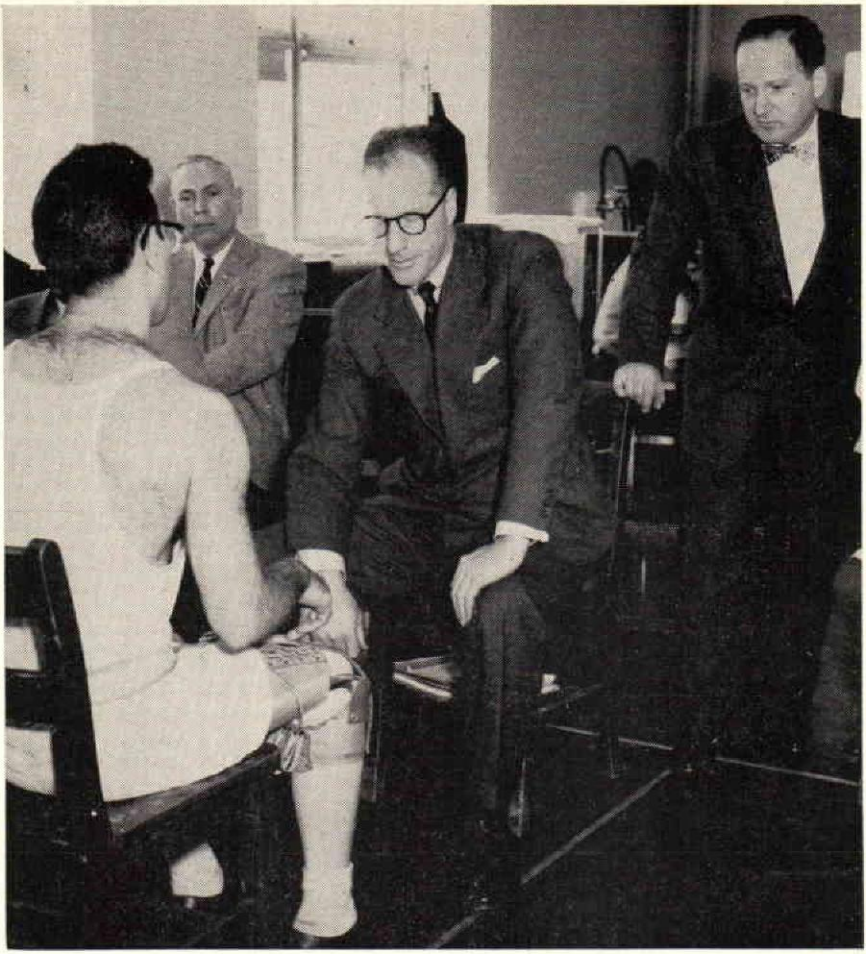
Clinic Team in session. Rear row, left to right: Howard V. Mooney, C.P.; Dr. Edward Harding, Asst. Clinic Chief; Victor N. Robillard, C.P. Front row, left to right: Noel Dube, Veteran and Dr. Eugene E. Record, Clinic Chief.

Sensory Aids Service Program, the Outpatient Clinic Directors and the Chief Medical Officers have learned that the Prosthetic Representative is the man who is prepared and fully capable of taking charge.

It is interesting to note that Prosthetic Representatives are frequently asked to visit or to talk to disabled non-veterans, so that the wealth of their knowledge and experience can be shared. This service is cheerfully rendered, since most of the amputee Prosthetic Representatives can remember when they were first visited and counseled by a person who had successfully overcome his own similar disability.

One of the most interesting and productive responsibilities of the Prosthetic Representative is his assignment as Coordinator and Technical Assistant to the Orthopedic and Prosthetic Appliances Clinic Team at some of the larger offices. Not only does the Prosthetic Representative plan, organize and supervise the administrative functions to relieve the orthopedic consultant of this detail, he is also responsible for adequate records and information pertaining to the case history of each veteran who is scheduled to appear before the Clinic Team. The narrative report which is prepared to explain the purpose of the veteran's appearance at the Clinic and the follow-up procedures after the Clinic's recommendation have been made, are included in the Prosthetic Representatives' duties.

On the technical side he keeps the Orthopedic Consultant and the mem-



"THE VETERAN HAS HIS CHANCE TO EXPLAIN"

Left to right: Ted Williams, Prosthetist; Dr. Eugene E. Record, Clinic Chief; Jack Miller, Prosthetic Representative.

bers of the clinic team advised of any new developments and progress made by the Research Program and with the other members he actively participates in the field testing of new items and components. He keeps the members of the team current with regard to the commercial contracts, he discusses the various limb and brace prefabricated component parts, emphasizing their merits or deficiencies, suggesting cases where their use may or may not be indicated, and based on his own experience as a seriously disabled veteran, he serves as technical consultant and demonstrator on cases similar to his own, and in some instances he provides training.

The Prosthetic Representative is responsible for the scheduling of the appointment together with arranging the other administrative details involving travel, lodgings and meals. The clerical portion of the clinic session must also be provided for in order to insure that the case history and recommendations are properly documented.

"GROUP DISCUSSION IS VITAL"

Left to right: Alfred Babeau, Veteran; Jack Miller, Prosthetic Representative; Dr. Eugene E. Record, Clinic Chief; Joseph Martino, Marion Kessler (rear), Howard Mooney, Victor Robillard, George Frees, Ted Williams, Prosthetists.

Many offices where Orthopedic and Prosthetic Appliance Clinic Teams have not been established by Central Office directive, are setting up their own informal clinic teams in order to provide comparable service on a limited basis. In these cases the Prosthetic Representative is not only the instigator, he is also the coordinator and technical advisor as described above. The Staff Orthopedist usually serves as the Clinic Chief and it has been noted that in these informal clinics the Prosthetic Representative's invaluable technical information is in constant demand.

In the course of the Prosthetic Representatives' busy day one would hardly think that there could be time for other activities such as program planning, for integrating the Prosthetic and Sensory Aids activities into the overall Outpatient Clinic Program; budget control, in order to live within the funds allocated to the Prosthetic and Sensory Aids Unit; reports and statistics preparation, for the local station and the Central Office statistics program; liaison within the VA, between other outpatient clinics and hospitals; and last but not least, liaison with commercial vendors.

It is in this latter direction that the Prosthetic Representative renders some of the most useful service. Some of the VA contract formats can be difficult to understand and commercial manufacturers can always find a sympathetic ear for the discussion of problems with the VA whether it be financial, contractual, or just the case of trying to satisfy a difficult veteran.

An administrative question is answered. Left to right: Jack Miller, Prosthetic Representative Prosthetists Howard Mooney, Joseph Martino, Victor Robillard and Wilfred G. Holsberg, Area Chief. Seated at rear: Prosthetists Marion Kessler and Ted Williams.

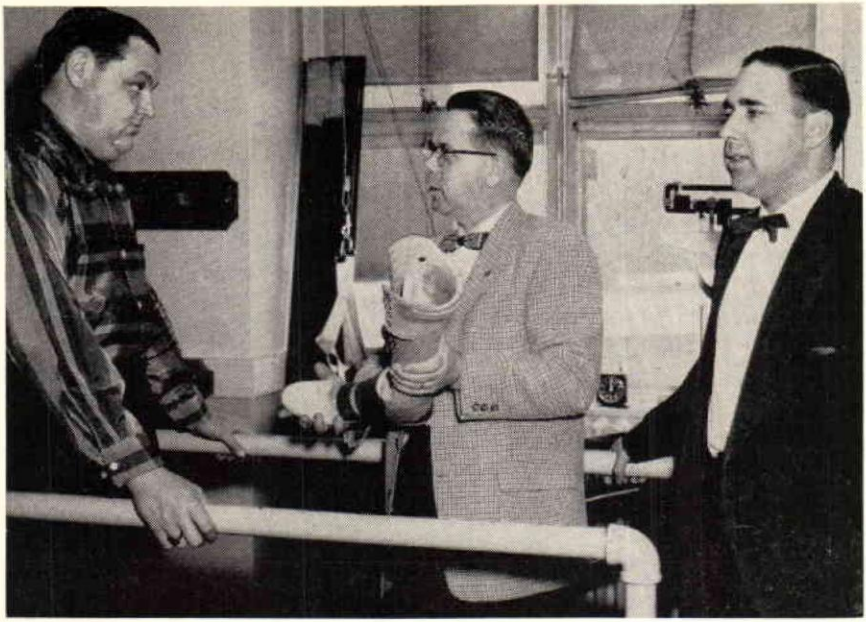
Since the Prosthetic Representative controls the Prosthetic Service Card Invoice Program before payment is finally made, he is required to judiciously inquire of the manufacturers as to questionable repair charges, and to assist the manufacturer in the preparation of his invoices. The public relations aspects of this type of program is such that relations between the VA and manufacturer must be top level in order to insure the continued success of a federal program which allows certain service-connected veterans to obtain their own repairs, whenever required, with the VA paying the bills.

The best example of the sound, business-like and cordial relationship that exists between the Orthopedic and Prosthetic Appliances Manufacturers and the Prosthetic Representatives, is the lack of resentment on the part of the manufacturer when the Prosthetic Representative is called upon, as he is on an annual basis, to rate the artificial limb shops, with quality and service as the basic criteria. These ratings are very important factors in considering the continuation of the artificial limb contracts, which are negotiated by Supply Service Personnel in the VA Central Office.

The Prosthetic Representative participates in local contract negotiations for such items as braces, surgical appliances, orthopedic shoes, and similar items, and as a representative of the Chief Medical Officer he makes recommendations resulting from past experience and personal observation.

It is through the Prosthetic Representative that the commercial contractor can best maintain an excellent relationship with both the veteran and the Veterans Administration.

Among the other specialized programs with which the Prosthetic Representative is actively associated are the VA and Contract Audiology Clinics wherein most hearing aids are tested, fitted and delivered to the veteran; VA Orthopedic Shops; VA Plastic Eye and Restorations Clinics, where plastic eyes are individually painted to match the patient's good eye; and the VA Prosthetics Center, which is physically located in New York, and which contains the Limb and Brace Section, the Orthopedic Shoe Section



Left to right: The Veteran hears an explanation of a technical point by Prosthetist Howard Mooney. Area Chief Holsberg is at the right.

and the Testing and Development Laboratory. Since the Prosthetic Representative's function is to provide the veteran with various devices, either as recommended by the physician in the case of fitted devices, or on his own initiative, as in the non-fitted devices, his relationship with the above sources are self-explanatory. However, these various activities require specialized processing and handling, which adds to the information and know-how that each Prosthetic Representative is required to have.

Having read this far you may well wonder how in the world one person, in one short lifetime, could become well informed on so many different subjects. When all of the various types of devices are analyzed you can see that they start beneath the soles of the feet, in the form of arch supports, and continue up through the body to the top of head in the form of a restoration, or to use the common phrase, a wig. There are hundreds of other devices in between, all of which have specialized functions, materials, methods of attachments, repairs, replacements, etc. The ileostomy and colostomy sets, used in conjunction with rectal and abdominal surgery, are prime examples of the variations possible, and when these items are followed by a discussion of implants, magnetic or otherwise, for enucleated eyes, or skull plates, or cosmetic ears and facial restorations in radical surgical cases, then the more common items such as limbs, braces, elastic stockings, trusses, corsets, belts, crutches, canes, wheelchairs, etc., seem to occupy less predominant positions.

To acquire this tremendous fund of knowledge, the Prosthetic Representatives have had to work, and work hard. In this respect, the VA has been indeed fortunate in recruiting the type of individuals who not only are

THE ORTHOPEDIC AND PROSTHETIC APPLIANCES CLINIC TEAM

Members attending V.A. Amputee Clinic at Fort Snelling, Minn. At left in white uniforms are three physical therapists. Standing left to right: Lorrin Madsen, Certified Prosthetist, Dr. Richard H. Jones, Orthopedic Surgeon. Seated left to right: Henry Niessen, Prosthetist, Chester Nelson, Certified Prosthetist, Dr. Richard B. Hullsick, Chief of Orthopedic Service—V.A. Ft. Snelling; Oscar Chelberg, Certified Prosthetist and George Botko, Certified Prosthetist.

physically disabled and are successful wearers of artificial limbs or other major appliances, but who also have met the rather strict experience and intelligence requirements. They have been trained by an outstanding Central Office Team, formerly under the over-all direction of Dr. Augustus Thorndike and presently under Dr. Robert E. Stewart, Director, Prosthetic and Sensory Aids Service, through concentrated administrative and technical training programs. They keep up-to-date on new trends, discoveries and improvements in the field of prosthetic appliances through consultation with orthopedic surgeons and engineering and technical persons in the field, through contacts with the manufacturers and their representatives, through a constant study of publications put out by the industries, and by a study of bulletins and communications distributed by the Prosthetic and Sensory Aids Service. Technical journals and pamphlets such as research reports on Artificial Limbs, this excellent publication, and privately written books are also prime sources for the never ending search for information.

The periodic visits by one of the seven Area Chiefs of Prosthetic and Sensory Aids Service not only provides technical and administrative help to the Prosthetic Representative, but also serves to keep him informed of activities in the field of research and development which are not quite ready for publication.

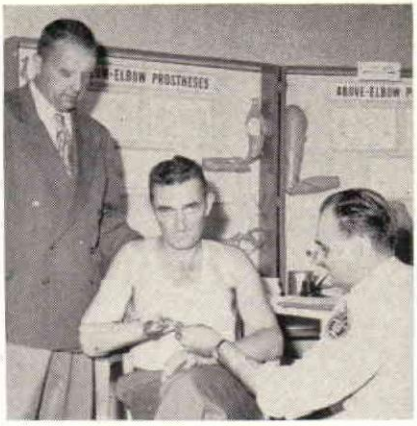
It is sincerely hoped that this bird's eye view of the role of the Prosthetic Representative will encourage the members of the orthopedic and prosthetic appliances industry to become better acquainted with the VA Prosthetic Representative in their respective section of the country. Prosthetic Representatives have made interesting speakers at Orthopedic Appliance and Limb Manufacturers Association meetings, and have clarified many doubts and questions in the minds of the manufacturers during the course of their talks and the subsequent question and answer periods.

A list of the seven Area Chiefs of the Prosthetic and Sensory Aids Service is given at the end of this article.

In some areas several VA stations are served by the same members of the industry. So that all members will be familiar with the Prosthetic Repre-

"NO MORE ELASTIC BANDS TO REPLACE"

Dr. Richard H. Jones, orthopaedic surgeon, and Lorrin Madsen, C.P., checking a new below elbow prosthesis with Northrop Two-Load Hook. (Photograph by John Hendrickson, the Winkley Company, taken at the Clinic Team sessions, Fort Snelling, Minnesota.)



sentatives serving their areas, the following list identifies the Prosthetic Representatives with their station locations:

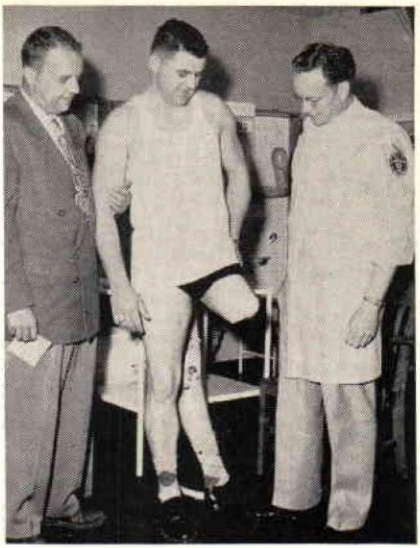
CHIEFS OF PROSTHETIC AND SENSORY AIDS UNITS AND SECTIONS IN VA FIELD STATIONS

NOTE: * Professional, Clerical, or Administrative personnel responsible for prosthetic activities—*not* assigned as Prosthetic Representatives.

Location	*Type Station*	
Albany, N. Y.	VA Hospital	James C. Higgins
Albuquerque, N. Mex.	VA Hospital	Joseph K. Blecha
Atlanta, Ga.	VA Regional Office	James A. Donovan
Baltimore, Md.	VA Regional Office	Robert B. Kay
Boise, Idaho	VA Center	Raymond E. Burch
Boston, Mass.	VA Outpatient Clinic	Jack Miller
Brooklyn, N. Y.	VA Outpatient Clinic	Terence Kolpackoff, Jr.
Buffalo, N. Y.	VA Hospital	John D. McCarthy
Cheyenne, Wyo.	VA Center	Peter J. Thauwald
Chicago, Ill.	VA West Side Hospital	Edward P. Tomashewski
Cincinnati, Ohio	VA Hospital	Karl B. Pfirrmann
Cleveland, Ohio	VA Regional Office	Roy A. Wing
Columbia, S. C.	VA Regional Office	Blaine H. Whorton
Dallas, Texas	VA Regional Office	William M. Sumner
Denver, Colo.	VA Hospital	Bruce B. McCay, Jr.
Des Moines, Iowa	VA Center	Cyril J. Mayrose
Detroit, Mich.	VA Regional Office	Otis N. Denny
Fargo, N. Dak.	VA Center	Paul G. Gnadinger
Ft. Harrison, Mont.	VA Center	James R. Anderson *
Hartford, Conn.	VA Regional Office	Victor P. Reis
Honolulu, Hawaii	VA Regional Office	Shigeru Goto
Houston, Texas	VA Regional Office	James T. Hall
Location	*Type Station*	
Huntington, W. Va.	VA Regional Office	James H. Fink
Indianapolis, Ind.	VA Regional Office	Roger Y. DeCharles
Jackson, Miss.	VA Center	Sidney Mayo
Juneau, Alaska	VA Regional Office	Charles R. Wells *
Kansas City, Mo.	VA Regional Office	Will M. Fortner
Little Rock, Ark.	VA Regional Office	Robert W. Wallace, Jr.

"THE STUMP HAS A COMPLETE RANGE OF MOTION"

Dr. Richard H. Jones, Orthopedic Surgeon and Chester Nelson, C.P. checking an AK amputee and his new prosthesis. (Photograph by John Hendrickson, Winkley Company, taken at the Clinic Team sessions, Fort Snelling, Minnesota.)



Location	*Type Station*	
Los Angeles, Calif.	VA Regional Office	Edward Ruzika
Louisville, Ky.	VA Regional Office	James D. Johnson
Lubbock, Texas	VA Regional Office	Donald F. Beaton
Manchester, N. H.	VA Hospital	William J. Gosselin
Milwaukee, Wis.	VA Regional Office	Robert F. Voss
Montgomery, Ala.	VA Regional Office	James T. Key
Muskogee, Okla.	VA Regional Office	Henry C. Bass
Nashville, Tenn.	VA Regional Office	John D. Pruitt
Newark, N. J.	VA Regional Office	Francis A. Loewinsohn
New Orleans, La.	VA Regional Office	Robert L. Indest, Jr.
New York, N. Y.	VA Regional Office	Julius Feig
Oklahoma City, Okla.	VA Hospital	Everett F. Barger, Jr.
Omaha, Neb.	VA Hospital	Elmer M. Gaughan
Pass-A-Grille Beach, Fla.	VA Regional Office	Robert S. Smith
Philadelphia, Pa.	VA Regional Office	William R. Bouldin
Phoenix, Ariz.	VA Hospital	Donald L. George
Pittsburgh, Pa.	VA Regional Office	James T. Kenny
Portland, Ore.	VA Regional Office	Leonard W. Jay
Providence, R. I.	VA Regional Office	Robert W. Flinn
Reno, Nev.	VA Center	Henry R. Landis
Roanoke, Va.	VA Regional Office	John F. White
Salt Lake City, Utah	VA Regional Office	Orville M. Norton
San Antonio, Tex.	VA Regional Office	William G. Harrell
San Francisco, Calif.	VA Regional Office	Philip R. Bray
San Juan, P. R.	VA Center	Bartolome Lopategui *
Seattle, Wash.	VA Regional Office	Arthur H. Dietz
Shreveport, La.	VA Center	LaRue Washburn
Sioux Falls, S. Dak.	VA Center	Albert H. DeGroot

Location	*Type Station*	
St. Louis, Mo.	VA Regional Office	Russel J. Curtis
St. Paul, Minn.	VA Regional Office	Clark E. Johnson
Syracuse, N. Y.	VA Regional Office	Edward J. Whiteside
Togus, Maine	VA Center	Meredith J. Ambrose
Waco, Texas	VA Center	James F. Flowers, Jr.
Washington, D. C.	VA Benefits Office	Edwin M. Brown
White River Junction, Vt.	VA Center	Everett Ayer *
Wichita, Kans.	VA Center	Charles N. Givens
Wilkes-Barre, Pa.	VA Hospital	Michael MacDonagh
Wilmington, Del.	VA Hospital	Mrs. Addie Wirts *
Winston-Salem, N. C.	VA Regional Office	Griffith C. Blair

SUPPLEMENT: AREA CHIEFS OF THE PROSTHETIC AND SENSORY AIDS SERVICE

Atlanta 3, Ga.	VA Area Medical Office 105 Pryor St., N.E.	Nelson McFarland
Boston 8, Mass.	VA Area Medical Office 30 Cornhill	Wilfred G. Holsberg
Columbus, Ohio	VA Area Medical Office 411 U. S. Post Office 85 Marconi Blvd.	Albert Zuidema
San Francisco, Calif.	VA Area Medical Office 49 - 4th Street	Harry D. MacBird
St. Louis, Mo.	VA Area Medical Office 415 Pine Street	Donald W. L. Smith
St. Paul, Minn.	VA Area Medical Office Bldg. #57, Ft. Snelling	Voigt W. Baker
Trenton, N. J.	VA Area Medical Office c/o Old P. O. Bldg. 200 E. State St.	Leonard J. McCarthy

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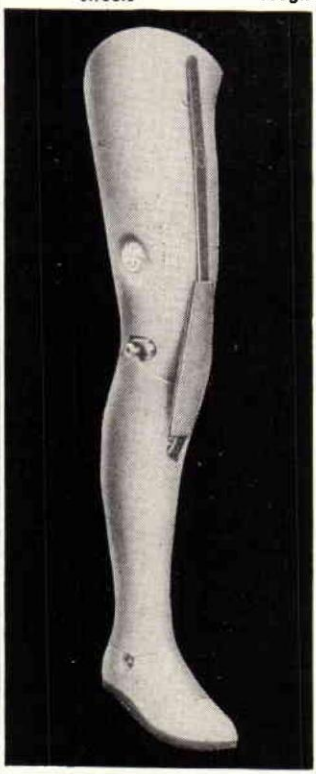

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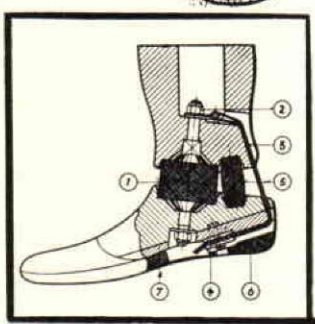

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Splint for Treatment of Congenital Hip Disease*

FREDERIC W. ILFELD, M.D.

The early diagnosis of congenital hip disease has increased the number of cases recognized during infancy and before weight bearing. Statistical (1) studies show that the earlier the treatment, the better are the results, and that, abduction splinting is the best treatment in these early cases. Splinting may also be used after closed or open reduction of the hip to eliminate or to shorten the plaster cast time (1).

The abduction splint method of therapy is not new. It has been advocated by Bost (2), and Haas (3). Effective splints similar to the one described here have been devised by Ponsetti (4), Denis-Browne (5), Frejka (6), and others.

Rationale of Splint

Since October 1951 a splint (fig. 1) with two thigh cuffs connected to an adjustable bar has been used in about 250 cases of congenital hip disease with good results. With this splint the thighs are gradually and without force directed into abduction and external rotation, the "frog position." The surgeon adjusts the splint into further abduction at weekly intervals until the desired position is obtained. The splint is removed several times a day by the mother for rotation-abduction exercise. This exercise as well as the kicking and natural movement of the hips in the splint tend to improve local circulation, increase abduction, and apply gentle pressure of the femoral head against the acetabulum.

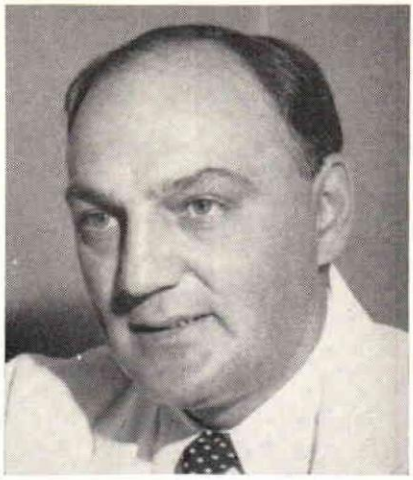
In the frog position the thigh muscles exert a force along the femoral shaft "pulling" the head into the acetabulum. In this way the dislocation of the femoral head is reduced. In dysplasia of the hip with delay in the development of the femoral head and acetabulum, the pressure of the femoral head in the abducted position is thought to stimulate bony growth. In dysplasia the splint is usually worn only at night. In dislocation the splint is worn continuously for several months being removed daily for bathing and exercise. The splint is then worn only at night until hip development is complete.

Construction of Splint

The splint consists of two thigh bands (fig. 2 B and fig. 3 [1]) made of ½ hard aluminum thickness .064 with Indiantone cloth covers and buckle straps. The thigh bands are connected by a special swivel (fig. 3 [2], an aluminum ball 24 ST ⅝ inch diameter, with a washer (fig. 3 [4]) 24 ST aluminum ⅝ inch diameter ¼ inch hole and a knurled cap screw (fig. 3 [5]) ¼ - 28, ¾ inch long. The swivel allows accurate fitting of the thigh band and is tightened with an hexagonal wrench which the surgeon keeps to prevent home adjustment. The swivel is attached to the cross piece (fig. 2 A) by a hinge joint (fig. 2 C). The male part of the hinge joint (fig. 3 [3]) is made of ⅛ inch cold rolled plate. The rivet pin (fig. 3 [6]) through the hinge is 3/16 inch diameter. The female part of the hinge (fig. [7]) is part of the cross piece (fig. 3 [9] and [10]). The hinge moves

* *This study received aid from the Bloomfield Foundation. The author also wants to thank Hy. M. Christensen, C.O. of the Ace Orthopedic Company for his help.*

Dr. Ilfeld was born in 1907 in Los Vegas, New Mexico. He received his A.B. Degree from Harvard College in 1928, and graduated from the Harvard Medical School in 1932. Dr. Ilfeld received his hospital training at Peter Bent Brigham Hospital in Boston and the Lakeside Hospital in Cleveland. Special orthopedic training was received at the Children's Hospital and the Massachusetts General Hospital in Boston. In World War II he served five and a half years with the Army Medical Corps as an orthopedic surgeon. Currently Dr. Ilfeld is practicing in Beverly Hills, California and serving as Assistant Professor of Orthopedic Surgery at the University of Southern California Medical School. He is a member of the staff of the Children's Hospital, the Cedars of Lebanon Hospital, St. John's Hospital, Mt. Sinai Hospital and the Los Angeles County General Hospital.



FREDERIC W. ILFELD, M.D.

through 90 degrees. This allows the cross piece to be comfortably placed in the sitting or lying position. In the supine position the cross piece points toward the feet, in sitting it points upward and so is out of the way. A common error in applying the splint is to have the hinge point posteriorly instead of anteriorly. The holes in the cross piece are spaced $\frac{5}{8}$ of an inch apart for adjustment of growth and abduction. They are tapped with 8/32 thread for a round head machine screw $\frac{1}{4}$ inch long 32 thread. The cross bar is made of cold rolled steel $\frac{1}{8}$ x $\frac{5}{8}$ inch.

The splint is made to fit the patient (fig. 4) with allowance for growth. It is commercially available in five sizes: size one for a baby 2-4 weeks of age; size two 4-12 weeks; size three 3-8 months; size four 8-24 months; size five 2-4 years. Shoulder straps or pelvic girdle may be used to help keep the splint in place.

When splinting is used in older children 2 to 10 years of age, the thigh cuffs are made of larger and heavier material. In place of the hexagonal swivel, the cuffs are adjusted by means of a swivel plate with holes, a bolt, and winged nut. The crosspiece is heavier and made of aluminum. In older children a pelvic girdle with elastic straps extends down to hold the splint in position.

For internal rotation of the hip (fig. 5), the thighs are held fixed in slight abduction and outward pressure is applied against the shin or lower leg. This maneuver internally rotates the hip. The position is maintained by using an adjustable "out-rigger" attached to the cross piece and fastened onto the lower leg by a cuff and swivel with hexagonal screw. In these cases the 90 degree hinges of the cross piece are eliminated or soldered solid. Even in this position of internal rotation the child can crawl and walk.

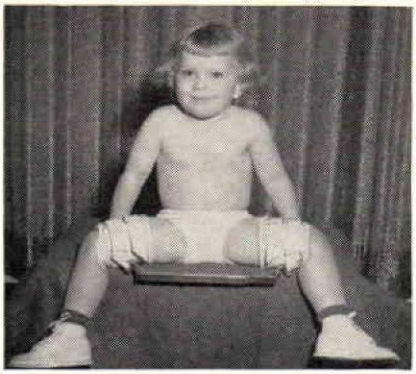


Fig. 1. at right—
The splint consists of two thigh cuffs connected with an adjustable cross bar controlling abduction. The bar points upwards for sitting and downward for the lying position.

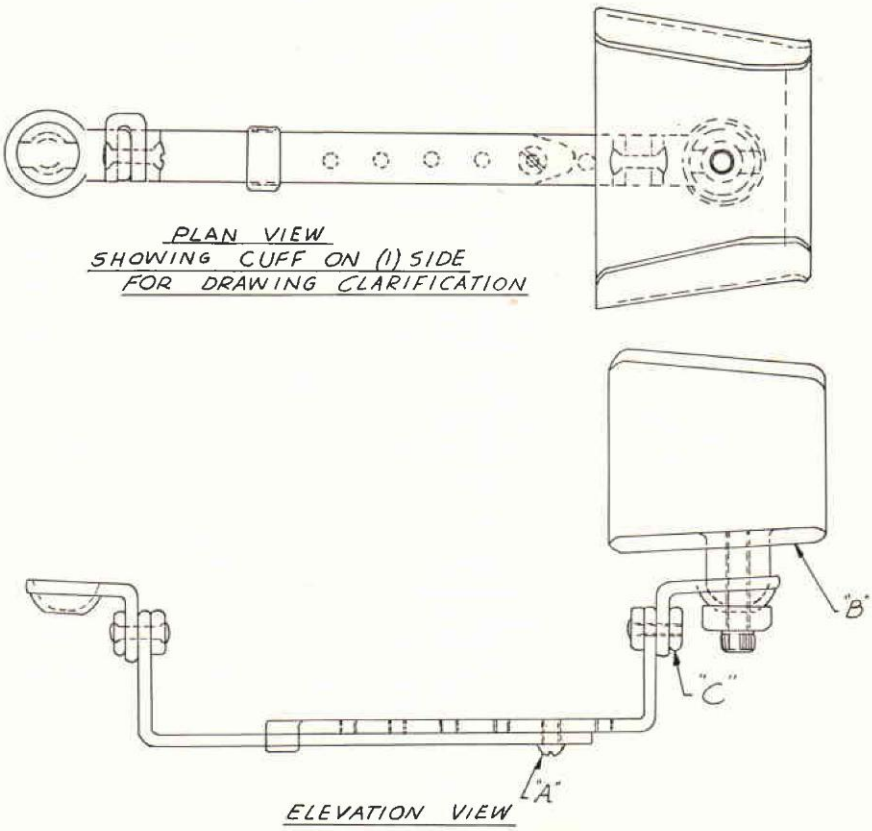


Fig. 2. Ilfeld Splint.

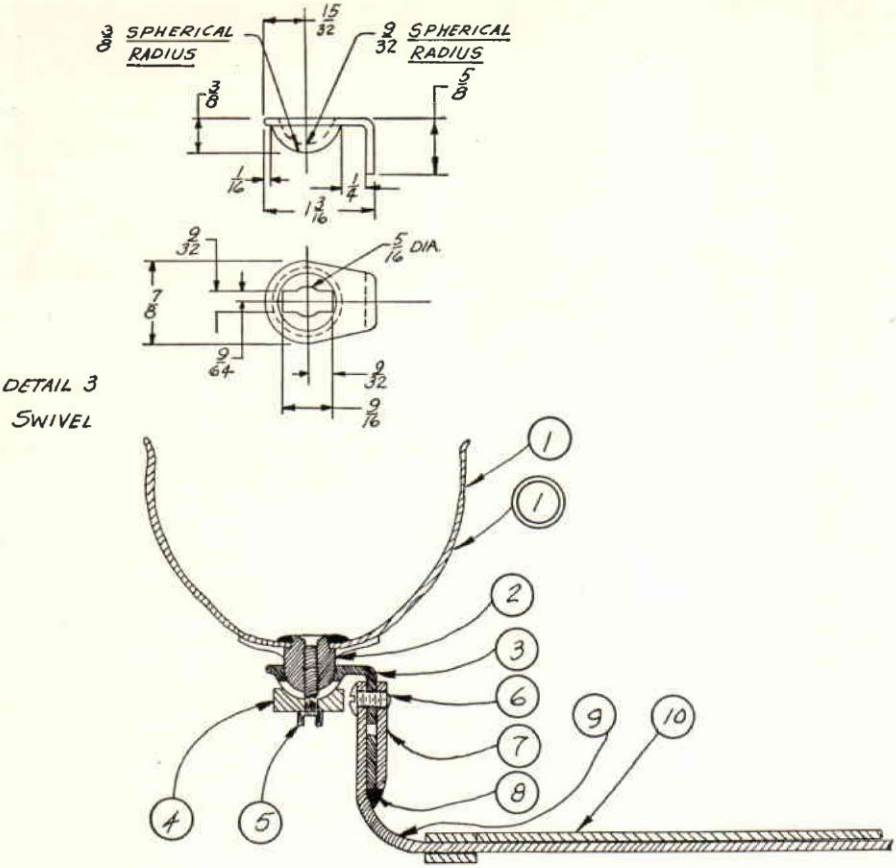


FIG. 3—Detailed drawing of abduction splint

Conclusion

Splinting in infants will usually reduce a dislocation of the hip without anesthesia, hospitalization, or plaster cast. In older children it may be used after closed or open reduction, even without preliminary plaster fixation. In some cases the splint may replace the cast after 4-6 weeks thus eliminating many months of plaster immobilization.

The splint method is dynamic, permitting crawling, walking, and running. It is adjustable for growth, cool and comfortable, light and handy. This method of treatment prevents stiffness of the hips and knees, stimulates acetabular and femoral growth, is convenient for the mother, and allows mobility of the child.

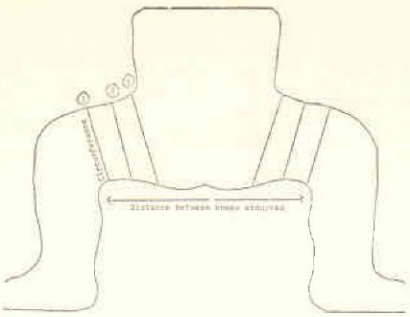


Fig. 4. Measurements for construction of splint. The arrows above indicate distance between knees abducted. Line 1 at left: circumference.

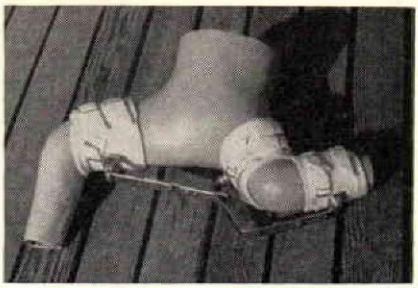


Fig. 5. Model of the internal rotation splint. An "outrigger" extends from the cross bar to the shin regulating internal rotation. The ninety-degree hinges are omitted or soldered solid.

1. **Lay child flat or supine for measing or tracing.**
2. **Give age of child—hip condition —and stipulate which hip is affected.**
3. **Be sure to record the circumference of both legs in the three designated places.**

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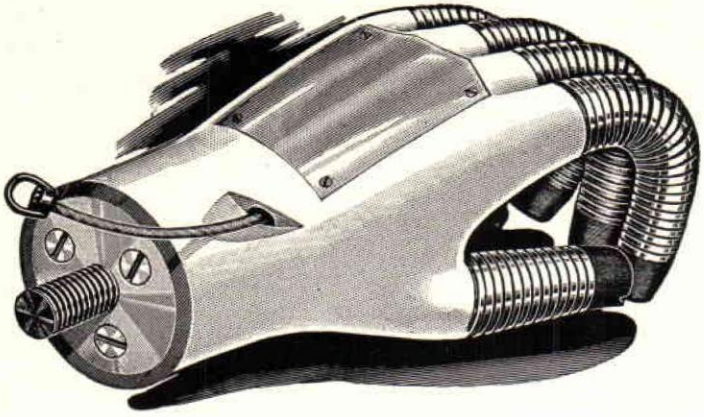

WITH improved finger lineup, enabling the thumb to grasp between 1st and 2nd fingers.

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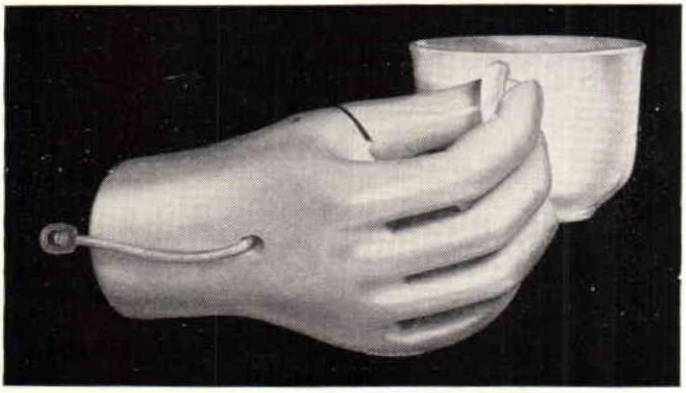

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The Heidelberg Arm
(Heidelberg Pneumatic Prosthesis)

A Report by William A. Tosberg, C. P. & O., Technical Director of the Prosthetic Services, New York University, Bellevue Medical Center

On February 12, 1957, Dr. Henry Kessler had invited a group of interested people to attend a demonstration of the Heidelberg Pneumatic Arm Prosthesis. The large auditorium of the Kessler Institute in West Orange, N. J., was filled with representatives of all the professions working for the rehabilitation of the physically handicapped when Dr. Kessler introduced Dr. Ernst Marquardt and Engineer Otto Hafner.

In his introduction, Dr. Kessler pointed out the differences in the prosthetic prescription for a leg amputee and an arm amputee. Whereas the artificial leg is primarily fitted to the stump, a prescription for an arm must consider the whole amputee to a much greater degree. The replacement for a lost hand normally poses a relatively simple problem functionally, but tremendous difficulties face the prescription team when it becomes necessary to fit a bilateral above-elbow amputation or even more so if the patient has had to be amputated at the shoulders. The greatest problem is the lack of power sources to activate the different components of the prosthesis. Cineplastic operations in some cases have provided additional force. Small electric motors have been used in the I.B.M. arm and also in the Vaduz arm. Now Dr. Marquardt was to discuss a prosthesis that utilized carbon dioxide.

Dr. Marquardt traced the development of the Heidelberg arm, stating that it had become imperative for Germany to improve the utility of prostheses provided, since, through the influence of war and because of the many industrial accidents, Germany was faced with 2,000 bilateral amputees who depended upon highly functional devices to become and remain self-sufficient. It was Mr. Otto Hafner, a mechanical engineer, who used highly compressed gases to activate the different joints in an artificial arm. These gases, compressed to a fluid state, are stored in an aluminum cylinder under a pressure of 45 atmospheres. By means of a reducing valve, the gases enter into a pneumatic system at a pressure that can be varied from 0÷5 atmospheres. Through a series of microvalves the gases are routed to the different joints where they perform the function of some of the amputated muscles.

A number of slides shown during Dr. Marquardt's remarks illustrated some of the many functions possible with amputations at different levels. Mr. Walter Pavelchek, a certified prosthetist from Kessler Associates, demonstrated a Heidelberg Pneumatic Prosthesis for above-elbow amputation which had been fitted to a bilateral A.E. amputee only a few days before. This man had worn a standard arm previously and he had had only three hours of actual wear in which to become accustomed to the different actions of his new device. Although some of his motions appeared awkward, it was apparent that he was able to perform some tasks that had been impossible for him to do before he received the new arm. Outstanding was the active rotation of his forearm. This motion is so essential for many activities of daily living, such as eating, dressing and many toilet activities.

Harold Russell, noted World War II veteran with Dr. Marquardt and O. Hafner in New York City following the demonstration of the Heidelberg Arm.

A film, made at the training center at the University of Heidelberg, showed a number of bilateral amputees during their training process. The day starts with general body conditioning after which a semifinished prosthesis is applied and functional exercises are performed at training boards. Eating and drinking are practiced as well as vocational skills in many fields. The film shows the construction details of several arms for different amputation levels. In one construction the remaining pronation and supination of the forearm is insufficient for normal rotation but is utilized for prehension of the hand. Where there is active forearm rotation, prehension is controlled by muscle valves placed over muscles that normally control wrist flexion and extension. These muscles have to be isolated and strengthened through training supervised by physical therapists. In above-elbow amputations the biceps and triceps muscles may be utilized in addition to scapular excursion. Mr. Hafner explained that the pneumatic system allows an almost limitless combination to activate the different motions. From viewing the film, it appears that most bilateral above-elbow amputees were fitted with only one functional arm. The metal containers were built into a dress arm on the opposite side. The film closed with a showing of several amputees at the farewell dinner which always is staged at a public restaurant and is enjoyed by the amputees in the presence of their wives or friends. It was apparent that no psychological problems connected with their disabilities existed with the group shown in this film. Dr. Marquardt also demonstrated several working models of the arm in order to show the many functions which can be obtained by the use of compressed gases.

A general discussion which followed the presentation brought out the fact that the container for the gas weighs less than one pound and lasts for about four days with average use. It can be refilled in about one minute from a master container which is provided for every amputee. The cost in Germany of a functional arm plus a dress arm for a bilateral shoulder disarticulation is about $700.00 in American money.

The writer had an opportunity to attend a demonstration during a recent visit to Germany in the interest of the International Society for the Welfare of Cripples. At that time I saw prostheses operated by men with different levels of amputations. Some of the arms had been worn for six years with only a replacement of the plastic tubes that distribute the gas to the different controls. I was told that presently about 80 arms are in constant use.

It is my impression that the Heidelberg Pneumatic Arm Prosthesis is an ingenious device to add to the function of the severely disabled. Its main advantages over any other artificial arm known to me are its excellent con-

NOW READY
Heidelberg Pneumatic Prosthesis Report

A 38-page illustrated booklet entitled "Technical Adequacy and Practical Application of the Heidelberg Pneumatic Prosthesis" can be obtained from the International Society for the Welfare of Cripples, 701 First Avenue, New York 17, N. Y., at one dollar a copy. This is a comprehensive description of the Heidelberg Pneumatic Prosthesis by E. Marquardt and O. Haefner. Translation of this article from the German language by E. Kunel was made possible by a grant from The Gustavus and Louise Pfeiffer Research Foundation.

trol of the many functions, its powerful motion at all joints and the normal appearance of these motions.

A disadvantage, at least from an American point of view, might be the type of hand used, its general bulkiness and the need for replenishing of motor power at rather frequent intervals. Despite these apparent disadvantages, the arm seems to have many indications especially in the bilateral amputee where it has definite merit.

It is hoped that through the visit to America which was arranged by Dr. Kessler in cooperation with the World Veterans Fund and the International Society for the Welfare of Cripples, the inventors will benefit further through their contacts with the many limbfitting centers maintained by members of the Orthopedic Appliance and Limb Manufacturers Association, by the Army and the Prosthetics Research Board. Only by such international cooperation will all amputees benefit from the work carried on in many parts of the world.

What's New(s)

The *Cleveland News* for December 24 has an interesting story, "Early Christmas Gives David New Leg." David Wallace, who is now ten, has a congenital defect in the left foot which had made it necessary to wear a metal extension brace and rocker. Through the enterprise of Paul Leimkuehler's secretary, Mrs. Wilbert Frailey, a fund was collected which made it possible for David to have a prosthesis. His left foot, which is opposite his right knee, now rests in a leather laced socket. This clipping has been placed in the OALMA Public Relations Scrapbook, which is available for loan.

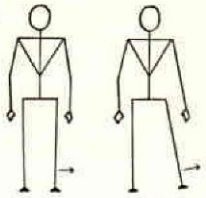
Paul Leimkuehler has appeared twice recently on a TV program in Cleveland called "Courage." The program features people who have overcome handicaps, and the Master of Ceremonies is a lady who has been blind for over twenty years. On one program Paul Leimkuehler was interviewed about his work and showed movies of two arm amputees and four different leg amputees. On the second program he was shown counselling with a mother and her ten-year-old son, who is a double below-elbow arm amputee. He explained to the boy and his mother the function of artificial arms with both hands and hooks. He also described the new program in prosthetics education at the University of California and the work of the Michigan Crippled Children's Commission.

OALMA headquarters is interested in learning about other members who may have appeared on TV or radio programs. Let us know about them.

Anatomical Terms Used to Describe Body Movements

Compiled by
CHARLES A. HENNESSY, C. P. & O.

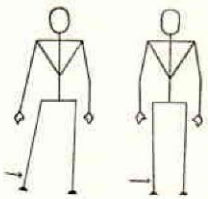
Abduct—To draw a limb *away from* a position near or parallel to the center line or median axis of the body. Standing erect with both feet together, you *abduct* your right leg by moving it sideways to your right.



Abduction—The act of abducting a limb.

Abductor—A muscle that abducts a limb.

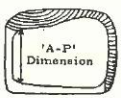
Adduct—To draw a limb *toward* the center line of the body. Standing erect with the feet apart, you *adduct* your right leg by moving it toward the left leg.



Adduction—The act of adducting a limb.

Adductor—A muscle that adducts a limb.

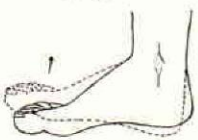
Anteroposterior—Extending from the front to the rear. Sometimes abbreviated "A-P."



Distal—The end of a limb farthest from the point of attachment.

Dorsal—Pertaining to the back of a body or one of its parts.

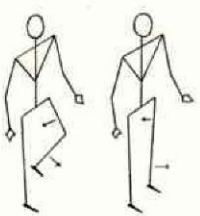
Dorsum—The back portion of a body or one of its parts.



Dorsiflexion—Flexion of a joint in a dorsal direction, or toward the back of the part.

Eversion—Turned outward and upward.

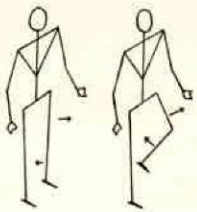
Extend—To straighten a joint that has been flexed or bent. Joints can be extended or straightened, but limbs cannot. For example, in the act of rising from a kneeling position the knee (joint) and hip (joint) are extended or straightened.



Extension—The motion of a joint when it is being straightened "the knee extension is limited."

Extensor—A muscle that acts to straighten a joint.

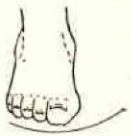
Flex—To bend a joint. Limbs cannot be flexed or bent, only joints. For example, in the act of kneeling, the leg and thigh are not flexed, only the knee (joint) and hip (joint).



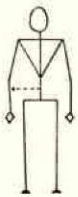
Flexion—The motion of a joint when it is being flexed or bent.

Flexor—A muscle that bends a joint.

Inversion—Turned inward and upward.



Lateral—Toward or nearer to the side; away from the center line..

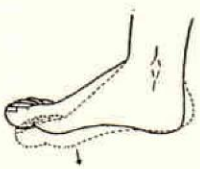


Medial—Toward or nearer the middle, or center line.
Mediolateral—Pertaining to the middle and one side.

Proximal—The end of a limb nearest the point of attachment.

Plantar—Of or pertaining to the sole of the foot.

Plantar Flexion—Flexion of the foot in the direction of the sole of the foot.



Valgus—Turned abnormally outward or inward and upward; more commonly used for turned outward and upward.

Varus—Turned abnormally inward and upward.

Volar—Of or pertaining to the palm of the hand or the sole of the foot. Usually used to refer to the palm of the hand.

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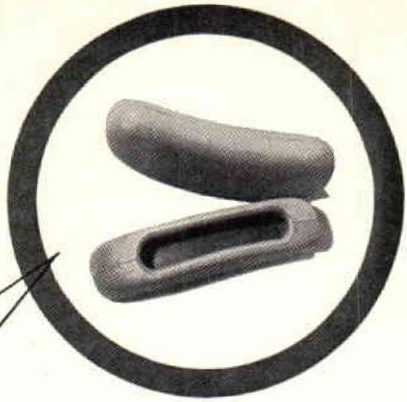

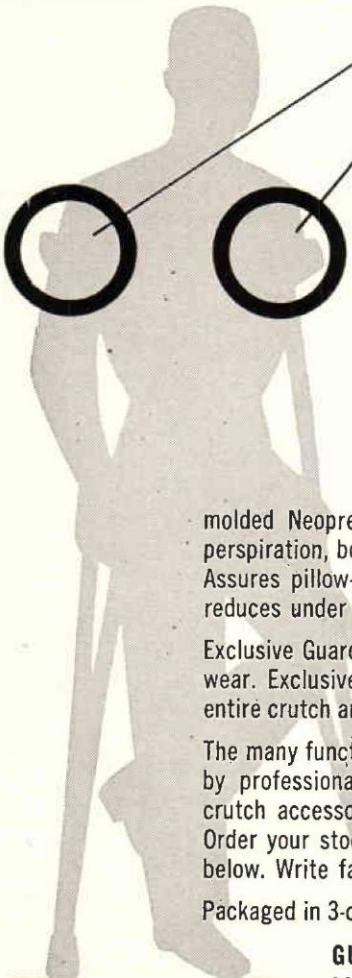

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Prosthetics: A World-Wide Interest

A Summary of the program of the International Society for the Welfare of Cripples and International Activities in the Field of Prosthetics.

By DONALD V. WILSON

Secretary General, International Society for the Welfare of Cripples

Prosthetic services have always been international in outlook. Many important developments in the United States are the result of new ideas secured from other parts of the world. Such scientific developments are not limited by national boundaries, for new and valid ideas in distant places are equally sought out and applied to solve problems at home. In many parts of the world adequate prosthetic service is one of the weakest phases of the total program for the physically handicapped. Recently there has been an increasing recognition of the need for the exchange of information concerning prosthetics and acknowledgement that all nations of the world will benefit by knowing more about technical improvements in other countries. The importance of prosthetics personnel from the United States participating in these international efforts is being increasingly acknowledged.

International Society for the Welfare of Cripples

In some regions, rehabilitation services for the physically handicapped is an entirely new program, being developed by expanding existing medical, social, educational and vocational facilities. Various international organizations, both governmental and voluntary, are carrying on some phase of the work of exchanging information, knowledge and experience on a world-wide basis in the field of rehabilitation including prosthetics.

Much of the pioneer work in rehabilitation, as well as in other health and welfare fields, is done by voluntary agencies. Probably the oldest existing international organization interested in services for the handicapped in all parts of the world is the *International Society for the Welfare of Cripples.* Established in 1922, the Society is a federation of national voluntary (non-governmental) associations and councils providing rehabilitation services for physically handicapped children and adults. From the date of its creation until 1939 the Society was known as the International Society for Crippled Children and held several world meetings in Europe as a part of its mission to extend and strengthen services for children. At the World Congress held in London in 1939 the Society's present name was adopted as a result of the interest of many of the national affiliates in providing services for handicapped adults as well as children.

The affiliated national organization of the ISWC in the United States is the *National Society for Crippled Children and Adults* (the Easter Seal Agency). Many individuals and organizations in all parts of the country support the program of the International Society and keep informed of its work by their membership in the United States Committee of the International Society for the Welfare of Cripples.

The work of the International Society is carried out through the exchange and translation of publications, the lending of films, encouraging professional personnel in the field to visit and study in a country other than their own, the holding of a World Congress every three years and by working closely with governmental organizations such as the United Nations, World Health Organization and other international voluntary agencies interested in extending services for the physically handicapped.

To carry out the primary purposes of the International Society, various methods are used. National Secretaries have been appointed in over forty countries of the world who serve as the Society's representatives in their countries and assist in the work of extending and developing services as rapidly as the conditions of each country will permit. These Secretaries assist in the exchange of information about existing programs and plans for the future.

Committee on Prostheses, Braces and Technical Aids

As a part of its general services for the handicapped of the world, the International Society, at the time of its World Congress in Stockholm in 1951, authorized the establishment of a Committee on Prostheses, Braces and Technical Aids. Dr. Knud Jansen of Denmark serves as Chairman. Other members include J. Craft of Middlesex, England; Professor O. Hepp of Germany; Dr. Masatora Hiyeda, Vice-Director of the National Rehabilitation Center in Tokyo; Maurice Morlet of Antwerp; Mr. Karl Montan of Sweden; Dr. J. E. van Gogh, Director of the Rehabilitation Center at Rotterdam, Professor Morandi of Italy; and Captain Thomas J. Canty, Glenn Jackson, Dr. Eugene Murphy and William Tosberg of the United States.

The Secretariat of the Committee is maintained in Copenhagen by the Society and Home for Cripples of Denmark, which is the affiliated national organization of the International Society in that country. Dr. J. Saugmann Jensen of Denmark serves as Secretary of the Committee.

Prosthetics Information Center

In order to carry out the work of the Committee, an International Prosthetics Information Center has also been established in Copenhagen. The functions of this Information Center are (1) to receive and distribute to interested persons throughout the world information concerning developments in research, manufacture, fitting and other fields related to prosthetics; (2) to maintain an international reference center where technical information from all parts of the world will be assembled and made available to interested persons and organizations; (3) to plan seminars and conferences to bring together experts working in the over-all field of prosthetics; and (4) to serve as an international center of information concerning opportunities for the training of limb-makers, limb-fitters, surgeons and others concerned with any phase of prosthetics; and to assist interested persons in locating suitable professional appointments in this field.

A bulletin is issued by the Center and sent to prosthetics personnel in all parts of the world. The address of the Society and Home for Cripples is Esplanaden 34, Copenhagen, Denmark.

Exchange of Information

One of the Society's services of very real importance, is the international film library, established in 1953, which now contains over one hundred film titles. These films deal with all aspects of services for the handicapped and include films portraying technical problems as well as interpretative films for the general public. The films have been produced in fifteen countries and include about ten films portraying prosthetics problems and programs from Austria, Canada, the United Kingdom and the United States. The films are provided as a service to member organizations and to others for a nominal fee which defrays the costs of shipping and replacement. It is believed that this is the largest film library dealing with rehabilitation

A short course in prosthetics will be held in Copenhagen, Denmark, from August 1st to 10th, 1957, under the sponsorship of the Committee on Prosthetics, Braces and Technical Aids of the International Society for the Welfare of Cripples.

Instructors and lecturers for the course will include outstanding physicians and prosthetists from Europe and North America. The language for the course will be English.

The course will include a survey of principles and techniques concerning prostheses and braces. Lectures, demonstrations, films and visits to institutions in Denmark will be included.

Of interest to prosthetists, doctors and therapists, the course is planned to give consideration to the special interests of each of these three groups, although most of the instruction will be of interest to all professional personnel interested in the problem of prostheses and braces.

The registration fee for the course is 400 Danish Krona ($60.00 U. S.), which includes board and lodging during the ten day period. Early registration is urged since attendance must be limited.

Registrations are to be sent to the Secretary of the Committee: Dr. J. Saugman-Jensen, 34 Esplanaden, Copenhagen K, Denmark.

services for the physically handicapped and circulated internationally by a voluntary organization.

The International Society has for some years maintained a rehabilitation information service which promotes the distribution and exchange of publications having to do with all phases of service for the physically handicapped. Recently, as a part of this basic information service, the Society arranged for the translation of a number of significant scientific and technical books and papers from their original English into Spanish, French and other languages. They have been made available both to voluntary groups, medical personnel, government officials, and professional journals throughout the world. This translation program, made possible by the Gustavus and Louise Pfeiffer Foundation, represents a real step forward in the dissemination of important reports and documents.

The importance of the exchange of information in the prosthetic's field is graphically illustrated by a letter recently received by the International Society. On behalf of a technician from Jordan who was working and studying in Lebanon under the auspices of the International Cooperation Administration of the United States a request was made for publications in English. This Jordanian was studying at a Rehabilitation Center in Beirut, jointly sponsored by the Government of Lebanon, the World Health Organization and the United Nations Childrens Fund (UNICEF). The international nature of this matter is indicated by the fact that the Prosthetics technician was an Englishman provided by the World Health Organization, and the physical therapists had secured their training in France. The International Society, with the cooperation of several other organizations, was able to be of assistance by providing the publications desired. This is only one of several illustrations of the fact that professional responsibility in the field of prosthetics is certainly not limited by national boundaries.

Prosthetics Personnel

The lack of adequately trained personnel is the main factor in the slow development of better prosthetics services. In 1954, the Committee on Prosthetics, Braces and Technical Aids conducted a survey to secure data concerning prosthetics personnel from eighteen countries. The results of the information received were consolidated into a report entitled, *Prosthetics Personnel.* This survey dealt with training facilities, systems of training, as well as standards of training and experience. Many problems came to light as a result of this world-wide inquiry, including those relating to shortages of material, organizational and financial problems and the need for more research in this field.

In order to improve the elevation of standards of personnel in this field, an increasing number of persons are seeking and securing study and training opportunities outside their own countries. Many of these persons come to the United States for a period of time to participate in training programs and to learn of new developments. For example, a technician from Bogota, Colombia is currently spending a year of study in this country and trainees from Guatemala, Thailand and Venezuela have recently completed a program of work and study here. Many other examples could be given for there is no one organization that knows of all the persons from other countries currently studying prosthetics in the United States at the present time. The future should see an increasing number of such professional personnel studying in other countries in an effort to improve.

Use is also made of experts from the more highly developed countries who spend short periods of time in teacher-training and demonstration in other countries. For example, an expert from the United States spent two months in Japan early in 1956 under the auspices of the United Nations, conducting specialized prosthetics courses. Following his work in Japan he visited orthopedic centers and workshops in Korea, Burma, India, Lebanon, Jordan, Germany and Denmark with the sponsorship of the International Society for the Welfare of Cripples. Many other examples could be given of how experts from the more developed countries have assisted in improving standards of prosthetics in less developed areas. In January, 1957, a prosthetics technician from Germany, after having worked for several years in Indonesia, accepted an assignment in Burma, under the auspices of the United Nations. Another techinican from Denmark recently began a two-year program of work in Sao Paulo, Brazil and an expert from England is currently working in Bombay, India; services of both of these men are also made available by the Technical Assistance program of the United Nations.

Meeting of Experts

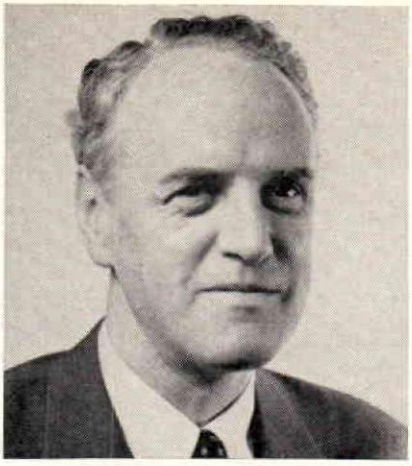
An important method to promote the exchange of technical knowledge is by the holding of meetings and conferences which bring together outstanding experts in the field of prosthetics. In recent years an important effort in this direction was made in August 1954 when the World Health Organization convened in Copenhagen, Denmark, an Expert Committee on Prosthetics. Dr. Henry H. Kessler of the United States served as Chairman and Sir Harry Platt, President of the Royal College of Surgeons of England, was Vice-Chairman of the conference. Participants included experts from Ceylon, Germany, Japan, the Netherlands, Norway, Pakistan, the United Kingdom, the United States as well as representatives from the United Nations, the International Society for the Welfare of Cripples and the World Veterans Federation.

DONALD V. WILSON

Donald V. Wilson has been Secretary General of the International Society for the Welfare of Cripples since 1949. He also serves as Vice-Chairman of the Conference of World Organizations Interested in the Handicapped.

The International Society for the Welfare of Cripples is a federation of thirty-one national organizations carrying out programs for the physically handicapped. Mr. Wilson is the Society's representative to the United Nations, the World Health Organization and other international agencies.

Mr. Wilson has been active for many years in social welfare and educational activities. He came to his present position from Western Reserve University in Cleveland, where he was Dean of the School of Applied Social Sciences. Prior to World War II, he was a member of the Staff of the Louisiana Department of Public Welfare and a member of the faculty of the School of Social Welfare, Louisiana State University. During the war, Mr. Wilson served in the United States Army as a military government officer. In both military and civilian capacities, he administered social welfare activities during the occupation of Japan.



DONALD V. WILSON

Subjects with which this important Conference was concerned included requirements for the formation and development of a limb-fitting service, the training of personnel, simplified artificial limbs, administrative problems, research and problems in international consideration and action.* It is to be hoped that there will be more technical meetings of experts, seminars and similar opportunities for the exchange of information about prosthetics development.

World Congresses

The world conferences held once every three years by the International Society for the Welfare of Cripples regularly bring together the largest number of persons interested in the improvement of prosthetics standards in all parts of the world. At the Fifth World Congress held by the Society in 1951 in Stockholm there was a great deal of interest in this entire field and as a result the Society's Committee on Prosthetics, Braces and Technical Aids was established. An increasingly large number of persons especially interested in prosthetics attended the Society's Congress held at The Hague, Netherlands in September 1954.

The Seventh World Congress of the International Society, to be held in London from July 22nd to 26th, 1957 will include several meetings where reports on prosthetics, braces and related matters will be considered. The Congress program has been developed to be of interest to doctors, social workers, nurses, therapists, as well as prosthetics personnel and other professional and lay persons who are interested in exchanging information and experiences with people from other parts of the world. Of special interest to persons interested in prosthetics will be an all day meeting at Roehampton.

Further information about the program planned for the Congress and registration requirements can be secured from the Congress Committee: 34 Eccleston Square, London S.W. 1, England.

*** AMPUTEES AND PROSTHESES. World Health Organization, Technical Report Series No. 100. Available from Columbia University Press, International Documents Service, 2960 Broadway, New York 27, N. Y. Price: 60c.**

A Study Tour is offered by the International Society for the Welfare of Cripples for persons attending its World Congress in London. Departing from New York on July 13th, the tour will include a visit to Scotland and attendance at the Congress from July 22nd to 26th. Two post-Congress tours are available, one to the Scandinavian countries and another to Switzerland and Italy. The group will return from Paris on August 13th. Interested persons can obtain full Tour and Congress details from the Society's headquarters at 701 First Avenue, New York 17, N. Y. Costs range from $423 to $975 for the complete four-week tour.

An exhibition to be held in connection with the Congress at Central Hall, London, will include several exhibits of prosthetics from various countries of the world. Many commercial and professional organizations have reserved exhibit space including from the United States: Kessler Institute for Rehabilitation, Institute of Physical Medicine and Rehabilitation, Winterkorn, Inc., Bulova School of Watchmaking, National Society for Crippled Children and Adults, National Foundation for Infantile Paralysis.

The World Congress is the occasion of several other special events. The International Sports Festival for the Handicapped will be held at Stoke-Mandeville Hospital on Saturday, July 27th the day following the official closing of the Congress. These "Paralympics" are held annually in cooperation with the World Veterans Federation.

Nurses, occupational therapists, special education teachers and prosthetics personnel will hold meetings, seminars and conferences before and after, as well as during the week of the Congress. Visits to various institutions will also be possible during the Congress week to acquaint participants with medical, welfare and prosthetics services in the London area. *The Albert Lasker Awards* will be presented to the three individuals or organizations that have made outstanding international contributions to the development of rehabilitation services; at the last Congress in 1954 these awards were presented to Dr. Henry H. Kessler of the United States, Dr. Juan Farill of Mexico and to Lord Nuffield of England.

World-Wide Responsibility

In recent years many commercial organizations in the United States have become interested in business opportunities in other countries which have been limited, however, by the adverse rates of exchange and the inability of persons in other countries to make purchases in dollars. This situation is improving somewhat and with the developing interest in improving the standard of prosthetics it is to be expected that purchases in the United States will increase. At the same time there will be an increase in the number of philanthropic requests received—requests for samples and donations of materials. There will also be more persons interested in receiving training in the United States and more opportunities for technicians to work in other countries of the world. The response that is made to such requests will directly affect the relations of this country to other peoples of the world particularly in those countries that have not as yet achieved the high economic and scientific standards found in the United States.

There is no doubt that in the field of prosthetics, as in related rehabilitation for the physically handicapped, we have a real opportunity to reach the minds and hearts of people in all parts of the world. What is done, and not done, by those active in the prosthetics field will directly affect the total effort to extend the democratic ideal. The work is tangible, easy to see and understand, and our continuing objective should be to apply it still more completely and efficiently on the international level. During recent years, as the result of research in artificial limbs pursued in the United States our own disabled have prosthetic devices far superior to those found in most countries of the world. The International Society considers it one of its primary tasks, as a practical expression of the democratic ideal, to stimulate an ever-greater sharing of these prosthetic skills with peoples everywhere.

OALMA to Be Represented at World Congress

OALMA will be officially represented at the Seventh World Congress and Exhibition of the International Society for the Welfare of Cripples. This meeting will be held in London, July 22-26, 1957. Milton Tenenbaum, President of the Metropolitan Orthopedic Appliance and Limb Manufacturers Association, has been designated as the Official OALMA Representative and will serve without compensation. Mr. M. J. Winterkorn of the Winterkorn Orthopedic Appliance Co., has been nominated as alternate. Messrs. Tenenbaum and Winterkorn have been asked to prepare a report on this Congress for the *Journal*.

MARCH, 1957, SUPPLIERS INDEX

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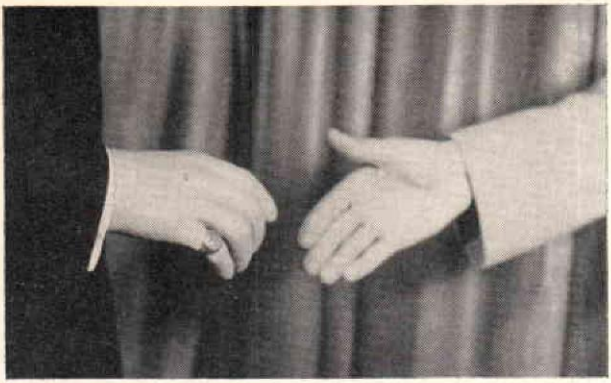

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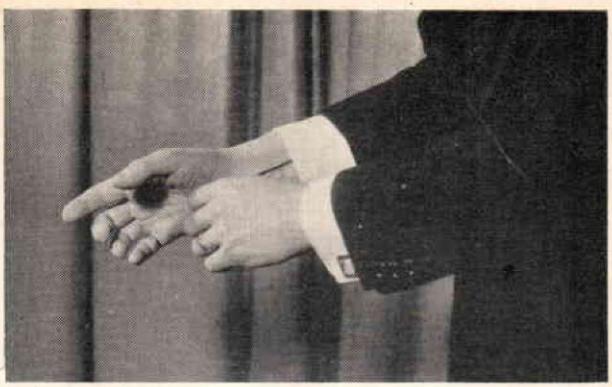
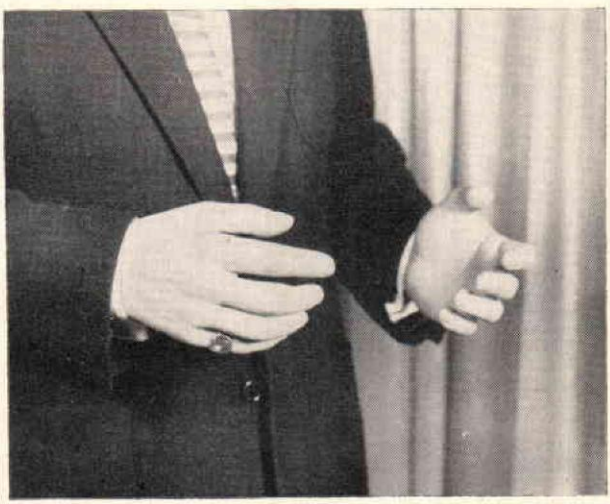


Don is girding himself as for battle. The ***Realastic*** glove which looks and feels like human skin, fits perfectly over the amputation as the zipper pulls it tight. An "insert" filling out the missing portions of the hand permits Don to arrange the fingers for a convincing hand shake. The prosthesis seen here had had one year's continuous use before these unretouched photographs were taken.

Now, look at Don pictured below. Here you see the well-adjusted salesman making his pitch. Power and confidence radiated in his stance. His company's investment in a ***Realastic*** prosthesis has paid off many times over. Don has found himself.



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Of all Types

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Corrections
of Body
Depressions,
Atrophies and
Abnormalities
of Every
Nature

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is to restore, to cover, to beautify---
Handsome is as handsome does---

Turn the page to the tale of
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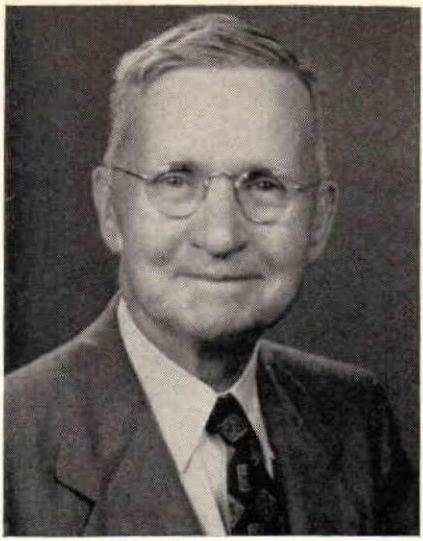


MARVIN POLLARD TO RETIRE

Founded Virginia Facility

Marvin F. Pollard, a pioneer member of the Orthopedic Appliance and Limb Manufacturers Association, has retired as head of the Marvin F. Pollard Co. of Richmond, Virginia. This company grew from a one-man establishment in Mr. Pollard's home to the modern facility of today with a staff of fifteen persons. Thomas G. Powell, who was trained by Mr. Pollard, has taken over the establishment and will operate it as the *Thomas G. Powell Company*. In addition to the Richmond facility, the company operates a branch office at the Woodrow Wilson Rehabilitation Center in Fishersville, Virginia.

We asked Mr. Pollard about his original interest in orthopedic appliances and about his future plans. His reply is an inspiration to those who are just beginning a career in this field:

"While employed as Superintendent of the American Locomotive Company, I maintained a workshop in my basement as a hobby. In my wife's family there was a young man crippled from childhood with Infantile Paralysis, who, on several occasions, had brought his brace to me for minor repairs. Then, one day, the idea came to me that I could probably make a new brace for this child, and so I began. After its completion, the boy was taken to the Orthopedist for a regular check-up, and the doctor was at once interested in knowing where he had secured the brace. Subsequently, I was contacted by the doctor, who urged me to go into the business of making braces for crippled children in our city. Since I was gainfully employed, I refused, and it was several years later, after a transfer by the American Locomotive Company to Schenectady, N. Y., where I found those Northern winters too cold for my Southern blood, before my thoughts turned to the construction of braces and appliances for the handicapped. Needless to say, the road was long and fraught with disappointments, hard work, long hours, experimentations, but the results have more than compensated for the labor and time that I had given the orthopedic appliance business.

"Now that I have retired, my wife and I plan to spend some time during the winter months in Florida, and then in the spring and summer, we can be found at our cottage at Stingray Point, Va., on the Chesapeake Bay."

Checkout Procedures for Below-Knee and for Above-Knee Artificial Limbs

By MARSHALL A. GRAHAM, M.S. and HERBERT E. KRAMER

Editor's Note: These two articles on checkout procedures originally appeared in the *Journal of the Association for Physical and Mental Rehabilitation*, 1956, volume 10, pages 89-93, 121-129, 135, and are reprinted by permission. In answer to our request, Henry C. Feller, C.P., Vice President of the J. E. Hanger Co., Washington, D. C., commented as follows on the outlines:

"The outlines are comprehensive and amply cover the functions that should be checked for a properly adjusted prosthesis. No doubt a test of the specific suggestions will be necessary and experience over a period of time will disclose any required modifications.

"This or a similar checkout procedure is necessary, however, and will be of inestimable benefit to all concerned, by co-ordinating the efforts of the members of the team and others concerned, in attaining the objective of the clinic team, a satisfactorily functioning and cosmetic prosthetic appliance."

PART I.

A Checkout Procedure for Below-Knee Artificial Limbs

There has been a growing trend in recent years to utilize the services of amputation clinics in the rehabilitation of amputees. These clinics, whose personnel include physicians, therapists, and prosthetists, have responsibility for the physical and prosthetic rehabilitation of the patient. Their responsibilities do not end with the prescription of a prosthesis, but include an evaluation of the adequacy of the prosthesis and training before the patient proceeds to subsequent phases of the rehabilitation program. It is known that an inadequate limb can result in insurmountable training problems and can hinder the physical, emotional, and vocational adjustment of the amputee.

Recently, as part of a nationwide research and educational program in upper extremity prosthetics, a checkout procedure for artificial arms was devised. The emphasis in prosthetic education has shifted from the upper extremities to the lower extremities. New York University and the University of California in cooperation with the Veterans Administration are developing lower extremities courses coordinated by the Prosthetic Research Board of the National Research Council. These courses for physicians, prosthetists and therapists, in addition to teaching fabrication, prescription, and training will include techniques of evaluation of lower extremity prostheses.

The major portion of the upper extremity procedure consisted of a check list of questions concerned with minimally acceptable prosthetic standards. If all the questions were answerable in the affirmative, the prosthesis was considered to be acceptable. Any questions answered in the negative immediately pointed up a deficiency in the prosthesis.

THE AUTHORS

Marshall A. Graham is an alumnus of the City College of New York and Springfield College, Springfield, Massachusetts, where he received the B.S. and M.S. Degrees with a major in physical education techniques applied to rehabilitation. He is now a doctoral candidate in this field at New York University. After working as a corrective therapist at the V. A. Hospital in Northport, Long Island, Mr. Graham joined the staff of the Prosthetics Devices Study of New York University.

A major concern during the six and one-half years with the Prosthetic Devices Study has been the physical aspects of amputation and prosthetic use, which culminated in the development, with Mr. Kramer, of the two articles on checkout procedures for below-knee and above-knee prostheses. He has also been a prosthetic consultant since 1953 to the Association for Physical and Mental Rehabilitation. Since September 1956 Mr. Graham has been employed as a Project Director with Space Utilization Analysis, Inc.

Herbert E. Kramer suffered an above knee amputation as a result of action with the infantry in Germany during World War II. Following separation from the Army he worked for the Veterans Administration's Prosthetic Center in New York for several years, training in the prosthetic field. He joined the Staff of New York University's Prosthetic Devices Study in 1947. Mr. Kramer has been specializing in gait and performance analysis, prosthetic evaluation and amputee training. In addition he himself has always been active in wearing and testing the latest experimental devices for above knee amputees. Other activities have included lecturing and demonstrating extensively to various medical meetings and other numerous organizations. In 1948 he was awarded the Patriotic Civilian Service Certificate from the Department of the Army "for furthering the program of research and development in artificial limbs." Recently his interest has once again brought his endeavor into the field of limb fitting.

In view of the success of the upper extremity checkout as an integral part of clinic procedure and as a result of many requests from physicians and therapists throughout the country, the authors have attempted to develop a check list by which the adequacy of a below-knee prosthesis can be determined. This check list pertains primarily to a conventional below-knee prosthesis as presented in Fig. 1. Although many variations are found, a conventional below-knee artificial limb is usually comprised of a wooden foot with toe-break; an ankle with provision for dorsi and plantar flexion (although some also make provision for inversion and eversion); a wood, metal, fiber or plastic shank; a carved wood, metal or molded leather or plastic socket; metal side braces with single axis knee joints; and a leather thigh corset. In addition, many below-knee amputees wear a waist belt with a fork strap attached to the shank, as an aid to retaining the limb on the stump, and a leather check lacer to control the knee joints in extension.

Fig. 1

Legend

A. Foot

B. Toe-break

C. Ankle joint and bushing

D. Front ankle bumper rubber or felt; acts as dorsiflexion stop)

E. Rear ankle bumper (rubber; for plantar flexion)

F. Anterior ankle articulation space (leather covered)

G. Posterior ankle articulation space (leather covered)

H. Shank (shin)

I. Air vent of shank

J. Fork strap

K. Check lacer

L. Knee joint

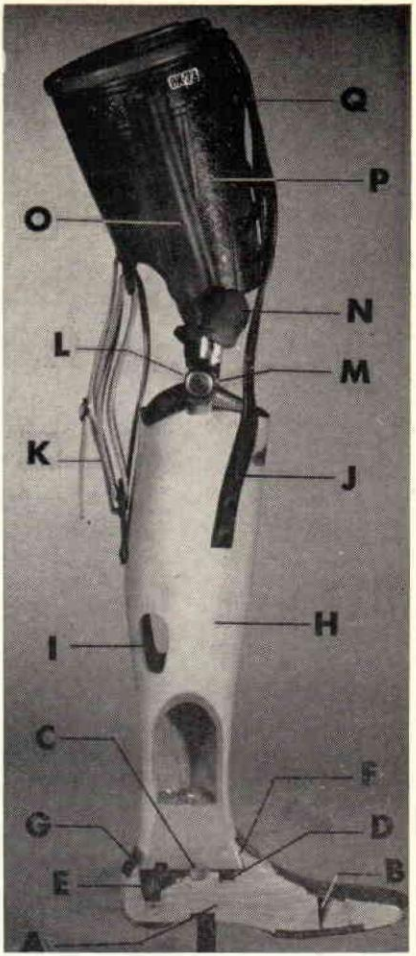
M. Knee joint extension stop

N. Knee joint cover

O. Thigh brace (leather covered)

P. Thigh corset (leather)

Q. Attachment strap or fork strap to waist belt



In this article, each italicized question represents a point to be checked by the clinic group. A brief discussion follows the question with occasional hints for correction of a subpar condition. A work sheet for clinic use can be easily drawn from the information contained in this article, supplemented by the reader's experience. A suggested form for the work sheet has a short underlined space preceding each numbered question, so that a check ($\surd$) or a "no" may be inserted as each item is covered at the clinic. The remedy for items that prove to have shortcomings may be obvious, in which case extensive discussion by the clinic group is unnecessary. It is the opinion of the authors that a checkout procedure such as this can facilitate the clinic functions by methodically emphasizing the most important factors in the prosthesis.

The reader should be cognizant of the fact that this article concerns itself solely with the determination of prosthetic adequacy. The entire area of functional adequacy of the amputee with this prosthesis as a concomitant of training and practice, is deserving of special treatment and is not covered in this article.

The check list which follows has been divided into four areas considered to be of major importance. The first area, quality control, is concerned with examination of the prosthesis before it is worn by the patient. The second area is concerned with the prosthesis worn by the amputee while standing. The third area is concerned with the posthesis worn by the amputee while sitting. The fourth and last area is related to the prosthesis worn by the amputee while walking. Any shortcomings of the prosthesis should be corrected and the limb rechecked by the clinic prior to the start of training.

A. Quality Control

1. *Is the color of the leg satisfactory and homogeneous?*

2. *Has the inside socket surface been completely and smoothly finished, and has a wood sealer been applied to the entire surface?*

In a wood socket, a wood sealer will prevent perspiration from the stump from penetrating the wood causing rough spots, rising of the grain, or cracking of the socket, any of which can cause stump irritation. A good finish will permit adequate hygienic care by allowing residual perspiration to be removed easily from the socket surface.

3. *Has the socket rim been adequately flared and all sharp edges smoothed?*

A sharp inside edge of the socket rim can cause discomfort and even laceration of the skin, especially in the case of obese amputees whose skin folds may overlap the socket.

4. *Is there a protective cover over the medial and lateral knee joint heads to prevent catching or tearing of trousers?*

This has been a continuing problem for below-knee amputees. Leather or plastic caps are available for placement over the joint heads.

5. *Do the knee joints articulate smoothly without resistance or excessive play?*

Excessive resistance will cause undue wear on the joint, shortening the maintenance-free period of wear. It will also force the amputee to exert more stump effort to extend the knee, resulting in more rapid fatigue. A loose joint can damage the bearings or, as a result of undue strain, cause a cracked joint. Rough action of the joints may be an indication of cracked or worn ball bearings, dirt, or lack of lubrication. Very often, noise will be associated with these conditions.

6. *Do both side braces come into contact with the knee extension stops simultaneously?*

Uneven contact of the knee extension stops will cause internal or external rotation of the prosthesis each time the knee reaches full extension in addition to causing uneven strain on the joints.

If a check lacer is worn, uneven setting of the joints may at first be overlooked. Usually a check lacer is used to prevent the clicking noise that occurs as the prosthetic knee reaches full extension. However, as the leather stretches, contact occurs at the knee stops and the deleterious effect of improperly set knee joints will become apparent. (Note: it has been the experience of the authors that check lacers can be eliminated in many below-knee prostheses. Generally, a lacer should be included on artificial limbs only for patients with short stumps and/or with knee instability due to weak

ligamentous structures. For other patients, elimination of a joint click can be accomplished by filing the knee extension stops and/or by the amputee resuming control of his knee so as to limit extension before the joint stops make contact.)

7. *Does the distance between the medial and lateral thigh braces remain constant during full flexion and extension?*

Inconsistent spacing between the thigh portion of the side bars during flexion and extension is an indication of misalignment of the knee joint heads. The joint heads should be perpendicular to an imaginary line through their centers and parallel to the line of progression of the prosthetic swing. Improper joint alignment will tend to distort the thigh corset and will influence the prosthetic swing while walking. It can contribute also to uneven wear of the knee joints and breakage of the thigh portion of the side bars.

8. *Is the brace and corset approximately 1 inch higher on the lateral side than on the medial side?*

The higher lateral shaping of the thigh corset will provide a better support for the muscles of the hip (which control movements of the femur) to work against, providing lateral stability.

The anatomical structure of the femur causes the body weight to lean laterally during the stance phase. This becomes exaggerated in amputees with the loss of muscular control at the base of support (foot and ankle).

9. *Has the thigh corset been finished in a workmanlike manner, i.e. lined, coated for resistance to perspiration, and sewn and riveted neatly?*

10. *Is there adequate clearance at the ankle articulation to prevent rubbing of parts or catching of socks?*

Too little clearance will cause rubbing of the inside surface of the foot on the ankle block which will cause noise. Too much clearance will allow sock material to catch, causing tearing and/or restriction of ankle movement.

11. *Has the artificial foot been properly upholstered and fitted to the shoe?*

Neat upholstery, with no "sharp" seams will do much to prevent tearing of socks. In addition, if the foot is too small, slippage of the shoe can cause tearing of socks. There also will be a tendency for the heel of the shoe to scuff the ground during the prosthetic swing phase.

12. *If used, do the fork strap and/or check strap have sufficient adjustment range? (Check length and holes on straps.)*

B. Standing

1. *Is the amputee secure while standing on the prosthesis with good posture and with heels touching?*

The amputee should feel that the prosthesis will remain directly under him while he is standing with his weight evenly distributed on both feet. If he feels that he is being forced backward, the prosthetic ankle may be set in too much plantar flexion. If he seems to be thrown forward and there is a tendency for the knee on the prosthetic side to buckle, the ankle may be set in too much dorsiflexion. If his weight is on the outside of the foot, the ankle is set in too much inversion; if his weight is on the inside of the foot, the ankle is in too much eversion.

2. *Is the amputee comfortable while standing on the prosthesis with good posture and with heels touching?*

Special attention should be directed to excessive pressure in such common areas of socket discomfort as:

a) posterior and distal to the head of the fibula
b) tibial tuberosity
c) anterior, distal tibia
d) anterior rim of the socket (in the area of the patellar ligament)

In addition, the amputee should not experience a choking sensation about the distal portion of the stump.

3. *Is the artificial leg the correct length?*

Incorrect length of the prosthesis can be determined by visual examination of the anterior-superior iliac spines or the superior iliac crests. The usual method of this examination is for the examiner to place his thumbs on the spinous processes or to place the hands on the crests of the illium, and by sight, judge whether or not they are level.

If the height is not correct, the use of prepared flat wooden slabs of varying thicknesses is helpful in determining the amount of correction necessary to attain the correct prosthetic length.

4. *Is the anterior rim of the socket properly contoured to allow medial and lateral movements of the patella?*

A narrow or high anterior rim of the socket that restricts lateral movement of the patella will generally force the patella upward causing the patellar ligament to be stretched. The amputee will experience discomfort because of jarring pressures on the patellar ligament at heel contact.

5. *Does the posterior rim of the socket extend high enough to prevent the formation of popliteal flesh roll?*

Experience has shown that keeping the posterior wall of the socket high enough to encase the flesh of the distal popliteal region reduces the tendency toward formation of a fleshy roll. A popliteal flesh roll can present a difficult fitting problem and restrict knee flexion.

6. *Do the side braces conform closely to the contour of the knee and thigh?*

Well-contoured side bars that provide a gripping action (without undue pressure) in the supracondylar region of the thigh will minimize the piston action of the socket on the stump, provide some lateral stability, and result in a more cosmetically acceptable prosthesis.

7. *Does the thigh corset fit snugly, with adequate adjustment for increasing the corset tension?*

There should be an opening of approximately 1 to 1½ inches between the corset borders. The adjustability of the thigh corset is particularly important for patients whose body weights fluctuate, and for recent amputees where considerable atrophy of the thigh may be anticipated. A thigh corset that cannot be tightened will become loose with thigh atrophy, disturbing the customary weight distribution between the corset and socket.

8. *Is the general shape of the prosthesis cosmetically acceptable?*

To be cosmetically acceptable, a below-knee prosthesis should approximate the shape and size of the non-amputated shank, ankle, and foot.

C. Sitting

1. *Is the amputee comfortable while sitting?*

This question is of a general nature. The various comfort factors are specifically covered in questions 2 to 6.

2. *Can the amputee sit with a minimum of 90 degree flexion and with his prosthetic foot flat on the floor?*

It should be possible for an amputee to sit comfortably in restricted areas, such as motion picture theatres and buses. In addition, restriction of knee flexion can cause the amputee's prosthetic foot to extend before him in a cosmetically unacceptable manner. There is also the danger of others tripping over an extended foot.

3. *Has the socket been properly shaped to prevent crowding in the hamstring and popliteal areas?*

Symptoms of improper socket contour are tingling and numbness of the stump and/or pressure of the socket rim on the medial (semimembranosus and semitendinosus) or lateral (biceps femoris) distal tendons. If such symptoms become evident, relief is usually indicated at the medial and/or lateral aspects of the posterior socket rim. In addition, socket pressure in the popliteal region indicates that the apex of the posterior socket rim is too high.

4. *Has the corset been properly shaped to prevent crowding in the hamstring and popliteal areas?*

An improperly shaped posterior distal thigh corset will cause bunching and irritation of flesh in the upper portion of the popliteal area. The distal corset should have an ox-bow shape with a cut-out for the ligaments high enough to prevent restriction of their normal function.

5. *Does the stump remain firmly situated in the socket while the amputee is sitting?*

The stump should not pull out of the socket or away from the anterior socket wall when the amputee is seated with knees flexed to about 90 degrees.

If the stump tends to pull out of the socket, it is an indication that the knee joints are placed higher than knee center and/or the posterior rim of the socket is too high.

If the stump tends to pull away from the anterior wall of the socket (gapping), it is an indication that the knee joints have been placed too far posteriorly. This is often accompanied by excessive pressure at the anterior distal tibia.

6. *Are both knees reasonably level while the amputee is sitting?*

For the below-knee amputee, this is a function of the correct length of the shank of the prosthesis as well as the correct positioning of the prosthetic knee joints.

D. Walking

1. *Is the amputee comfortable while walking? (If not, specify areas of discomfort.)*

Special attention should be directed to certain common areas of discomfort and irritation (see question 2 under the heading, Standing):

a) posterior and distal to the head of the fibula
b) tibial tuberosity
c) anterior, distal tibia
d) anterior rim of the socket (in the area of the subpatellar ligament)

The authors believe that these areas are worthy of emphasis since discomfort will become most evident when walking. The amputee's comments should be related to a careful examination of the stump at the conclusion of the walking phase of the checkout procedure.

2. *Is the amputee secure while walking?*

The amputee should feel that the prosthesis remains directly under him during stance phase with little or no tendency to shift his body weight laterally or medially. Lateral instability, usually associated with a shifting of the entire prosthesis laterally as full weight is taken on the artificial limb, may be corrected by increasing the amount of valgus (knock) of the prosthesis. This is accomplished by bending the upper portion of the side braces. Displacing the prosthetic foot laterally on the shank is another way of widening the support base. The latter method, although more difficult, will not influence the positioning of the stump within the socket, whereas bending of the side bars may result in stump discomfort. Conversely, medial instability (which is less prevalent) is corrected by increasing the varus (bow) of the prosthesis, or displacing the foot medially.

Anterior-posterior stability is primarily a function of the foot-shank relationship. General prosthetic practice has aligned the foot on the shank at an angle of slightly less than 90 degrees of dorsiflexion. Excessive dorsiflexion will cause the amputee to flex his knee prematurely while walking, resulting in a "dipping" gait and giving the impression of too short a prosthesis. Excessive plantar flexion will cause difficulty in transferring weight over the ball of the foot, resulting in an irregular gait and giving the impression of too long a prosthesis.

3. *Does the prosthesis swing in a straight line of progression?*

The three major variations of the swing of a prosthesis in the sagittal plane are:

a) medial whip
b) lateral whip
c) circumduction

A medial whip is characterized by a movement of the heel of the prosthetic foot medially and a rotation of the knee laterally, which can best be observed immediately after toe-off. The foot then rotates back to its usual position either during the remainder of the swing phase (causing a "fish tail" effect), or as the heel of the prosthesis is contacting the ground with the toe rotating medially. A medial whip can usually be corrected by moving the upper portion of the medial side brace posteriorly on the thigh lacer.

A lateral whip is the reverse of a medial whip, with the heel of the foot moving laterally and the knee rotating medially immediately after toe-off of the prosthesis. A lateral whip can usually be corrected by moving the upper portion of the medial side brace anteriorly on the thigh lacer.

Circumduction is a movement of the prosthesis in a lateral arc from a straight line of progression. Circumduction is seldom seen with below-knee amputees, but if present can be caused by the amputee walking with little or no knee flexion and so moving his prosthesis outward to insure that the foot clears the ground.

4. *Is the toe-out of the prosthetic foot the same as that of the normal foot?*

5. *Does the amputee walk with a reasonably narrow base of support?*

In evaluating this item, each amputee must be considered as an individual. The length of his stump and his general body type must be taken into con-

sideration. It is to be expected, for instance, that an obese person will walk with greater natural abduction than one who is thin or muscular.

In order to increase lateral stability, it has been the practice to fit very short below-knee stumps with a prosthesis set in exaggerated valgus (the prosthetic foot outset), which produces an effect of abduction.

There is no reason why the average below-knee amputee with no special physical or prosthetic complication cannot walk with his base of support as narrow as that of the nonamputee. This is usually between ½ and 2 inches.

6. *While walking, is the plantar surface of the prosthetic foot flat on the ground during stance phase?*

Observation of the attitude of the foot during the prosthetic stance phase will show whether the foot has been properly aligned on the shin. An everted or inverted foot will cause uneven wear of the sides of the sole of the shoe and may be the cause of lateral instability. Plantar and dorsiflexion have already been discussed (see question 2 under the heading *Walking*).

7. *Is the resistance of the ankle to plantar flexion properly set to prevent foot-slap or external rotation immediately after heel contact?*

If there is too little resistance (caused by too soft a rear ankle bumper) the prosthetic foot will strike the floor too rapidly after heel contact, causing a slapping noise. Too much resistance (caused by a rear ankle bumper that is too hard) will cause the prosthetic foot to delay striking the floor after heel contact. This will allow the natural rotation of the leg to externally rotate the prosthetic foot before it is flat on the floor. The delay of the sole of the foot in contacting the floor is readily observable as the amputee walks.

8. *Is the "piston action" between the stump and socket minimal during walking?*

An easy method for determining piston action between the stump and the socket is by observation of the action of the base of the patella as it moves away from and toward the anterior socket rim. A pencil mark on the stump sock can be most helpful in this observation. The motion noticed when the knee is flexed should be ignored. It is after the knee is extended and weight placed on the prosthesis that the amount of pumping can be most accurately determined. Displacement of one-half to three-quarter inch is not unusual. Obviously, it is desirable to have little piston action.

9. *Does the prosthesis function in a smooth, noise-free manner?*

Common areas and sources of noise are:

a) the ankle joint, which may require greasing
b) the space between the foot and ankle which may be inadequate and cause rubbing (a home remedy is to insert soap scrapings into the space)
c) the knee joints, which may require greasing
d) clicking of the knee joint extension stops, which is usually eliminated by the use of a check lacer or by filing the stops.

At the conclusion of the walking phase of the checkout procedure, the amputee's stump should be examined for any irritated or discolored areas, with particular attention directed to the common areas of discomfort previously described. Some indication of how weight is distributed over the stump can be obtained by the impression left by the stump sock on the skin.

This paper has attempted to delineate the areas considered by the authors to be of major importance in determining the prosthetic adequacy of a below-knee artificial limb.

PART II.

A Checkout Procedure for Above-Knee Artificial Limbs

By MARSHALL A. GRAHAM, M.S. and HERBERT E. KRAMER

In the preceding article the authors present a procedure for evaluating the adequacy of below-knee prostheses. The problems of above-knee amputees are more acute than are those of below-knee cases, primarily as a result of the greater functional anatomical loss due to the higher amputation site.

A conventional above-knee prosthesis usually consists of a wood foot with a toe-break (Fig. 1); an ankle with provision for dorsi and plantar flexion (although some also provide inversion and eversion); a wood, metal, fiber or plastic shank; a single or multiple axis knee (providing flexion and extension) (Fig 2); a carved wood, metal, molded leather, or plastic socket; and a pelvic belt with single or double axis hip joint (or an air valve, if a suction socket is used). Fig. 3 presents two conventional above-knee prostheses. One is fitted with a pelvic belt as the major means of suspension (No. 1), while the other utilizes the suction socket principle (No. 2). In addition, many above-knee amputees wear an extension aid in the form of a kick strap, hickory lever, wrap spring, coil spring, or compressible rubber bumpers to help in achieving knee extension while walking.

In past years there has been great emphasis placed on finding solutions to the problems of above-knee amputees. Because of this, an impressive array of literature is available concerning the fit, alignment, biomechanics, and training related to above-knee prostheses. However, to the writers' knowledge, there has been no comprehensive clinical procedure set forth by which th adequacy of an above-knee prosthesis could be determined. It is the purpose of this paper to present such a procedure.

As in the article dealing with below-knee prosthesis checkout, each italicized question represents a point to be checked by the clinic group. A brief discussion follows the question with occasional hints for correction of a substandard condition. A work sheet for clinic use can easily be drawn from the information contained in this article, supplemented by the reader's experience. A suggested form for the work sheet has a short underlined space preceding each numbered question, so that a check ($\surd$) or a "no" may be inserted as each item is covered at the clinic. The remedy for items that prove to have shortcomings may be obvious, in which case extensive discussion by the clinic group is unnecessary.

The check list which follows has been divided into four areas considered to be of major importance. The first area, quality control, is concerned with examination of the prosthesis before it is worn by the patient. The prosthesis is then examined as it is worn by the amputee while standing, sitting and walking. Any shortcomings of the prosthesis should be corrected and the limb rechecked by the clinic prior to the start of training, since it is known that an inadequate limb can result in insurmountable training problems and can hinder the physical, emotional, and vocational adjustment of the amputee.

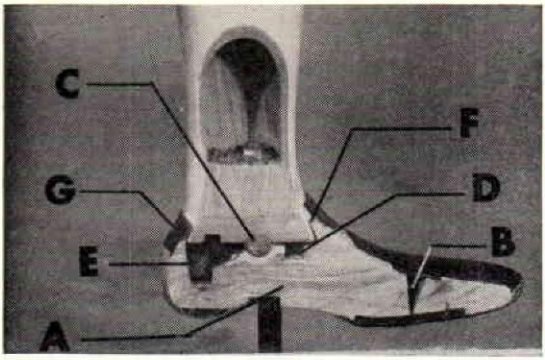


Fig. I—Legend: A. Foot, B. Toe-break, C. Ankle joint and bushing, D. Front ankle bumper (rubber or felt; acts as doriflexion stop), E. Rear ankle bumper (rubber; for plantar flexion), F. Anterior ankle articulation space (leather covered), G. Posterior ankle articulation space (leather covered).

A. Quality Control

(To be checked with the prosthesis off the patient.)

1. *Is the color of the leg satisfactory and homogeneous?*
2. *Has the inside socket surface been completely and smoothly finished, i.e. a wood sealer covering the entire surface?*

   In a wood socket, a sealer will prevent perspiration from the stump from penetrating the wood, causing rough spots, raising of the grain, or cracking of the socket, any of which can be the cause of stump irritation. A good finish will permit adequate hygienic care, allowing residual perspiration from the socket surface to be easily removed.
3. *Has the socket rim been adequately flared, and all sharp edges removed?*

   A sharp inside edge of the socket rim can cause discomfort and even laceration of the skin, especially in the case of obese amputees whose skin folds may overlap the socket rim.
4. *Is a back pad attached to the posterior socket wall?*

   When the amputee seats himself on a hard surface, a back pad attached to the posterior socket wall will help to:

   a. Reduce the wear on trousers.
   b. Muffle the sound of the socket contacting the hard chair surface.
5. *If a pelvic joint is used, does the joint articulate smoothly without resistance or excessive lateral play?*

   Excessive resistance will cause undue wear of the joint, shortening the maintenance-free period of use. It will also restrict hip motion, necessitating added effort by the amputee.

   A loose joint can cause noise and loss of prosthetic control (by lateral movement of the socket) or, as a result of undue strain can fracture the hip joint.

6. *Is there proper clearance between the anterior portion of the knee and shank during knee flexion and extension?*

Too little clearance will cause rubbing of the surfaces between the knee and the anterior-proximal shank, producing noise. Too much clearance will allow the trouser material to catch, resulting in tearing and/or a restriction of knee motion. Catching of the trouser is most likely to take place when rising from a sitting position or when walking into the wind.

7. *Is the knee extension stop padded?*

The knee extension stop should be padded with felt, rubber or other shock absorbent material. The padding will help muffle noise caused by contact between the knee stop and the socket, as well as to reduce the impact at full extension during walking.

8. *Can the prosthetic knee be flexed a minimum of* 120°?

When sitting, adequate knee flexion will permit positioning of the prosthetic foot well under the chair.

This knee flexion range is also important to allow the amputee to kneel comfortably, since limited knee flexion will cause the amputee to fall forward and can cause stump discomfort.

A quick method for determining if the prosthetic knee allows sufficient flexion is to place the prosthesis in a kneeling position on a flat surface. With the knee flexed to its maximum, the longitudinal axis of the socket should be posterior to a vertical line through the knee axis.

9. *Is the posterior-distal socket supported over the entire cut-out area of the shank during maximum knee flexion?*

This is particularly important when the amputee kneels. If the posterior-distal socket is not evenly supported over the entire shank cut-out area, there is a strong possibility that the posterior portion of the shank will splinter, crack or become deformed.

10. *Is there adequate clearance in the ankle articulation to prevent rubbing of parts or catching of socks?*

Too little clearance will cause rubbing of the inside surface of the foot on the ankle block, which may produce noise. Excessive clearance will allow the sock to catch, causing tearing and/or restriction of ankle movement.

11. *Has the artificial foot been properly upholstered and fitted to the shoe?*

Neat upholstery with no sharp protrusions or edges will do much to prevent tearing of socks.

If the foot is too small, slippage of the shoe can cause sock damage, or a tendency for the heel of the shoe to scuff the ground during the prosthetic swing phase. Naturally, if the foot is too large the amputee will find it difficult to change shoes or socks on his prosthesis.

12. *If a kick strap is used, is there adequate adjustment for increasing or decreasing tension?*

13. *In a suction socket, can the valve body be threaded easily in and out of the valve seat?*

It is important that the threads of the valve seat be free of glue or dirt, as improper seating of the valve body may cause loss of suction and/or "anti-social" noises.

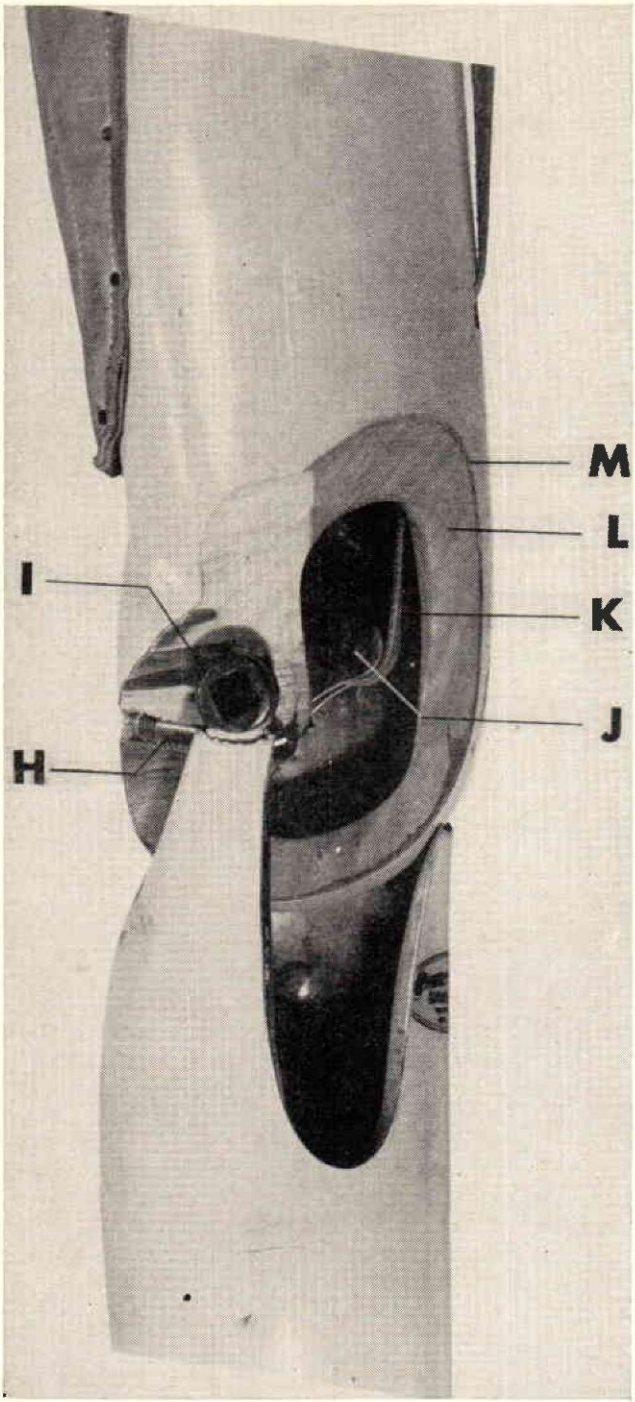


Fig. II—H. Knee friction adjustment screw, I. Knee bolt (single axis), J. Knee control roller, K. Knee control strap, L. Willow or Bass wood construction, M. Rawhide over wood (painted).

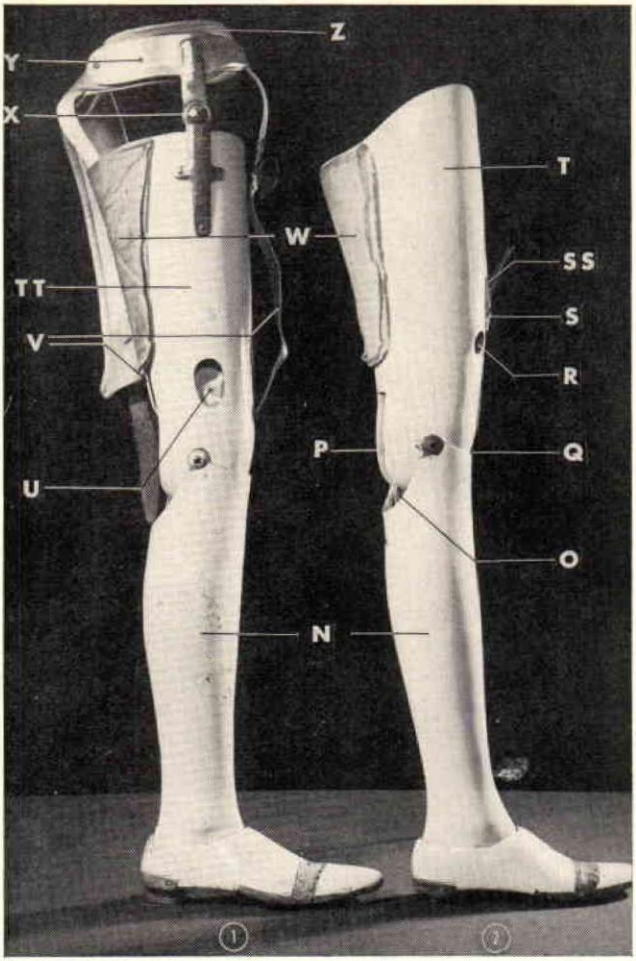


Fig. III

N. Shank (Shin)
O. Knee extension stop
P. Cut out of knee (permits knee flexion)
Q. Knee
R. Suction socket valve opening
S. Kick strap adjustment buckle
SS. Kick strap
T. Suction socket
TT. Conventional, pelvic belt socket
U. Air vent opening
V. Knee control strap
W. Back pad
X. Pelvic joint
Y. Pelvic band
Z. Pelvic belt

B. Standing
(prosthesis on)

1. *Is the amputee secure while standing with good posture and with heels together?*

When the amputee stands with good posture and heels together, there should be no tendency for the prosthetic knee to buckle. Although the stump is extended to the rear, pressure should not be necessary to maintain knee stability. As a further check, have the amputee balance momentarily on the prosthesis, with the sound foot off the ground, to be sure the prosthetic knee does not buckle. (The fact that the amputee cannot balance himself on the prosthesis for any appreciable time does not indicate a prosthetic shortcoming, but may be due to inadequate training.)

Increased knee stability for the amputee can be accomplished most expeditiously either by (a) increasing knee extension by adjusting the knee extension stop or (b) setting the foot in additional plantar flexion.

These adjustments should be made conservatively or they may create such problems as:

a. Hyper-extension of the prosthetic knee which can result in increased lumbar lordosis when the prosthesis is in stance phase. In addition, it will force the amputee to use greater stump effort to initiate knee flexion while walking, causing fatigue and/or poor appearance of gait (excessive rearward heel rise at toe-off).

b. Excessive plantar flexion of the ankle which may cause the amputee to complain of a sensation of walking "up a hill" as he transfers his weight over the ball of the prosthetic foot, resulting in the feeling that the prosthesis is too long. In order to compensate for this apparent increase in length the amputee may develop such poor walking habits as rising excessively on the ball of the normal foot during the swing phase of the prosthesis (vaulting) or walking with an abducted or circumducted gait.

If the two prosthetic adjustments mentioned above are not successful, it may be necessary to sever the socket from the knee block and set it more anterior to the knee axis. It is routine prosthetic practice to fit amputees with medium or short stumps with the knee bolt posterior to a reference line between the greater trochanter of the femur and the ankle axis. In contrast, a well-trained amputee with a longer, well-developed stump can tolerate the knee axis closer to the trochanteric-ankle axis line, as an amputee of this type can more readily control prosthetic knee flexion.

2. *Is the amputee comfortable while standing on the prosthesis with good posture and heels close together?*

The above-knee amputee bears weight primarily at the:

a. Ischial tuberosity

b. Gluteus maximus region

Weight-bearing is avoided as much as possible in the adductor, femoral triangle and ramus regions of the stump. Some weight is borne over a major portion of the remaining area of the stump, extending to approximately 1½ inches of the end. The distal stump should be relatively free of weight, since it is generally more sensitive in this area.

3. *Is the artificial leg the correct length?*

The adequacy of the length of the prosthesis can be determined by visual examination of the anterior-superior iliac spines. The usual procedure is for the examiner to place his thumbs on these spinous processes and by sight judge whether or not they are level.

If the height appears unsatisfactory, the use of prepared flat wooden slabs of varying thicknesses (⅛", ¼" and ½") is very helpful in determining the amount of alteration necessary to correct the length of the prosthesis.

4. *Is the anterior-medial area of the socket wall properly contoured to avoid excessive pressure in the femoral triangle region?*

Too tight a fit in the femoral triangle (Scarpa's triangle) region will usually cause an "aching sensation." Too low a fit in the femoral triangle will cause the development of a flesh roll which may present serious fitting problems.

The need for a properly contoured socket in this area is critical, since edema of the stump is often associated with restriction of the lymphatic and venous return, due to localized restriction in the femoral triangle as well as the distal regions of the stump.

5. *Is the medial socket wall the correct height to prevent (a) formation of an adductor flesh roll and (b) excessive pressure on the ramus of the pubis?*

A low medial wall may not initially cause the amputee any appreciable discomfort. However, with time, an adductor roll will develop which will not only hinder the amputee's gait (as he will tend to walk with the prosthesis in abduction to avoid friction and pressure) but will also cause fitting difficulties. It is felt that the medial wall should be no more than $\frac{1}{4}$ inch lower than the level of the ischial seat of the socket.

Ideally, the ramus should be located inside the medial socket wall which should be so shaped as to minimize pressure during weight-bearing.

6. *Is the ischial tuberosity properly situated on the ischial support of the socket?*

Present knowledge of above-knee prostheses indicates a quadrilaterally shaped socket with a definite flat portion on the posterior-medial rim, which becomes the major weight-bearing area of the socket (for placement of the ischial tuberosity of the pelvis). If the ischium should slip off this socket support area, the amputee will experience acute discomfort. Improper placement of the ischial tuberosity on the socket rim (tuberosity inside the socket) is an indication that the distance between the anterior and posterior socket walls is too great, providing insufficient counterpressure along the anterior socket wall for stabilizing the ischial tuberosity on its seat. This distance between the anterior and posterior socket walls represents a critical measurement of the amputee's stump (the distance between the adductor longus tendon and the ischial tuberosity). Present expert opinion is that the ischial tuberosity should be located one-half inch posterior to the inner surface of the rear wall and one inch from the inner medial socket wall. Therefore, the anterior-posterior dimensions of the inner socket walls should be one-half inch less than the adductor longus-ischial tuberosity measurement.

To determine whether the ischial tuberosity is properly positioned on the socket, have the amputee remove his weight from the prosthesis, place a finger (with the palm up) on the ischial tuberosity and allow the amputee to re-apply his weight to the socket. In cases where location of the ischial tuberosity is difficult (muscular and/or obese patients), it may be necessary to have the patient bend forward in order to properly locate the bony prominence and then have him straighten up as he re-applies weight to the prosthesis.

It is further suggested that the clinician mark the location of the ischial support on the socket before removing his finger. This mark will allow location of the ischial support with the prosthesis off the patient.

7. *Is the distal stump free of tension?*

To check the tension of the skin at the end of the stump, insert a finger through the valve opening of the suction socket or through the air vent opening of a conventional socket and palpate the stump while the amputee alternates his weight on and off the prosthesis. This procedure will also tell the relative position of the stump within the socket and give information about the pumping action taking place between the stump and socket.

Excessive tension on the distal stump will cause an uncomfortable pulling sensation that is often exaggerated when scar tissue is in this area.

8. *Is there adequate socket space distal to the stump while the amputee puts full weight on the prosthesis?*

   There should be approximately 2 inches of socket space distal to the stump to reduce the possibility of the end of the stump hitting the bottom of the socket during full weight-bearing or if the stump should slip too far into the socket.

   Limited clearance in the suction socket will mean too small an air space which may cause too great a fluctuation of positive and negative pressures during use. The recommended suction socket pressure in the past has been one to two pounds per square inch for both negative and positive pressures. However, this should not be a hard and fast rule. There have been reports of successful suction socket wearers with socket pressures as high as four to five pounds per square inch.

9. *On weight-bearing does the stump stay in contact with the lateral socket wall?*

   On weight-bearing the lateral stump should be in firm contact with the socket wall in order to afford maximum lateral support for the amputee. This can be determined best by asking the amputee if the lateral wall gives support without pain or discomfort.

   In the suction type socket, the lateral fit becomes more critical. There should be no gap between the lateral rim of the socket and the amputee's stump, as this will cause breakage of the suction seal allowing air to enter or escape from the socket with accompanying "anti-social noise."

10. *If a pelvic belt is used, does it accurately fit the contours of the body?*

    The pelvic belt should pass between the iliac crest and the greater trochanter and not exert excessive pressure on the anterior-superior iliac spine. A well fitting pelvic band and joint will do much to overcome excessive pumping action between the stump and socket while walking. Excessive pumping action can cause skin irritations of the stump and may force the amputee to walk with a gait characterized by vaulting, abduction or circumduction.

11. *If a pelvic belt with hip joint is used, is the head of the joint located on or anterior to the greater trochanter?*

    The pelvic joint should be attached to the socket on or slightly anterior to the greater trochanter and parallel to the line of progression for best function while walking and comfort while sitting. Pinching of the flesh in this area is not uncommon with an improperly located pelvic joint. (Also, see SITTING, questions 4 and 5).

12. *If a Silesian belt is used, are the attachments properly located?*

    The lateral attachment of the Silesian bandage should be at a point about ¼ inch posterior to the greater trochanter.

    The anterior attachment should be at or near a point formed by the intersection of:

    a. a horizontal line at the level of the ischial seat
    b. a vertical line down the middle of the socket

C. SITTING

1. *Can the amputee sit comfortably with his hip flexed to 90 degrees?*

   Particular attention should be directed to the anterior socket rim while the amputee is seated with the hip and knee flexed to 90 degrees.

With the suction socket, too high an anterior wall may push against the bony prominence of the pelvis, displacing the socket. There is usually no discomfort with too low an anterior wall of a suction socket, although this is conducive to the development of an anterior flesh roll.

With the pelvic belt leg, too high an anterior wall can cause pressure and pain where it strikes the pelvis and can restrict hip flexion. Too low an anterior rim may cause crowding and pinching of the flesh of the anterior proximal stump.

An additional check of the correct height of the anterior socket wall is to have the amputee bend forward and touch his feet while sitting.

2. *Is the prosthetic knee the correct height and length in proportion to the sound knee?*

The prosthetic knee presents an objectionable appearance if it extends beyond or is higher than the sound knee while the amputee is sitting. Either of these conditions indicates that the prosthetic knee axis does not coincide with the center of rotation of the sound knee.

If the prosthetic knee extends too far (knee center too low and socket too long) the prosthetic foot may not reach the floor. If the prosthetic knee is too high (knee center too high) the amputee may have difficulty when sitting at a desk or table or when driving a car.

An amputee with a long-above-knee stump (supra-condylar or Gritti-Stokes amputation) may require a prosthesis with a knee center that is lower than the sound knee in order to allow for fitting with a conventional above-knee prothesis. This is especially true of a suction socket, due to the need for an air space.

3. *Does the knee remain flexed while the amputee is seated?*

If an extension aid has too much tension, it will tend to extend the prosthetic knee when the foot is lifted from the floor. This condition is more prevalent with amputees who do not utilize knee friction.

4. *Can the amputee sit without the prosthesis internally or externally rotating?*

The outer posterior socket wall should be relatively flat, so that the posthetic shank remains vertical when in contact with a hard surface.

Another cause of medial or lateral rotation of the prosthesis while sitting is improper placement of the pelvic joint. If the joint head is placed too far anteriorly (and medially rotated to the line of progression) the thigh portion of the prosthesis will rotate internally and the shin will abduct. If the joint head is placed too far posteriorly, the thigh portion of the prosthesis will rotate externally and the shank will adduct. As previously mentioned, the recommended placement of the pelvic joint is on or slightly anterior to the greater trochanter.

5. *Does the prosthesis remain in good abduction-adduction alignment?*

While sitting, the amputee should be able to maintain comfortably the thigh portion of the prosthesis parallel to the thigh of his non-amputated limb.

Although adduction is not usually encountered, abduction of the thigh is quite common. The amputee may abduct the prosthesis to relieve pressure in the adductor or femoral triangle regions of the stump.

A second cause may be that the pelvic joint assembly does not closely follow the anatomical contours of the hip and thigh while sitting. There should not be a large gap between the joint and the body, and the joint assembly should not be in abduction in relation to the body parts. Pressure or gapping of the pelvic band can also cause abduction.

6. *Does the lateral wall remain in contact with the stump?*

Gapping at the lateral wall of the socket while the amputee sits is an indication that the socket fit or alignment is improper. The socket should fit snugly around the entire stump periphery. Gapping is usually associated with pressures at the lateral-distal and/or the medial-proximal stump and can often be attributed to poor shaping of the socket. In addition, there is a problem of air loss for the suction socket wearer.

7. *Is the ischial support area of the socket properly contoured to prevent stump discomfort?*

A sharp burning sensation in the ischial tuberosity area is an indication of insufficient relief for the hamstring muscle tendons as they are stretched over the ischial support region of the socket. The burning sensation is the result of pressure on the stretched tendons as well as friction. The usual procedure is to relieve the ischial support region within the socket by sloping the socket in this area or by channeling the socket to allow sufficient room for the tendons of the hamstring muscles. This burning sensation is usually noticed after several moments of sitting.

8. *With the suction socket, can the amputee reapply his weight after sitting without any disturbing "suction noises"?*

Ask the amputee to stand, putting his weight on the prosthesis. A flatulating noise occurring when weight is re-applied, is an indication that air has re-entered the socket (commonly at the lateral socket wall). A condition of this type can be very embarrassing to the wearer and if not corrected, may result in the rejection of the suction socket. A high, well-contoured socket fit across the lateral wall will prevent this type of noise.

D. Walking

1. *Is the amputee comfortable while walking? If not, specify areas of discomfort.*

Areas of discomfort of the stump, which may not be a problem while sitting or even standing, become acute while walking, due to the constantly changing distribution of weight in the socket.

Special attention should be directed to the following regions in which discomfort and irritation are commonly found:

a. Ischial tuberosity
b. Ramus of the pubis
c. Proximal adductor region
d. Femoral triangle (Scarpa's triangle)
e. Distal lateral region

Every effort should be made to provide the amputee with a comfortable socket, since his adaptability to training and his subsequent performance depends heavily upon being comfortable.

2. *Is the amputee secure while walking?*

Prosthetic instability of the above-knee amputee consists basically of two types: (a) buckling at the knee and (b) lateral instability.

(a) *Buckling at the knee* is the more dangerous of these two balance problems since inadvertent flexion of the prosthetic knee, occurring when the prosthesis is weight-bearing (stance phase) can

cause falling. Three common causes of an insecure prosthetic knee are:

(1.) Faulty anterior-posterior alignment of the knee. The center of rotation of the knee is too far anterior to a reference line between the greater trochanter and the prosthetic ankle axis (see question 1, STANDING).

(2.) Too hard a rear ankle bumper (plantar flexion bumper). Too hard a rear ankle bumper resists plantar flexion at the time of heel contact causing the forward momentum of the body to be applied to the knee resulting in a tendency to buckle. This can be overcome to some extent by excessive rearward stump pressure.

(3.) Excessive dorsi-flexion of the prosthetic ankle. General prosthetic practice is to align the foot on the shin at an angle of 90 degrees or slightly greater (plantar flexion). Excessive dorsi-flexion will place the knee axis too far anterior to the greater trochanter-ankle axis line, so that when the amputee transfers his weight to the prosthesis, the knee will tend to buckle.

If the prosthetic knee is unstable, the amputee may incorporate various compensatory movements in his gait pattern to overcome the difficulties he may be experiencing. The four most common observable compensatory movements are:

(a) forcefully flexing the prosthetic knee and then abruptly extending it with a whip-like motion

(b) overextending the prosthesis, deliberately taking a long prosthetic step and then exaggerating the hard impact at heel contact

(c) walking with a slow, halting gait and with "double knee action"; the prosthetic knee does not maintain full extension as the weight is transferred to the prosthesis after heel contact and the amputee re-extends the knee by forcing the socket backwards with his stump

(d) lordosis—the amputee uses extensor muscles of the back as a substitute for weak hip extensors to help maintain knee extension.

(b) *Lateral instability*—The amputee should feel that the prosthesis remains directly under him during stance phase with little or no tendency to shift his body weight laterally. Lateral instability is usually associated with a shifting of the entire prosthesis laterally as full weight is taken on the artificial limb. The two basic causes of this inncorrect instability are improper medial-lateral alignment of the prosthesis and inadequate training.

Improper alignment may be corrected by increasing the width of the walking base. The suggested way of doing this is to displace the knee-shank-foot of the prosthesis laterally in relation to the socket. This procedure widens the base of support without influencing the position of the stump within the socket.

A second cause of lateral instability is inadequate training. An amputee should be trained in balancing, so that he is able to utilize the hip abductors on the amputated side for maintaining a stable position.

As in knee stability, the amputee may compensate in his gait pattern for the feeling of lateral insecurity by walking with an abducted gait or with considerable lateral bending of the trunk over the prosthesis.

3. *Does the amputee walk with a reasonably narrow base of support?*

In evaluating this factor, each amputee must be considered as an individual. The length of his stump and his general body type must be

taken into consideration. It is to be expected, for instance, that an obese, endomorphic type of individual will naturally walk with greater abduction than would a thin or muscular person.

In addition, in order to increase lateral stability, it has been the practice to fit very short-above-knee stumps with a prosthesis set in exaggerated valgus (the prosthetic foot outset), which produces a wider base of support.

Occasionally with a pelvic belt wearer, abduction can be caused by the joint being in abduction.

Another cause of abducted gait is pain or pressure in the abductor or ramus region of the socket. The amputee abducts his stump and therefore, the prosthesis, in order to gain relief in these areas. In such cases, abduction is often accompanied by lateral bending of the trunk.

However, there is no reason why the average above-knee amputee, with no physical or prosthetic complications, cannot walk with his base of support as narrow as that of a non-amputee. This is usually between ½ and 2 inches distance between the inner borders of the shoes.

4. *Does the prosthesis swing in a straight line of progression?*

The three major variations of the swing phase of a prosthesis in the sagittal plane are:

a. a medial whip
b. a lateral whip
c. circumduction.

A medial whip is characterized by a movement of the heel of the prosthetic foot medially and a rotation of the knee laterally, noticed immediately after toe-off. The foot then rotates back to its usual position either during the remainder of the swing phase (causing a "fish tail" effect), or returns to its original position by the toe rotating medially immediately after the heel of the prosthesis contacts the ground. A medial whip is corrected by the prosthetist rotating the prosthetic knee medially. In addition to alignment factors, a medial whip may be caused by too tight a socket in the area of the *adductor longus* muscle and tendon.

A lateral whip is the direct reverse of a medial whip, with the heel of the foot moving laterally and the knee rotating medially immediately after toe-off of the prosthesis. A lateral whip is corrected by the prosthetist rotating the prosthetic knee laterally. A whip of this type may be caused by too tight a socket fit in the area of the *gluteus maximus.*

Circumduction is a movement of the prosthesis in a lateral arc during its swing phase. It can be caused by too long a prosthesis, or by the amputee walking with little or no knee flexion and so moving his prosthesis outward in order to assure the foot clearing the ground.

5. *Is the resistance of the rear ankle bumper adequate to prevent foot-slap?*

Too little resistance of the prosthetic ankle to plantar flexion is caused by too soft a rear ankle bumper. The plantar surface of the prosthetic foot therefore strikes the floor too rapidly and with an audible "slap," as the body weight is applied to the prosthesis after heel contact.

6. *Is the resistance of the rear ankle bumper low enough to prevent external rotation of the foot?*

Too much resistance of the prosthetic ankle to plantar flexion is caused by too hard a rear ankle bumper. The plantar surface of the

prosthetic foot is therefore retarded from striking the floor after heel contact, allowing the natural rotation of the leg and body to rotate externally the prosthetic foot before it is flat on the floor. The delay of the sole of the foot in contacting the floor is readily observable as the amputee walks.

7. *Is the toe-out of the prosthetic foot reasonably close to that of the normal foot?*

8. *Is the friction at the knee adequate to control the forward and rearward prosthetic swings?*

The correct setting of knee friction mechanism will do much to eliminate the two major swing phase gait deviations caused by prosthetic inadequacy, i.e., excessive rearward prosthetic heel rise and violent impact at full knee extension.

At the time of toe-off, the amputee flexes his hip, moving his stump and socket forward. Without friction, the shank of the prosthesis has a tendency to remain at rest or to move in a direction opposite that of the stump (Newton's Laws of Motion) depending on the force and speed of hip flexion. The result is excessive rearward heel rise of the prosthetic foot after toe-off.

This excessive heel rise causes, in turn, a time lag in the extension of the prosthetic knee. The amputee finds it necessary to wait for the knee to become extended, and so, for the prosthesis to become weight-bearing. This waiting may cause poor gait characteristics such as *vaulting* (rising on the toe of the normal foot while the prosthesis is in the swing phase) or erratic acceleration (a surging of the entire body with each non-prosthetic step).

Adding friction to the knee creates a more direct relationship between the prosthetic thigh and shank (consider the extreme situation of enough friction to lock the knee in extension) and so the rearward motion of the shank and foot is minimized. Correct adjustment will produce equal heel rise for both the prosthetic and natural legs. (In the natural leg, rearward heel rise is controlled by action of the quadriceps femoris muscles.)

After knee flexion is completed, a prosthesis with no friction at the knee exhibits the characteristics of a pendulum. The shank and foot start the forward swing and gradually increase their speed by means of gravity, but strike the knee extension stop before they are allowed to decelerate naturally (by means of gravity).

In the human body, a gradual deceleration of the shank is accomplished by the hamstring muscles of the thigh. Friction applied to the prosthetic knee acts for the same purpose as the hamstrings although not in the same manner. The friction found in most conventional prosthesis is of a constant type (i.e., acts throughout the swing phase range of the knee), whereas the human muscles act with progressively greater strength, creating what has become known as *terminal deceleration.* (Several prostheses still in experimental stages provide a variable type of friction that more closely approximates muscle functions.)

Also, because of the excessive rearward heel rise and impact at full knee extension caused by lack of friction especially during fast walking, the amputee is forced to restrict his walking speed. The addition of friction at the knee makes it easier for the amputee to walk faster with better prosthetic control and better appearance.

Friction should be adjusted for the amputee's normal walking speed. However, it should not be so great as to require an undue amount of stump effort to fully extend the prosthetic knee. High friction may also tend to cause the foot to "hang up" at the end of the rearward motion. It is the opinion of the authors that with present commercially available prosthetic devices, knee control can be achieved with a fairly high degree of friction and the addition of a knee extension aid (see question 9 below).

9. *If a knee extension mechanism is used, is it properly adjusted?*

The primary functions of an extension aid are: a) to minimize excessive rearward heel rise, and b) to assist gravity in initiating the knee extension movement. As the knee flexes, the extension aid (be it in the form of a kick-strap, hickory lever, wrap spring, coil spring, or compressible bumper) is placed progressively on increasing tension until the tension overrides the force of inertia that is causing the prosthetic heel rise rearward.

Then, due to its tensed condition, the extension aid acts to help gravity initiate and carry out the knee extension movement (forward swing phase).

However, the extension mechanism should not be so tight that it limits knee flexion and causes scuffing of the prosthetic toe. Too tight an adjustment will also tend to bring the shank into full extension with too much force, resulting in a jarring impact on the stump. As previously mentioned, there must be a proper balance of forces between the extension aid and the knee friction.

10. *At the conclusion of this phase of the checkout, have the amputee remove his prosthesis and examine the stump for any irritated or discolored areas, which might indicate need for further prosthetic service.*

In the preceding pages the authors have attempted to present in concise form the highlights of a checkout procedure for above-knee artificial limbs. This checkout is applicable to both suction socket and pelvic belt types of prostheses by simply omitting the few questions that do not apply in either case.

The authors wish to thank members of the Prosthetic Devices Study Staff for their review of this article.

WHAT'S NEWS

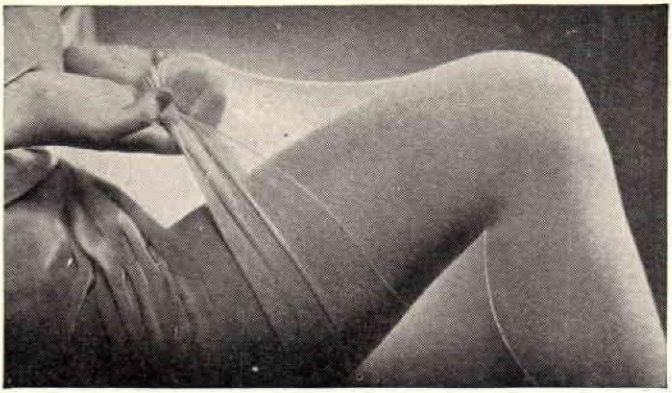
The *D. W. Dorrance Co.* and the *A. J. Hosmer Corp.* have had to expand their quarters in San Jose, California, as a result of increased demand for their services.

The Hosmer Corporation has a new building under construction, which will be open April 1. It is just a four minutes' walk up Coleman Avenue from the present Dorrance structure. Mail for the Hosmer Corporation should be addressed to P. O. Box 152, San Jose, California.

The move will make it possible for the D. W. Dorrance Co. to re-organize their present plant and use the addiitonal space vacated by the Hosmer Corporation. All mail for the Dorrance Company should be addressed to 748 Coleman Avenue, San Jose, California (no longer use Post Office Box 1128).

Copies of the new *Construction Manual for the Flexible Soft Socket for Upper Extremity Protheses* are now available. Persons interested should write to Thomas J. Canty, Captain, MC USN, Chief, Amputee Service, U. S. Naval Hospital, Oakland 14, California.

ANNOUNCING THE NEW SUPER EXTRA-SHEER ELASTIC STOCKING BY BELL-HORN



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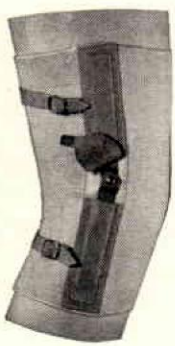

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NEW YORK-MOALMA PLANS PROSTHETIC CONFERENCE

Past Presidents of MOALMA honored at the January Meeting. Left to right: John A. McCann, Fred Eschen, Arthur Beitman, Milton Tenenbaum (President 1956-57), OALMA Director Glen Jackson, David E. Stolpe and John Eschen.

A program devoted to *new devices* in the orthopedic and prosthetic appliance field will be one of the important features of the MOALMA Prosthetic and Orthopedic Conference to be held in New York City, May 3 and 4, at the Biltmore Hotel. William Spiro is serving as Chairman of the New Devices Committee and persons wishing to present devices should write to him at 362 Fulton Avenue, Hempstead, New York, describing the device they have in mind and requesting permission to have it presented.

In addition to the display of new devices, the Conference will feature a section of scientific exhibits. These are in charge of Herbert B. Hanger, and application for permission to exhibit should be sent to him at 104 Fifth Avenue, New York City, N. Y.

Plans for the two-day session and for the printed program are under the supervision of Charles Goldstine, head of the Prosthetic Facilities of the Institute for Crippled and Disabled. Mrs. Mary Dorsch, President of the Dorsch-United Limb Co. is in charge of publicity and information services.

January Meeting

John A. McCann, Vice President of OALMA, inducted the incoming officers: President, Milton Tenenbaum; Vice-President, Adolph Margoe; Treasuerer, Richard Gottheimer; Secretary, Jerome Kessler; Chairman Membership Committee, Leo Waller.

Among the Guests of Honor on hand for the anniversary celebration were: Dr. T. Campbell Thompson, Past President, American Academy of Orthopedic Surgeons; Dr. Donald Covalt, Associate to Dr. Howard Rusk in charge of New York University-Bellevue, Institute of Physical Medicine and Rehabilitation; Dr. Bruce Grynbaum, New York City, Department of Hospitals; Dr. Jerome Lawrence, Veterans Administration Consultant, also in charge of amputee clinic in Hospital for Special Surgery; Mr. Harry Katz and his colleagues, Mr. Louis Salzman, Mr. Michael Mulligan, Mr. I. Weissfeld, representing the New York State Division of Vocational Rehabilitation; Mr. Milton Sandberg, former legal counselor to Metropolitan Orthopedic Appliance and Limb Mfrs. Assn., and Mr. George Gross, representing New York State, Insurance Department.

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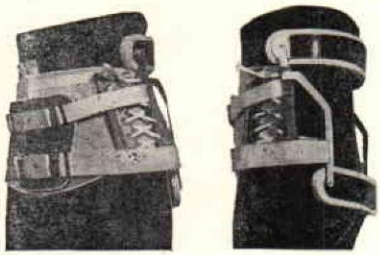


FRONT VIEW BACK VIEW

Available in Hip Sizes: S 32-34; M 36-38; M-L 40-42; L 44-46

No. 250, Williams Brace
completed, ready to fit
our price $22.50

Williams Brace
AND
Hyperextension
SET-UP KITS

That's right. All metal parts necessary to make your own Williams and hyperextension braces. *

BIG SAVINGS IN
ASSEMBLY TIME—MONEY!

Williams Kit *(not ill.)* includes:

- Top and bottom bands of highly polished aluminum. Shaped and cut to size, with holes drilled.
- 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.

$10.50 Set

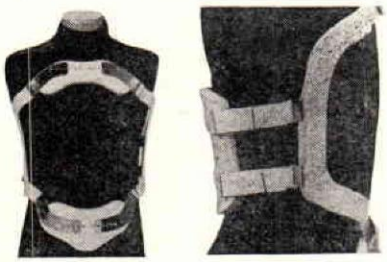
Specify #150 and give desired size: small, medium, medium large or large

Hyperextension Kit *(not ill.)* includes:

- Chest, side and abdominal plates. shaped, drilled and tapped.
- Four side bands, two top and two bottom. Shaped drilled and countersunk.
- All necessary screws for assembly.
- Fitting instructions.
- All exposed metal is polished to a high professional finish.

Specify #99

$10.95 Set



No. 299 Hyperextension
complete, ready to fit
our price $22.50

* Buckles, truss, hooks, etc., not included.

PRIES F.O.B. LOS ANGELES—IMMEDIATE DELIVERY

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"Don't Be a Mugwump"

A Message from

CHARLES A. HENNESSY,

President of OALMA

My son came home from school the other day and told me that he had been studying a political party called the "Mugwumps". According to the history book, a Mugwump was someone who sat on the fence, with "his mug on one side and his wump on the other."

The worst trouble about sitting on the fence is that sooner or later you get knocked off, and usually land on either your mug or your wump. It's better to get off the fence under your own power, and stand on your two feet.

The fence that I'm thinking about right now is the dividing line between prosthetics and orthotics as a "business", or as a "profession". It's the difference between a salesman and a certified prosthetist or orthotist—between a patent medicine peddler and a registered pharmacist—between some of the quacks who advertise on Mexican radio stations and the M.D.'s who practice medicine in our own communities. It's the difference between *selling* and *service.*

I guess that makes it plain which side of the fence I am on. I'm certified, and that means a lot more to me than a license to sell.

The thing that puzzles me is the certified man who puts his faith in selling. Those are the men who are really sitting on the fence—who have been certified as possessing the skill and knowledge required in order to render a professional service, but who put all their hopes for success on ability to sell. Or worse yet, put their hopes in the hands of somebody else—a salesman who isn't even certified.

Point 19 of our code of ethics insists that we *recognize that the interest of the amputee and the handicapped is the first concern of this limb and brace profession.* The code of ethics of the medical profession insists that the health and welfare of the patient is the physician's prime responsibility. These two statements fit together.

I don't know any physicians who feel that they need to be salesmen. As a matter of fact, I don't know any physicians who feel that a certified prosthetist or orthotist needs to be a salesman.

(Continued from page 97)

I don't think there is any need for salesmanship between professional competence and "the interest of the amputee and the handicapped." We can put salesmanship in there—there's nothing bad about that—but ONLY if we make absolutely certain that it is not allowed to take the place of either professional competence and service or the interests, health and welfare of the patient.

Okay, so I believe in true professionalism. Is that news to anyone in OALMA? I just wanted to be sure I wasn't a Mugwump.

CHARLES A. HENNESSY
President

Know Your Officers

This is the second installment of a series of articles about the eleven men who served as Regional Directors of the Orthopedic Appliance and Limb Manufacturers Association. (The first article appeared in the December 1956 issue of the *Journal* on pages 27-28.)

Bert R. Titus, C. P. & O. of Durham, N. C., is serving a second term as Director of OALMA Region IV. This Region, which roughly encompasses most of the old Confederacy, runs from North Carolina south to Florida and west to the Mississippi River.

BERT R. TITUS

Its Regional Director, however, comes from the Middle West. He was born at Sioux City, Iowa, in 1924, and attended State Teachers College at Mankato, Minn, before entering military service in 1943 with the Army Medical Corps. Since 1946 Mr. Titus has been associated with the Duke Hospital Brace Facility at Durham, N. C. His title now is Director and Technical Associate in Prosthesis and Orthesis at the Duke University School of Medicine.

Mr. Titus has continued his interest in prosthetic training and is a graduate of the Arms School of the University of California and the Prosthetics School course of the University of New York. He is associated with the technical staff of several North Carolina hospitals, including the Naval Hospital at Camp LeJeune, N. C. In the course of his duties he attends seven crippled children's and vocational rehabilitation clinics in North Carolina.

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(Atlas, pages 521 - 535)

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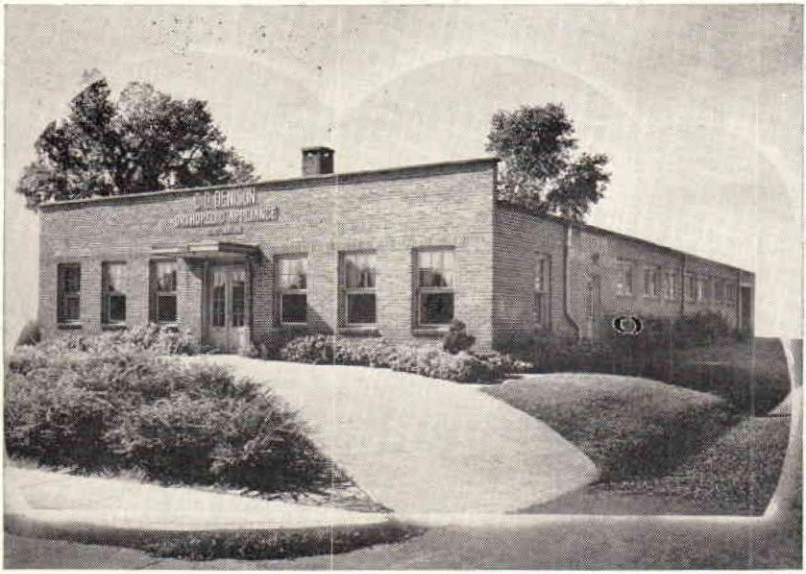

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Greetings From Overseas

European Colleagues Send Professional Regards

International cooperation and good will in the Limb and Brace Field has flourished in the last decade. Most recent evidence of this spirit of friendship, comes to OALMA from Germany, Italy and Belgium.

The *Belgian* association of limb and brace technicians has sent fraternal greetings and with them the first issue of its new magazine "Revue des Bandagistes et Orthopedistes." This magazine is bi-lingual, with each article appearing in both French and Flemish.

From *Germany*, come greetings to our President from two sources: (1) The journal "Orthopaedie Technik" which is well known in this country. (2) The Federal Union or Guild of Orthopaedic and Surgical Appliance Technicians, and Bandage and Truss Trade for the German Republic including West Berlin—see the letter below from President Stortz and Secretary Druschki.

From Our German Colleagues

"BUNDESINNUNGSVERBAND fur das Orthopaedie-, Chirurgiemechaniker- und Bandagistenhandwerk im Bundesgebiet und Westberlin"

Koln, den 7. Dezember, 1956.

Dear Mr. Hennessy:

We have just received notice that you have been elected to the presidency of the Orthopedic and Prosthetic Limb Manufacturers Association. We would not miss congratulating you on this occasion.

We are sure under your presidency that the exchange relationships between the USA and us will be cultivated.

We are especially delighted that your organization is headed by a specialist who is also known over here through the visit of our Study Commission.

With best regards

/s/ Hugo Stortz, President
Carl Druschki, Executive Sec.

The magazine, "Orthopaedie Technik" in its December 1956 issue, carried this announcement of the election of OALMA's New President at the San Francisco Assembly:

MR. CHARLES A. HENNESSY
NEUER PRAESIDENT DES US-FACHVERBANDES

Die Orthopedic und Prosthetic Limb Manufacturers Association hat einen neuen Praesidenten gewaeht. Es ist Mr. Charles A. Hennessy, Los Angeles/California/USA, 502 West Washington Blvd. Mr. Hennessy ist den Herren unserer Studienkommission, die vor funf Jahren die USA besuchten, nicht unbekannt und erfreut sich hier grossen Ansehens als bekannter Fachmann. Es handelt sich hier um den gleichen Fachverband in den USA wie unser Bundesinnungsverband im Bundesgebiet. Aus diesem Anlass haben wir Herrn Praesident Hennessy zu seiner Wahl die herzlichsten Grusse und Gluckwunsche uebermittelt.

Auch die Fachzeitung und Verlag Orthopaedie-Technik schliessen sich hierbei an und uebermitteln ebenfalls Herrn Praesident Hennessy und seinem Fachverband zu dieser Wahl die herzlichsten Glueckwunsche.

For those of our readers whose German is either a long way off or altogether missing, we give this translation:

"MR. CHARLES A. HENNESSY,
NEW PRESIDENT OF THE U. S. TECHNICAL ASSOCIATION"

The Orthopedic and Prosthetic Appliance Limb Manufacturers Association has chosen a new President. He is Mr. Charles A. Hennessy of Los Angeles, California. Mr. Hennessy is well-known to the members of our German Study Committee, which visited the United States five years ago. He is also well-known in Germany as a qualified specialist. OALMA is an organization similar to our own German Bundesinnungsverband. On this occasion we have pleasure in sending Mr. Hennessy our best wishes on his election as President."

The editorial staff and the press of "Orthopaedie Technik" also sends its heartiest congratulations to President Hennessy and his Association on this choice of a new President."

Italy Sends Greetings

We are indebted to our good member, Cosmo L. Invidiato for this translation of greetings sent us by the Italian National Association for the Production of Orthopedic Supplies (Associazione Nazionale fra Produttori di Presidi Ortopedici).

"We are in receipt of the June issue of your *Journal* for which we thank you warmly. We find it very interesting.

"We have given instructions to mail you regularly our bulletin, 'Technical Sciences on Orthopedics in Italy and all of Europe.' We would appreciate being assured of receiving your *Journal* regularly in exchange.

"We would also like to have your permission to translate your articles for our Bulletin which is to be printed in Italian. These articles are to be written and supplied to those requesting copies free of charge and we, therefore, are not looking for any revenue arrived therefrom.

"The scope of our Bulletin published by our Association is to give enlightenment and information to parties interested in Orthopedics, not only in Italy but throughout all of Europe.

"Permit us to thank you again for your *Journal*, and remain

"Respectfully yours,
Aldo Variolo, *Il Presidente*"

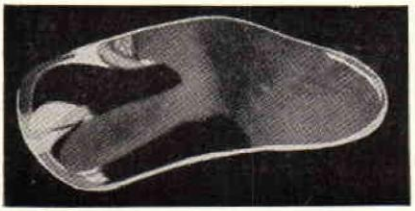
What's New(s)

Leo Waller sends us this news on his company's products:

"*Hersco Arch Products Corporation* is now producing their new Style No. 800 and 803 Combination Arch Support with medium and low flange in a heavy gauge Dural, especially treated against corrosion and powdering. This is also available in the Child's Whitman No. 900. The ever increasing demand for a feather weight Metal Support has compelled them to greatly increase their production on this item. Hersco is now prepared to meet all requirements and assures prompt service.

"The above mentioned Arch Supports are made in stock sizes. Our Customs Department will also fill orders of the above mentioned styles to be made after Plaster Casts or Impressions."

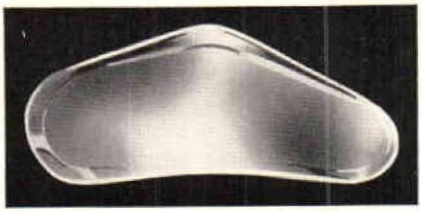
NEW "ORTHODUR" PLASTIC ARCH SUPPORTS FOR MAXIMUM FOOT COMFORT



STYLE 79

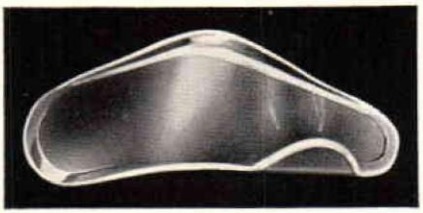
Regular, most popular style. Longitudinal and metatarsal arch support. Stock sizes:

Men: 3 to 12
Women: 3 to 12



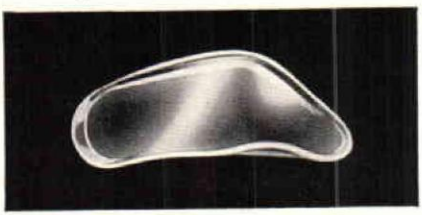
STYLE 77

With high inner flange, longitudinal arch can very easily be fitted to individual wearer.



STYLE 83

With high inner and high or low outer flange.



STYLE 69

Special design for children.

The new "ORTHODUR" Plastic Arch Supports are the Arch Supports of the Future

They are:

- Superior in
- durability
- flexibility
- hygiene and
- ease of adjustment

WRITE FOR PRICES AND LITERATURE

HOLDWELL ARCH PRODUCTS

Specialists in modern Foot Supports

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CARLTON E. FILLAUER

Our best Yardstick—

"Ethics.

Education and

Professional Relationships"

When a certifee contemplates the value of his status what should he look for? What yardstick is available to him to properly gauge his progress to date or to use for planning ahead?

At first he may recollect the time a few years ago when doctors generally thought of bracemakers as blacksmiths, cobblers or just mechanics who should not be seen out of their shops unless they were "salesmen" for the company. The yardstick I would like to see everyone use is one based on *education, ethics and professional relationship with patient and doctor.*

Prosthetists have had and still have the opportunity to attend specialized courses related to their branch, but orthotists are not so fortunate in this respect. They must continuously search the current journals for improvements in old techniques and reports of new braces and appliances. In our facility we have a maxim which has considerable merit and may offer "food for thought." *If you are using or doing the same procedure or technique you did three years ago you have made no progress.* Keeping one's mind open and active for advances is a prerequisite for education.

There has been much said and written about the merits of our code of ethics. For those of us who practice it in our daily work it gives greater meaning to our status as prosthetists and orthotists, not only with our patients and doctor friends but also with our own consciences. It is vital to our survival that we love our work, receive adequate compensation and recognition of a degree of status commensurate with our level of progression. Of these, the last can be the most gratifying if we work and live as professional orthotists and prosthetists. Can you picture a professional man making solicitous hospital or home calls without an invitation from the surgeon or from the patient after his discharge? Or can you picture a professional man working at an untidy work bench or in run-down fitting rooms? Or would a professional man who attends the university courses and who provides modern service to his patients be one to cut prices in order to get more business? The answer to these questions will relate to your status in your circle of operation.

Doctors are in an excellent position to exert pressure against the evils of solicitation and it is evident that they are utilizing increasingly only the services of those facilities which refrain from this deplorable practice. It is incumbent upon certifees and owners of facilities to surround their patients with professional decorum in order to replace the emphasis of selling an appliance with that of supplying prescription service at a professional level.

The Board, at every opportunity, exhibits at medical meetings to keep the story of Certification and the names of certified facilities before those who prescribe our services. During January we were given an excellent booth in the scientific section of the American Academy of Orthopaedic Surgeons annual meeting held this year in the Palmer House in Chicago. The leading orthopedic surgeons of the country came to listen to and discuss the newest techniques, methods, appliances, etc., developed during the past year. Our booth was well situated and attracted the attention of a good number who wanted to know more of our certification. Many asked for copies of our Journal and our Registry of Facilities.

As you know, our board meets annually at a time between conventions, when the progress of the past year and current problems are discussed. Also, at this time plans for the next examination are laid. This year the meeting will be in the latter part of May in Washington and I urge all certifees to feel free to write to me or to the national office regarding any suggestions or comments that might relate to board action or consideration.

Carlton Fillauer

REVIEWS

THE SHOULDER AND ENVIRONS

By James E. Bateman, M.D., F.R.C.S. Published by the C. V. Mosby Company, 1955, 565 pages.

Reviewed by Lenart C. Ceder, C. P. & O., Tacoma, Wash.

Dr. Bateman's book "The Shoulder and Environs" is a masterful treatise on the subject. The book contains twelve chapters which deal with every phase of the shoulder from the evolution and embryology through all the injuries and disorders to the final chapter on the management and assessment of disabilities in the shoulder region.

The early chapters are excellent in their description of the shoulder. Schematic drawings, x-rays and photographs give the reader a clear picture of shoulder anatomy, physiology and function. The relationship of the shoulder to the arm and neck are also well covered. Every type of injury and disorder in the shoulder and their relationship to arm and neck are discussed. Each injury with its treatment is well described with photographs, diagrams and x-rays.

From the orthotist's standpoint this book is well worth studying. It gives one a clearer picture of injuries we sometimes have to brace and of which we many time know little about. The book does not give too much detailed discussion or description of braces but suggests types of braces used on specific injuries. Though primarily written for the use of physicians and surgeons, the book nevertheless, because of its clear, concise wording can easily be understood by the average orthotist.

OALMA Enrolls 10 New Members in First Quarter

McCann Cites Strength of OALMA Program

Ten firms have been added to the Membership Roster of OALMA and other applications are being considered, according to John A. McCann, Chairman of the Membership Committee.

Mr. McCann expressed pleasure at two developments in the growth of the Roster: First, the increasing number of brace firms who are affiliating with OALMA. He declared that "to me this is further evidence of the soundness of our program, and the need by the new members of an organization such as the OALMA."

Second, he called attention to the election of OALMA's first Corresponding Associate Member overseas. This is the firm of "Ortopedico Keleti" located at Caracas, Venezuela.

The addresses, telephone numbers and executive officers of the new member firms are listed here. It is suggested that these be written in the OALMA Roster, pending the publication of the 1957 "Fortieth Anniversary" Membership Roster. Brief sketches of the history of these new members will appear in this and future issues of the *Journal* (see also the list of new members carried in the December, 1956 issue, page 41 and 43).

Additions to the Roster

Edmonton Artificial Limb Company, William H. Stauffer, Manager; 10133 99th Street, Edmonton, Alberta, Canada. Phone: Danube 6-4050.

Walter E. Gavin Brace Shop, Walter E. Gavin, Owner; G.A.R. Highway, Box 118, Eastham, Mass.; (telephone Orleans 694) and at 3 Nelson Street, Natick, Mass. (Olympic 3-5987).

Corresponding-Associate Member: *Ortopedico Keleti*, Dr. Thomas J. Irsay & Co.; Cuji A. Romualda No. 68, Caracas, Venezuela.

Jahnig Manufacturing Co., William H. Jahnig, Owner; 1141 Fourth Ave., Huntington, W. Va.

North Hollywood Orthopedic Laboratory, Morris Jacobs; 6302 Laurel Canyon Blvd., North Hollywood, Calif. Phone: POplar 1-0783.

Parsley Manufacturing Company, George M. Parsley, President; 216 Broad Street, Charleston, W. Va. Phone: DI. 3-7845.

Stark Limb & Brace Co., Charles Hixenbaugh and James N. Ice, Owners; 116 West 9th Street, North Canton, Ohio. Phone: Hy. 9-6886.

University of California, Prosthetics Education, Miles Anderson, Director; Medical Center B 4-229, Los Angeles 24, Calif.

Brace Shop, Carrie Tingley Hospital for Crippled Children, Leo P. Schwartz, Administrator; Truth or Consequences, N. Mex.

The Birmingham Artificial Limb Company of Mobile, Ala, Moody Smitherman, President; 107 S. Washington Street, Mobile, Ala. (Note: This is an affiliate membership. The parent company at Birmingham has long been a member of OALMA.)

GREATER COMFORT

For use on congenital talipes equino-varus, calcaneovalgus, cerebral palsy (spastic paralysis), congenital subluxation or dislocation of hips, bow legs and knock knees.

NEW SABEL NIGHT BRACE SHOE

SABEL'S
NIGHT BRACE
TRADE MARK SHOE REG. U.S. PAT. OFF.

by R. J. POTVIN SHOE CO.
Brockton, Mass.

FLEXIBLE HEEL

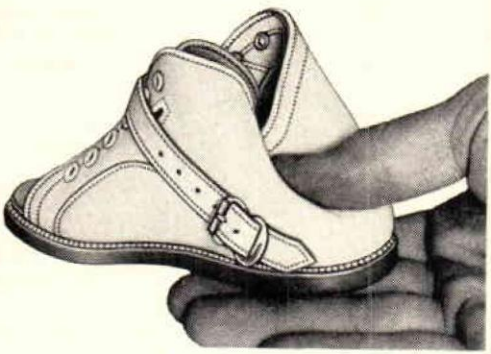
One-piece construction eliminates back seam, giving flexibility and a soft, smooth seat for the heel . . . elminates pressure and rubbing over tendo achilles.

FIT YOU CAN SEE!

Tongue swings aside to see foot positioned in shoe. No guess work . . . fit is guaranteed.

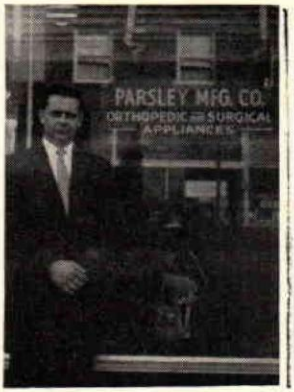
REINFORCED ARCH

Moulded side arches compensate for the removal of heel counters. Lace and straps hold foot in desired position. A long metal plate between outer and innersole supports forefoot and permits application of corrective force at point desired. Night brace clamps to hard sole.



New Members of OALMA

WALTER E. GAVIN
Eastham, Mass.



GEORGE M. PARSLEY
Charleston, W. Va.

ARTHUR SEELERT
Minneapolis, Minn.

From the OALMA "Who's Who"

Walter E. Gavin began his apprenticeship at the Washburn Brace Shop at Worcester, Massachusetts. In 1940 he opened the Army Brace Shop at Lovell General Hospital at Camp Devens, Mass. In 1943 he established the Brace Shop in the new Cushing General Hospital at Framingham, Mass. Six years later he moved his main shop from Natick to Eastham, Cape Cod, Mass., and is now serving both the Eastham and Natick areas. Mr. Gavin specializes in all types of hand, neck, back and leg braces and also does repairing of artificial limbs. Commenting on his work with orthopedic surgeons in the United States and from other countries, Mr. Gavin declares that "the experience I've had and the knowledge I have gained through my work with these doctors has helped me in a million ways."

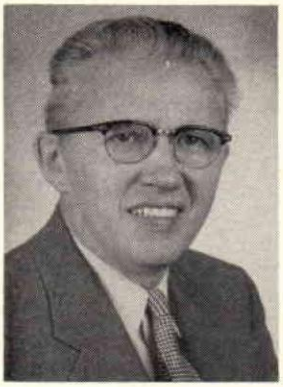
William H. Jahnig, President of the Jahnig Manufacturing Co., Orthopedic and Surgical Appliances of Huntington, West Virginia, received his training in artificial limb and brace work in Hanover, Germany, while working for the firm of Brandes & Diesing. He came to the United States in 1929 and was an employee of Henry J. Schmitz and Amsterdam Brothers in New York City. He then became an employee and later manager of the Huntington branch of the Otto K. Becker Company, which he purchased in 1944.

Arthur Seelert has had 43 years experience in the limb and brace field, having begun his training in 1914 at the Lux Company in Minneapolis. He later worked in Chicago, Illinois, returning in 1922 to Minneapolis to purchase the Lux Company. He changed its name to the Seelert Orthopedic Appliance Company and has operated it continuously since 1922. Mr. Seelert has special interest in braces and has developed the Seelert Leg Brace, which features an automatic knee control device. Setups of this brace are now available to other firms.

George M. Parsley, President of the Parsley Manufacturing Company of Charleston, West Virginia, with his brother purchased the facility in Charleston from George Rinck, who had established it a decade earlier (Mr. Rinck is now located at Lima, Ohio). George Parsley is now sole owner of the establishment.

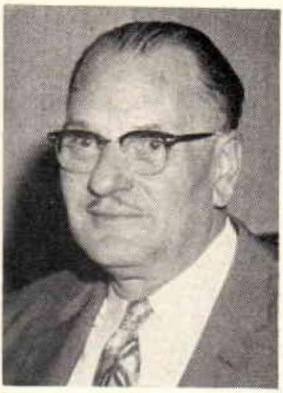
His original training was in the field of chemical research, which he de-

New Members of OALMA



HERBERT J. LUDWIG
Salt Lake City, Utah

CHARLES HIXENBAUGH
North Canton, Ohio



JAMES N. ICE
North Canton, Ohio

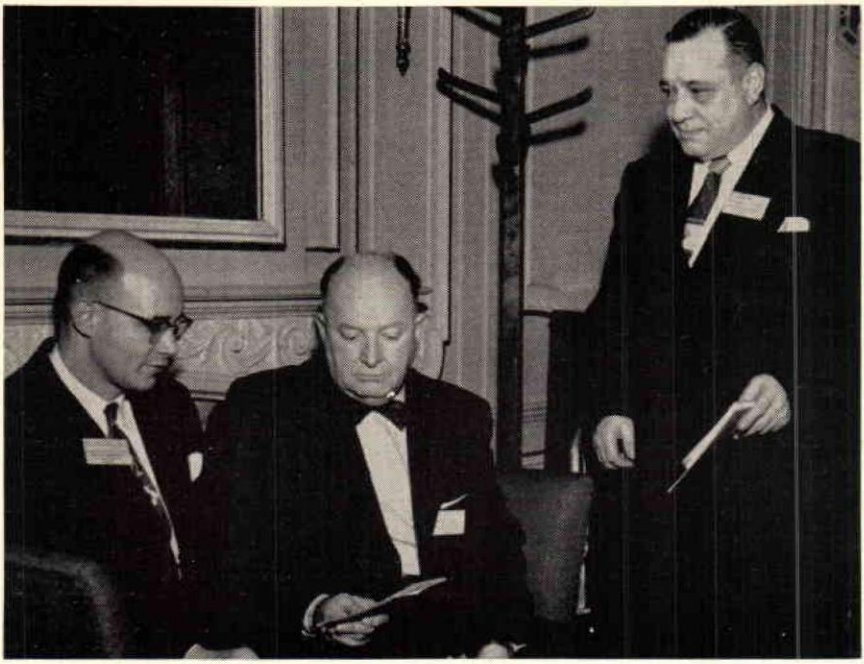
clares has given him great respect for the development of new ideas and research in any field.

Mr. Parsley is a graduate of the course in Upper Extremity Prosthetics at New York University. He received special training in the manufacture of prosthetic restorations from Dr. Elon Clark, Director of the Medical Illustration Department at Duke University. In a letter to the editor, Mr. Parsley declared, "I would like to say that I am very interested in this work and am happy to be a part of an organization like the OALMA because I think it has brought the profession to much higher level than could be attained in any other way."

The Stark Limb and Brace Company of North Canton, Ohio, is the result of a successful partnership between a son and his stepfather. The stepfather, James N. Ice, received his training from I. P. Boggs in the 1920's, and since then has continued his interest in artificial limbs. His son-in-law, C. E. Hixenbaugh, though not an amputee, early developed an interest in their problems. In 1954 they opened their own establishment in North Canton, and in 1956 added an orthopedic shoe department under the direction of a skilled shoe technician. Mr. Hixenbaugh reports that in addition to back and leg braces, the establishment is interested in and does a considerable volume of work with the Otto Bock Knee and the Simplex aluminum limb.

Morris Jacobs, C. O., is the proprietor of the North Hollywood Orthopedic Laboratory, located at 6302 Laurel Canyon Boulevard, North Hollywood, California. Mr. Jacobs has been in the brace field for fourteen years, beginning his work with the Army Medical Dept. at Bushnell General Hospital, at Brigham City, Utah. He was later stationed at McCaw General Hospital in Walla Walla, Washington and at Letterman General Hospital, San Francisco. At the completion of his Army service, he was an employee of the N. J. Hall Appliance Company before opening his own establishment. Mr. Jacobs' laboratory specializes in general orthopedic and surgical braces, making and fitting of surgical corsets and belts, trusses, arch supports, elastic hosiery, children's shoes, men's orthopedic shoes, shoe corrections and extensions, also canes and crutches.

Cross-Country-News of Limb and Brace Field



Academy Visitors Check Program. Left to right: Carlton Fillauer and Colonel A. W. Spittler, Certification Board members with W. Schoene of Chicago at the Academy of Orthopaedic Surgeons' meeting.

The largest orthopedic convention of the world was held in Chicago, January 26 to 31, at the Palmer House. This was the twenty-fourth Annual Meeting of the American Academy of Orthopaedic Surgeons. An attendance of from three to four thousand is not unusual at these annual gatherings of the Academy, and this year's session was heavily attended.

Color Television Program On Prostheses

The color television program arranged by a committee headed by Dr. William J. Schnute, was one of the outstanding features of this meeting. Of special interest was the color television session on the morning of January 27, devoted to "Lower Extremity Prostheses for Children." Dr. Donald B. Slocum of Eugene, Ore., acted as moderator for this session. A panel composed of Doctors Clinton L. Compere, Claude N. Lambert, George T. Aitken, and Charles H. Frantz, reviewed actual cases and commented on them. This was followed by a session devoted to "Upper Extremity Amputations in Adults." Dr. Compere again served on this panel and was assisted by Dr. Charles O. Bechtol and Col. Maurice J. Fletcher of the Army Prosthetics Research Laboratory.

In discussing prosthetic service, Dr. Bechtol held up on the television screen the current Official Registry for 1956, and emphasized that "these are the recognized ethical and Certified Facilities to which you should turn for good service." He went on to declare that the orthopedic and prosthetic appliance field deserves credit for instituting what was, in effect, its own licensing system as a move to raise standards of service.

REGION VI MEETS

Colonel A. W. Spittler, new member of the Certification Board was guest of honor at the meeting. This was held in the Palmer House in Chicago, in connection with the meeting of the Academy of Orthopaedic Surgeons.

Two of the scientific exhibits are of special interest:

The Treatment of Scoliosis with the Milwaukee Brace presented by Walter P. Blount, M.D.; Albert C. Schmidt, M.D.; Richard C. Bidwell, C.O.; Dudley Keever, M.D.; and Eugene Leonard, M.D. Readers of the *Journal* will remember that a preliminary presentation of this subject by Dr. Albert C. Schmidt and Mr. Bidwell, was a feature of the OALMA National Assembly in 1955 at New Orleans.

The brochure on the brace begins with this paragraph:

"*Preparation of the Model*—The most important single requirement of satisfactory use of the Milwaukee brace is an intelligent, skillful, cooperative orthotist. If such a man can be called on to make, fit, and modify the brace as necessary, the technic may be used with satisfaction in the most difficult cases."

The Certification Movement and the Orthopedic Surgeon. This was the exhibit of the American Board for Certification arranged by Assistant Director Lester A. Smith. The booth was set up by John A. DeBender, C.O., with the skilled assistance of Mrs. DeBender.

This exhibit was intended to describe to the orthopedic surgeon the achievements of the Certification Movement in its first decade, 1948-1957.

Photographs of the ten surgeon members of the Certification Board since its founding were displayed at the rear of the booth (under the By-Laws of the Certification Board, three of the seven members, "shall be known and recognized orthopedic surgeons").

The new officers of the Academy are: *President*, Frederic C. Bost, M.D. of San Francisco; *Vice President*, Leo S. Lucas, M.D. of Portland; *Treasurer*, Jesse T. Nicholson, M.D. of Philadelphia; *Librarian and Historian*, Albert C. Schmidt, M.D. of Milwaukee and *Secretary*, Clinton L. Compere, M.D. of Chicago. The two new elected members of the executive committee are Herbert E. Pedersen, M.D. of Dearborn, Michigan and Albert B. Ferguson, Jr., M.D. of Pittsburgh, Pennsylvania. The new ex-officio member is the retiring president, William T. Green, M.D. of Boston.

WISCONSIN GROUP AT THE ACADEMY MEETING

Shown above are: standing—Howard Reinherz of Kenosha, Lawrence Lambert of Neenah and Alfred Denison of Chicago. Seated: Alexander Finlay of Milwaukee, H. J. Geisler of Fond-du-Lac and Ludwig Karsten of Milwaukee.

For the first time, an OALMA Regional Meeting was held in Chicago, in conjunction with the Academy session. This was the meeting of Region VI, arranged by Regional Director Ralph Storrs, and held at the Palmer House Tuesday, January 27.

Through the courtesy of Academy officials, Mr. Storrs was able to arrange for OALMA members attending the Regional Meeting, to visit the impressive Scientific and Technical Exhibits which are a feature of the Academy. In addition to OALMA members from Region VI, which includes Illinois, Wisconsin, Michigan, Indiana and Eastern Missouri, the meeting was attended by OALMA President Charles A. Hennessy, Certification President Charles Fillauer and Assistant Director Lester Smith. This was the first Regional Meeting attended by Mr. Hennessy since his election as President of OALMA.

President Hennessy called attention to the outstanding programs arranged by the Academy for its members. He emphasized the great variety of instructional courses which are held each year at the Academy meeting and for which Academy members spend hours in classroom discussion.

WHAT'S NEW(S)

Kingsley Manufacturing Co. announces that it is now offering the Women's Sach Foot blanks (to be shaped by the prosthetist) in heel heights of 1¾-2" and 2¼" in the 6 to 8 size range.

Mr. Kingsley, President of the company, also reports that the Kingsley Co. has developed a new modern plant for manufacturing the APRL cosmetic glove. The new plant is able to process the newly developed materials that are more suitable for cosmetic glove manufacture.

Orthotists at the Academy Meeting

Several orthotists from Indiana attended the OALMA Region VI "get-together" at the 1957 Academy meeting. Left to right: Terry Moore of the Florida Brace Company, H. S. Snyder, University of Indiana; Clyde Peach of the Pope Brace Division; T. M. Davidson, M. E. Miller and P. Georgescu of the Indiana Brace Shop.

Region VII Meets at Minneapolis

April 27 is the date and the Radisson Hotel in Minneapolis is the place for the spring meeting of OALMA's largest region—VII—covering the great plains area from Kansas north to the Canadian border.

Walter H. Erickson, regional chairman, and Erich Hanicke, director, have planned a helpful all-day session, with these highlights:

1) "Desirable Characteristics of Braces for Upper Extremities"
   —a report by Dr. Frederick Kottke, Professor and Head of the University of Minnesota's Department of Physical Medicine and Rehabilitation.
2) "What's New in Bracing"
   —a panel discussion by Ted W. Smith, Erich Hanicke, C. E. Medcalf and Ralph Storrs, with Lucius Trautman as Moderator.
3) "Service for You—OALMA's Program for Members"
   —by National President Charles Hennessy.
4) "An Orthopedic Surgeon's Version of Modern Prosthetists"
   —by Dr. Edward Evans, Associate Professor of Orthopaedic Surgery, University of Minnesota.
5) "What's Ahead the Next 10 Years"
   —by Glenn Jackson, Executive Director, OALMA.
6) "Service to the Veterans—A Question and Answer Forum"
   —by William H. Talley, Asst. Director of the VA's Prosthetic and Sensory Aids Service.

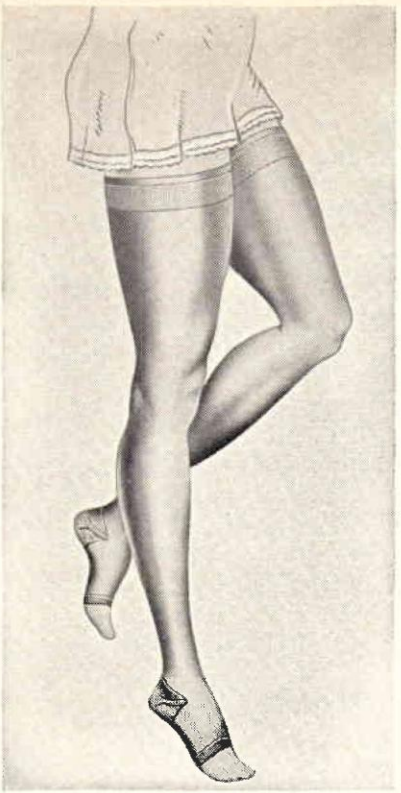
Pennsylvania Members Active

The orthotists and prosthetists of the Philadelphia area are now conducting their second Annual Training Course in Anatomy, according to word received from Regional Director Basil Peters. The class is being taught by Dr. C. G. Psaki and Dr. Robert J. Doman, who made such a notable contribution to the success of last year's class. The schedule has been expanded to cover a period of fifteen weeks.

The Pennsylvania Orthopedic and Prosthetic Society will hold its spring meeting in Philadelphia at the Broadwood Hotel, May 3, 4 and 5.

Officers of the Society for the current year include: Basil Peters, President; Nunzio Pulizzi, Vice President; Moritz Apitzsch, Secretary-Treasurer; S. M.

Kennit Two-Way Stretch Stockings are full fashioned to the shape of the leg. Made in varying lengths above the knee — 6, 8, 10, 12-inch. Proportioned to the extra size of the thigh.



Kennit Extra Thigh Lengths Have Taught Them Something

They've learned about comfort and safe support for varicosity high on the leg. They know Kennit extra thigh lengths give them security that regular length stockings cannot give. Extra thigh lengths available in Kennit Stockings are used after operations or ligating of the veins, in cases of phlebitis and post-phlebitis swellings, thrombosis and during pregnancy. The Kennit Stocking is fashioned to the shape of the leg; not a straight tube-like affair. Its smooth, wrinkle-free appearance is inconspicuous even under sheer hose. Uniform pressure from toe to thigh is only possible when a stocking is full fashioned.

Closed heel. Open toe, of course.

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Mazzy, Political Actions. The new Executive Committee Members are: Eugene Teufel, E. A. Warnick, B. F. Dillon and Andrew Pope.

Southeast Meets at Tampa

OALMA Region IV celebrated its tenth Annual Meeting at the Hillsboro Hotel in Tampa, Florida, February 15-17. Jack Caldwell of Tampa, who was in charge of the arrangements, reports a good attendance. Members were specially pleased to have OALMA President Hennessy and Certification Board President Carlton Fillauer attend their session. At the Business session of the Region, Charleston, South Carolina was picked as the city for the 1958 meeting.

New officers include Chairman Wilbur Floyd of the Floyd Brace Company of Charleston; and Secretary-Treasurer Mrs. Louise Gillespie of the Gillespie Limb and Brace Co., Pensacola, Florida. James Bonds of Knoxville, Tennessee and John D. Hinnant of Columbia, South Carolina, were named members of the Executive Committee.

With the encouragement and help of Executive Director Glenn Jackson. the Region tried out successfully a new type of conference program. Instead of asking the many topflight officials and authorities who were present to make set speeches, their services were utilized as resource consultants in a problem clinic.

ORTHOPEDIC APPLIANCES FOR HOLLYWOOD
By RUTH DAVIS

When a movie star requires an orthopedic appliance, his privacy is respected.

But when the appliance is used as a "prop" in a picture, that is publicity. Last July, M-G-M Studios commissioned M. J. Benjamin to make long leg braces for John Wayne to use in a film to be titled "The Wings of Eagles." In the film, Wayne plays the role of an aviator who returns to active duty after an injury had interrupted his flying career.

Instead of an orthopedic problem, it was necessary that the braces be made to be worn with anything ordered from the property department without defacing the shoe. This little problem was solved by shaping a stirrup to stay ahead of the heel with straps attached to the turn of the stirrup so that they could cross above the heel and buckle in front of the ankle. The studios will go to almost any extreme to conserve the time and energy of a star. A pair of short leg braces was also ordered to give the appearance of long leg braces when worn under trousers. An extra pair of short leg braces was made for Mr. Wayne's double to use in "going away" shots.

"The Wings of Eagles," M-G-M's color motion picture released this March, is a great dramatization of the life of "Spig" Wead, famous for his flying records, his influence upon the development of air power for the U. S. Navy, and for his writing of powerful screenplays depicting life dramas about Navy air power. But of even more importance to the Orthopedic appliance field: It is an excellent portrayal of the adjustment a person must make when required to learn to live with braces. Moreover, it is a tribute to the orthotists of America to show on the screen the value of leg braces in the rehabilitation of a paraplegic.

One sidelight will be of interest to Orthopedic Men. Upon seeing the film, orthotists will immediately notice the fallacy that the braces were not locked for the scene depicting John Wayne's first attempts at walking. However, Charles Schnee, the producer, and John Ford, the director, must be highly

The scene, photographed aboard the U. S. S. Philippine Sea, shows John Wayne, as "Spig" Wead, returning to active duty after a spinal injury had interrupted his flying career. Actor Louis Jean Heydt is at his side. "The Wings of Eagles" was filmed through the cooperation of the United States Navy.

congratulated for the development of this scene because it admirably heightens the dramatic effect of the film, and is consistent with the script by Frank Fenton. This excellent script calls for the portrayal, by Dan Dailey, of the devoted friend who urges on and inspires the hero, as he falters along, trying to learn to walk.

What's New(s)

Norman Shamp, C. P., has opened his own establishment under the name of Shamp Artificial Limb Co. at 68 Springfield Street, Barberton, Ohio.

Mr. and Mrs. Milton Katz are the parents of a new daughter, named "Mindy Barbara," who was born January 24. Mr. Katz is President of the Bennington Stump Sock Corporation of Bellmore, New York.

Mrs. Ruth Brown
President

Mrs. Virginia Hedges
1st Vice President

Mrs. Bobbye McGraw
2nd Vice President

Mrs. Margaret Peters
Secretary

Mrs. Anette Ceder
Treasurer

TO THE LADIES:

from

OALMA's Woman's Auxiliary

SUBJECT: You at the National Assembly September 29 to October 2—Happy Days for You and Husband in Washington, D. C.

Much careful planning is going into a program which will thrill you. For example, our Secretary, Mrs. Margaret Peters of Philadelphia, spent two days in Washington this month, going over arrangements for our Auxiliary's program. While there she conferred with our local members Mrs. Bella Ross and Mrs. Dorothy Smith, as well as the staff of OALMA Headquarters.

You will soon be hearing about the exciting things planned for you. Meanwhile here are some "teasers" to pass on to your family:

1) *A Tour of the White House*—Since we were last there in 1952, the President's Mansion has been completely redecorated. You'll want to see these beautiful and famous rooms where so much history has happened!

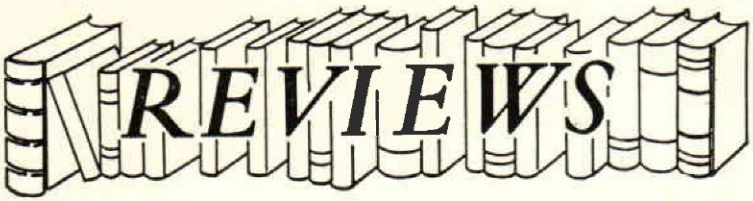
2) *National Gallery of Art*—A Special Tour housing the famous Andrew Mellon Collection and other world-famous paintings.

3) *"The Work our Husbands Do"*—Its Problems—Its Rewards—Its Future.

And as they used to say on the *Show Boat Program*, "That's Only the Beginning—Only the Beginning"—See you in Washington!

Sincerely yours,

Ruth Brown
President



CAMPBELL'S CREATIVE ORTHOPEDICS

By J. S. Speed, Editor and Robert A. Knight, Associate Editor

Published by C. V. Mosby, 1956. 2 volumes, 2192 pages, illustrated. $40.00.

Reviewed by John F. Buckley, C.O., Orthopedic Services of Rhode Island.

This is the third edition of a text which since 1939 has become one of the most used reference books in the orthopedic surgeon's library. Many innumerable changes of techniques spawned during the war years as well as those from recent research are included in these two volumes.

As the title of the text indicates, the bulk of the material is concerned with the surgical and physiological aspects of orthopedics. However, there are three chapters which will prove of interest to the prosthetist and orthotist.

Chapter III on Apparatus includes not only a discussion of braces and splints but also a section on bed frames, traction equipment and plaster bandage technique. The authors are careful to note at the beginning of this chapter that proper fit and thorough instruction of the patient in the use of any apparatus will help greatly to reduce bracing failures. They also stress the need for correct and adequate prescription. Although this section does not go into any great detail there is an excellent reference list at the end for the reader who has been tempted by the "snacks" given him in this chapter.

Fractures and their treatment are considered in great detail in Chapter IX. This chapter is arranged by body regions and following a description of the surgical and conservative treatment procedures, there is a discussion of after-treatment. This reviewer found here many comments on bracing and prescription which he has not observed before in other literature. The more curious orthotist would find this chapter quite worth his time.

Dr. D. B. Slocum, now of Oregon but formerly Chief, Amputation Section, Walter Reed Army Hospital, is the author of Chapter XIII, "Amputations." Dr. Slocum is well known among the prosthetists and they will be happy to note that he begins his chapter by saying, ". . . amputation performed for the purpose of creating a stump which may be used effectively with a prosthesis." Although no details of fitting and construction are shown in this chapter (undoubtedly because they are readily available in other literature) the author has taken into consideration of the operative procedures all of the new fabrication and fitting techniques developed in recent years.

The above mentioned chapter as well as the entire two volumes should be noted by our members as an excellent reference text. These books are minutely indexed and cross-referenced so that the reader can easily check any particular question he may have.

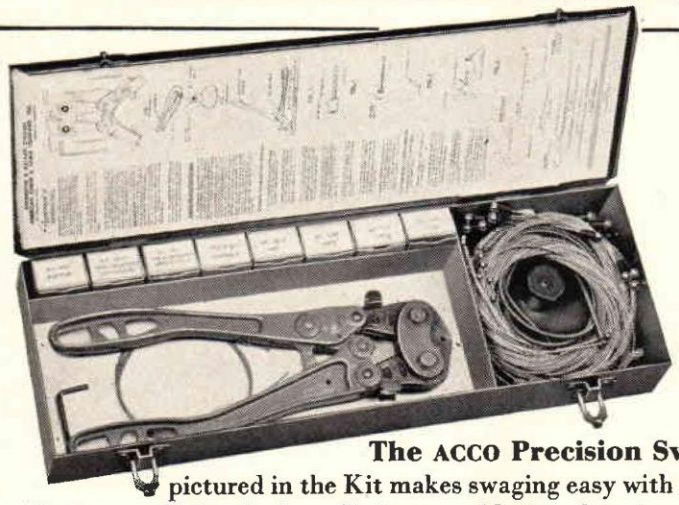
This reviewer recommends *Campbell's* as a reference text.

Coming in Our Next Issue

The Management of a Corset Department in an Artificial Limb and Brace Facility—A Valuable Report by Mrs. Loraine Isle Dillard.

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!



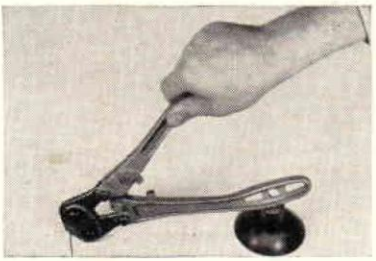
The ACCO Precision Swaging Tool pictured in the Kit makes swaging easy with ACCO Tru-Loc Fittings and Terminals... eliminates soldering. Swaging is unquestionably best... provides 100 per cent bond between cable and terminals... and there is no acid to corrode the cable... no heat to weaken it.

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.



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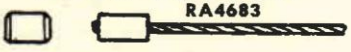
Shown Here are the Stainless Steel Terminals, Fittings, Assemblies, Cable and Housings furnished to Limb Shop Operators in

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

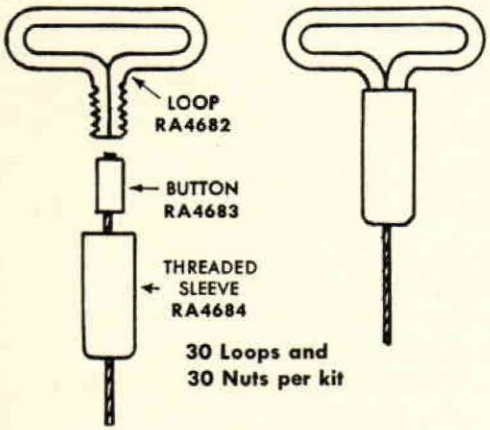


100 Buttons per kit

To assemble—
Insert Cable and Swage

ACCO STRAP "T" HANGER

All drawings approximately actual size

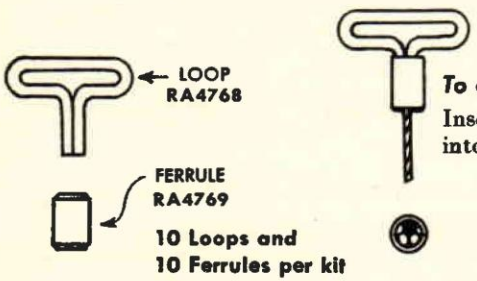


30 Loops and
30 Nuts per kit

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

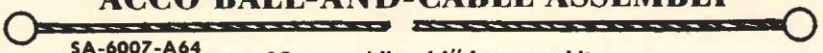
ACCO ELBOW "T" HANGER



10 Loops and
10 Ferrules per kit

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

ACCO BALL-AND-CABLE ASSEMBLY

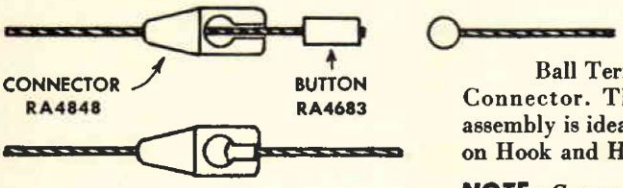


SA-6007-A64

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



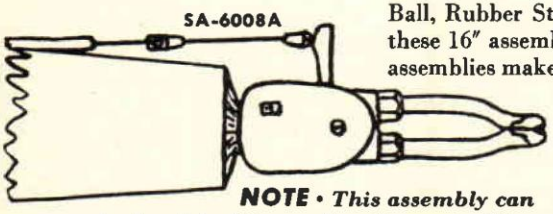
65 Connectors per kit

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

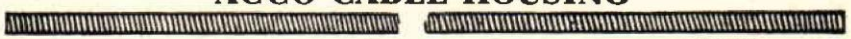
15 Assemblies 16″ long per kit



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**

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REVIEWS

THE TREATMENT OF FRACTURES

By Lorenz Boehler, M.D.

Published by Grune and Stratton, New York and London, 1956-57. Two volumes (volume 3 in preparation). $40.00.

Reviewed by Alfons Glaubitz, C.P. &O., Elizabethtown, Pa.

The scientifically minded orthotist can now avail himself of Vol. 1 of *The Treatment of Fractures* by Lorenz Boehler, M.D. Presently it can be borrowed from the Headquarters Library of the OALMA, and the Board of Certification. It is the fifth English Edition, a translation of the 13th German Edition, of Boehler's books on fractures. It is with interest to note, that the translators call his decade, one of a trauma packed period.

Because of his renowned interest in trauma, his teaching on the subject has become world-wide, the principal law on fracture healing. His applied medical mechanics are of fundamental principles the orthotist, should know and use in his constructions of splints and braces.

Written in a very precise manner from case histories, of which he alone has treated over 660,000 patients in his own clinic in Vienna, it is profusely illustrated with drawings and pictures, many of them are of splints and braces. It will also be of interest to note that the illustrations in his book show the wrong and proper application splinting from the lower to the upper extremities. His widespread knowledge in fractures has earned him the respect of every country in the world, where he has taught and worked.

In Memoriam

ARTHUR C. POMEROY, 83, retired president of Pomeroy Company, Inc., New York City, died December 30, 1956, in Stamford, Conn., following a prolonged illness. He was a charter member of OALMA.

ARTHUR CLEVELAND POMEROY
1873-1956

For fifty-one years Mr. Pomeroy headed the surgical appliance firm founded by his late father, Daniel Pomeroy, in 1867, the presidency of which he held from 1897 to 1948 when failing health required him to reduce his responsibilities. He continued for a time longer as consultant.

During his half century of active years as president, Mr. Pomeroy built the Pomeroy Company, Inc., into an organization which at one time numbered eleven offices, one of which was in London, England; others in New York City; Brooklyn, N. Y.; Newark, N. J.; Wilkes-Barre, Pa.; Boston, Mass.; Chicago, Ill.; and the Pomeroy-Williams Company in Springfield, Mass., and Hartford, Conn., Detroit, Mich.

A charter member of OALMA, Mr. Pomeroy had a deep interest in all matters concerning the Orthopedic and Artificial Limb Industry, and was especially interested in advancement and progress relating to the Medical Profession and the business enterprise.

Mr. Pomeroy was a graduate of Wesleyan University, class of '95; member of the Psi Upsilon Fraternity, Skull and Serpent Society, and Captain of the football team. He was a charter member of the Woodway Country Club; a member of the Union League Club and Crescent Athletic Club, and at one time the Stamford Yacht Club.

Surviving are his wife, Mrs. Edith Pomeroy; a daughter, Mrs. Lucien Bavetta; a sister, Mrs. Lewis Sperry, and a son, Arthur Pomeroy, the present head of Pomeroy Company, Inc.; also grandchildren.

Funeral services were conducted by the Rev. Stanley Hemsley, Rector of St. Thomas Episcopal Church in Stamford, Conn. Interment was in Green-Wood Cemetery, Brooklyn, N. Y.

"Father, in Thy gracious keeping
Leave we now Thy servant sleeping!"

—David E. Stolpe

JOURNAL INDEX

An index to the Journal for the year 1956 will be distributed with the June issue.

In Memoriam

JOHN R. COCCO, C. P. & O.

It is with deep regret that we announce the untimely passing of JOHN R. COCCO, age 38, on February 15, 1957, due to injuries received in an automobile accident. A certified orthotist and prosthetist, he was senior partner of the certified firm of Cocco Bros. of Philadelphia and Trenton, N. J., a member firm of OALMA.

John was born in Italy, coming to America in 1928. He learned his profession under the tutelage of Hans Christoph of Philadelphia. He formed the firm of Cocco Bros. in 1943. He was a member of the Sons of Italy, the Pennsylvania Council of Physically Handicapped, the So. Philadelphia Business Men's Association and the So. Philadelphia Lions Club.

As an active and progressive member of OALMA and president of the Pennsylvania Orthopedic and Prosthetic Society from 1955 to 1956, John's enthusiasm and tireless efforts on behalf of both these organizations will be sorely missed.

He is survived by his wife Frances, daughter Sandra and son John C. His brothers and partners, Anthony and Frank will carry on the business.

BUFORD M. GOFF, C.P.&O., President of the B. M. Goff Artificial Limb Co. of Amarillo and Lubbock, Tex., died October 15, 1956, at the age of 59. Mr. Goff had been a resident of Amarillo since 1906, and was also well known as a tax consultant. His wife, Mrs. Madelyn Francis Goff, is continuing the facility.

HARRY BRODHEAD, a veteran employee of the Hanger Company, died suddenly January 16, 1957. He had been employed by the Hanger Company for over a quarter of a century as prosthetic technician and service representative, most of the time as an employee of the Hanger facility in Philadelphia.

CHARLES E. MATLOCK, Certified Prosthetist of Los Angeles, died December 25, 1956. Mr. Matlock was formerly employed by the Milligan Company of Los Angeles.

We regret to report that ORRY A. BALL, owner of the Orry A. Ball facility at Marshalltown, Iowa, died in January, 1957. Mr. Ball was born in 1887, and had been active in the artificial limb field since 1904. From 1915 to 1939, he managed limb shops in Europe, returning to this country because of the hostile attitude of the fascist regime in Italy. Mr. Ball attended the Assemblies in New Orleans and San Francisco.

MERVIN POTEET, a prosthetic trainee with the J. E. Hanger Company of Missouri, died January 1 following an automobile accident. B. H. Vowell, vice president of the company, praised Mr. Poteet as an excellent employee, whose loss would be greatly felt.

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