JUNE, 1953

The journal of the Limb and Brace profession

Orthopedic and Prosthetic Appliance Journal

The Surgeon and Amputee Rehabilitation

Our Education Program

Painful Feet

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

DATES TO REMEMBER — 1953

What • When • Where

AUGUST

29 CERTIFICATION EXAMINATION—*Request form TRS from Board Headquarters, 336 Washington Bldg., Washington, D. C.*
Atlanta, Ga.

31 UCLA PROSTHETICS SCHOOL—5TH SECTION OPENS
Los Angeles, Calif.

SEPTEMBER

26 CERTIFICATION EXAMINATION—*Request form TRS from Board Headquarters, 336 Washington Bldg., Washington, D. C. (Application must be made by July 27)*
Chicago, Ill.

27-30 NATIONAL ASSEMBLY OF THE LIMB AND BRACE PROFESSION CONDUCTED BY OALMA AND THE AMERICAN BOARD FOR CERTIFICATION
Chicago, Ill. Drake Hotel

OCTOBER

1 FINAL DAY OF NATIONAL ASSEMBLY OF LIMB AND BRACE PROFESSION
Drake Hotel

19 UCLA PROSTHETICS SCHOOL—6TH SECTION OPENS
Los Angeles, Calif.

WELCOME TO NEW MEMBERS OF OALMA!

Cordial greetings are extended to these new members of OALMA:

Amarillo Orthopedic Appliances, Fred G. Brockmeyer, Owner-Manager, 606 West 6th Street, Amarillo, Texas.

Gregor Orthopedic Appliances, John Gregor, Owner, 2622 S. Pulaski, Chicago, Illinois.

Lincoln Splint & Brace Shop, Jack O. Casey, Owner-Manager, Sharp Building, Lincoln, Nebraska.

Miller & Sierakowski, Warren S. Miller, Co-Owner, 791 The Alameda, San Jose, California.

Miller Artificial Limb & Brace Company, Robert A. Miller, Owner, 1516 N. Water Street, Corpus Christi, Texas.

Roy Van Schaack Orthopedic Appliances, James Leroy Van Schaack, Owner, 1309 Vermont Avenue, Hollywood 27, California.

White Surgical Company, Jerome D. White, Owner, 680 Bay Street, Staten Island, New York.

Slawner's Orthopedic Appliances & Repairs, Joseph Slawner, Owner, 4622 Park Avenue, Montreal, Quebec, Canada.

THE ORTHOPEDIC AND PROSTHETIC APPLIANCE JOURNAL

(Founded in 1946 as The Journal of OALMA)

VOLUME 7 JUNE, 1953 NUMBER 2

PUBLISHED QUARTERLY

By the Orthopedic Appliance & Limb Manufacturers Association, and The American Board for Certification of the Prosthetic and Orthopedic Appliance Industry, Inc.

GLENN E. JACKSON, Executive Director.

LESTER A. SMITH, Editor.

Office: 336 Washington Building, Washington 5, D. C.

SUBSCRIPTIONS

The Journal is sent to all certified fitters and to members of the Association. A special subscription rate of $4.00 a year is available to (1) Physicians (2) Fitters who are not certified (3) Societies and Government Agencies, and (4) Persons and firms which are not eligible for membership in the Association.

Reprints of articles in this issue will be available at reasonable cost.

THE NATIONAL ASSEMBLY OF OALMA AND ABC

1953 Program to Stress Trends for Limb and Brace Profession

Drake Hotel in Chicago to be Meeting Place

"We learn from each other" would make a good motto for the 1953 National Assembly, September 27 to October 1, at the Drake Hotel in Chicago, according to the preliminary program announced by Howard Thranhardt, Assembly Chairman.

Central Theme of this year's meeting is: *Professional Trends for Prosthetists and Orthotists.* To emphasize this theme, Howard has lined up a score or more of our outstanding technicians to guide Assembly sessions. A series of forums, round tables and panels, under their supervision, will draw on the "know-how" and experience of OALMA members and certified fitters for the answers to our problems.

The beautiful Drake Hotel in Chicago, centrally located on Lake Michigan's Gold Coast, forms an almost ideal setting for this annual meeting of the Artificial Limb and Brace Profession. The hotel's large Ballroom and the adjoining Walton and French Rooms will be reserved exclusively for the Assembly.

"HI-LIGHTS"

1. **OALMA and ABC hold National Assembly of the Limb and Brace Profession, Chicago, Illinois, Sept. 27 - Oct. 1. All meetings at the renowned Drake Hotel.**
2. **SEMINAR COURSES—"refresher" classes meet Sunday and Monday, Sept. 27 and 28.**
3. **CERTIFICATION—Examination on Saturday, Sept. 26. Apply now —ask for Form TRS (deadline: July 27).**
4. **SOCIAL PROGRAM for all. Special events for ladies.**
5. **REGISTRATION Forms and printed Programs ready Aug. 1.**

More Technical Exhibits

The layout of the Hotel convention floor makes possible a highly efficient routing of traffic through the Walton and French Rooms into the main Ballroom for all sessions. A good deal of time will be left on the Assembly program for visitors to give exclusive attention to the displays. Many members plan to devote an important part of their Assembly time to getting fall and winter supplying underway, as well as to making personal contacts with manufacturers and wholesalers. For many of them, it is a reunion with old friends.

Paul Leimkuehler and Ted Smith, who are serving as co-chairmen of exhibits, report that a number of new exhibitors are asking for space and that most of the firms represented at Washington last year have applied for booths at the Drake. A proposed meeting of supplier members to discuss

better service to the limb and brace profession has met with favorable response. It is tentatively set for the last day.

Exhibits in the Walton Room will include displays from research institutions and government. These will adjoin the technical displays of the manufacturers, which are considered equally valuable from an educational viewpoint.

Certification Test

Fitters wishing to be certified before the end of 1953, are reminded that the examination scheduled for September 26 is their last chance this year. The examination will be given at the Hotel Drake as a pre-Assembly event. July 27 is the deadline date. For applications to take the examination, secure Form TRS from Certification Headquarters, 336 Washington Building, Washington 5, D. C.

"Refresher" Classes Monday and Tuesday

Review classes on technical subjects will get underway Sunday immediately after Registration. The subject matter of these courses will be taken from this list: *Casts & Measurements for Cosmetic Appliances; Elementary Anatomy; Plastics (Terminology and Fabrication); Corrective or Functional Bracing; Arm Training.*

Turning from labor to refreshment, Assembly visitors will be guests Sunday evening at an OALMA party of which C. H. Bennington is chairman.

Other social events will be interspersed among the technical sessions, to take full advantage of Chicago's cultural and entertainment facilities. Mrs. Betty Hanicke, president of the OALMA Ladies' Auxiliary invites all ladies coming to the Assembly, to take part in the parties which are being arranged for her group. A Hospitality Committee representing both OALMA and the Auxiliary, will be active throughout the five day session.

The President's Breakfast Monday morning brings us all together to hear the Keynote Address and a preview of "What's Going to Go On." President Lee Fawver will preside at the breakfast and at the OALMA business session which follows.

Fair Trade Code for Brace Establishments

The Federal Trade Commission is considering the need for a Fair Trade Code to apply to Orthopedic Appliance Firms, and has decided to use the Assembly facilities for the hearing which will draft the proposed regulations.

The Code now in effect for the artificial limb industry, which was itself drawn up at a previous OALMA meeting in Chicago, has won high praise from government officials.

Monday evening has been tentatively set aside for the FTC hearing.

An Arms Clinic will be presented Tuesday morning—reviewing the lessons learned at UCLA and the latest developments in appliances. General F. S. Strong, Jr., Chairman of the Advisory Committee on Artificial Limbs and Dr. Miles Anderson of UCLA, will open the discussion.

An informative account of the Examination system is a feature of the Certification Board meeting Tuesday. This will be helpful to those wishing to prepare for the tests, and will offer suggestions to certified personnel who are anxious to keep themselves fully informed. Dr. T. Campbell Thompson, president-elect of the Academy of Orthopaedic Surgeons will be guest of honor. (Dr. Thompson was elected to the Certification Board at the 1952 annual meeting). D. A. McKeever, Board president, will preside at the Certification luncheon which precedes the annual meeting.

Professional Public Relations

How to work effectively with important "publics" of the brace and limb field is a topic to be explored Wednesday morning. OALMA members who have made outstanding records in dealing with these groups will discuss these relations, under such revealing titles as: "The Psychology of the Handicapped—Getting Along with Your Patients"—"Your Place on the Rehabilitation Team and Your Relations with the other Team Members"—"Relations of the Prosthetist-Orthotist with the Surgeon—How to Make Them Mutually Satisfactory."—"Working with VA and Rehabilitation Agencies." As a climax, we hear from one of our good friends on "The sort of Public Relations I like to find in the limb and brace establishments."

Joseph Aveni of Boston, Mass., has been invited to head up a Round table on the Rehabilitation Problem, Wednesday afternoon. Working with him on actual case histories will be a team of skilled orthotists, prosthetists, therapists and physicians.

The Annual Banquet Wednesday evening is for many the high-mark of the entire Assembly. President Fawver will preside and present scrolls testifying to personal life membership to Joseph Spievak and Clyde Aunger, who were presidents of OALMA, 1934-1936 and 1936-1938 respectively. Past President Lucius Trautman is to receive an engrossed citation.

Management Day

The worries of Management are balanced against its opportunities and rewards at Thursday's "Open Forum," with Director Glenn Jackson as moderator. As the "knotty" problems are presented by any OALMA member present, the moderator will turn for the answers to a host of talent.

Last on the docket is OALMA's business session and then adjournment. The Program Committee is confident that you'll come up to adjournment, satisfied that attendance at this Assembly has paid off in dividends—real dividends in education, advancement, and recreation.

OALMA To Aid in Research Program Industry Ideas To be Sought

The Advisory Committee on Artificial Limbs of the National Research Council, has earmarked a fund of $5,000.00 for the purpose of paying necessary and approved out-of-pocket expense incurred by members of the artificial limb and brace profession and OALMA when devoted to testing inventions and ideas in prosthetics.

This brings to fruition a long-awaited development whereby the industry becomes an active integral part of the Research Program in the field of prosthetic appliances and services.

This means that OALMA Headquarters in Washington will now serve as a channel through which any prosthetist or his firm may submit a new idea or device. After referral to the Industry Advisory Committee consisting of Messrs. Chester Haddan, Lucius Trautman and H. R. Thranhardt, the new idea will be tested under the most favorable circumstances.

OALMA officers emphasize that this new opportunity is a challenge to the inventive genius in the artificial limb and brace profession. They hope and confidently expect that many new ideas will be submitted for testing with benefits in the years ahead to amputees throughout the world.

Conferences between representatives of OALMA and the Committee on Artificial Limbs of the Research Council have resulted in the following agreement on procedure:

1. Any inventor or firm engaged in the artificial limb industry or profession is encouraged to submit to the Association any new device or technique he believes would make a valuable contribution to the improvement of the practice of prosthetics in this country.
   The idea should be carefully described so that it can be understood sufficiently to make a preliminary judgment; a sample will, in some cases, be most useful and should accompany the statement wherever practical.
   Whatever is received by the Association will be sent to the Industry Advisory Committee which will serve as the original Screening Committee.
2. If the Industry Advisory Committee, or its designated representatives, believe the idea holds promise, they will make some satisfactory arrangement for an "on the scene inspection." At this inspection, representatives of New York University, the designated Testing Laboratory, will be present.
3. If this group approves and recommends further tests and appraisal, their recommendations will be made to the appropriate Technical Committee (either lower or upper extremity) of the A.C.A.L. for action.
4. If further tests and evaluation are authorized, the tests will be carried out at New York University which will report to the A.C.A.L. or its appropriate technical committee as to its findings on the scientific merits of the device or technique.
5. An informal agreement would be made with the inventor which will permit N.Y.U. to make whatever tests are in line with its customary prosthetic testing procedures.

GENERAL COMMENTS:

(a) Throughout this procedure, there is no concern over the patents which may be involved, or their effect. The inventor is fully protected.

(b) Our common interest in all of this procedure is to develop improved prosthetic service to the amputees of America.

To You—from our Presidents

OALMA

To look back over the last six years is nothing less than a miracle. This rapid growth of OALMA in that time can be attributed to the cumulative effect of our members working together to promote a better industry in which we can serve those who depend upon our knowledge and our "know-how."

Lee J. Fawver

During the past three months, many OALMA regional meetings have been held with splendid attendance. After attending most of these meetings, I am sure that the zest for new ideas and greater knowledge is also a prime factor in our Association's strength.

I have just returned from an extended trip with Director Glenn Jackson, to a series of regional conferences. Our first meeting was in Chicago with over 70 of our people on hand. Then to Seattle where all firms in that area took part. The same was true at the meeting in Portland. In San Francisco, Region X's meeting was a full day affair with many interesting high lights.

Never-to-be forgotten is the manner in which the Los Angeles area is promoting a better understanding between our members and the Medical Profession. The evening of June 9 at the Statler Hotel a banquet was held for the doctors and our members, with well over two hundred present. Thanks to the Committee for a job well done!

Lee J. Fawver

AMERICAN BOARD FOR CERTIFICATION

The foundation for our entire Certification Program is the ability, the qualification and integrity of the individual certifee—the individual fitter. Of course it is important that the facility be adequate, clean and satisfactory in every way. It is the qualified individual fitter, however, who is the essential factor which makes the facility.

D. A. McKeever

The Certification Board has recognized the importance of the individual fitter from the beginning. It arranged for him to receive regularly the issues of this *Journal*.

The Board then set up a National Advisory Council chosen by the certified fitters throughout the United States and Canada. The seventy members of this Council have already been of great help.

The program for the National Assembly in Chicago this coming September was arranged with the individual fitter in mind. It will emphasize strongly the effect of certification on the fitter. We shall discuss the standards that have been set, the examinations—how they are conducted and what they attempt to do.

It is not too soon for you to begin planning now to attend this National Assembly. Like many with whom I have talked, I hope you are planning to bring your family, and make this a combination vacation and "professional education."

Dan McKeever

*The Surgeon's Responsibility in the Rehabilitation of the Amputee

An Evaluation of 228 Amputees as to Surgical and Prosthetic Management

by Jack Wickstrom, A.B., M.D., F.A.C.S.

Associate Professor of Surgery and Chairman,
Division of Orthopedic Surgery, Tulane University

Accelerated interest and activity in all rehabilitation problems and especially in rehabilitation of amputees is one of the remarkable phenomena of post-war medicine in our country. Great strides have been made in restoration of function and increasing opportunities for amelioration of economic and social problems, especially in special centers for rehabilitation. The vast majority of civilian amputees however, remain the problem of the individual surgeon, prosthetist and the vocational counselor. If the results of a recent survey of the management of 228 amputees, evaluated by the author between January 1948 and January 1951, are an indication of the care the average amputee receives, it would appear that many individuals are not benefiting from recent advances in amputee rehabilitation. Too frequently the surgeon fails to recognize his responsibilities to the patient other than abalation of the diseased member and post-operative care of the wound, ignoring entirely the present day concept of the surgeon's role as actuator, adviser, and coordinator of a complete rehabilitation program which requires cooperation of a number of individuals for success.

Rather than present a detailed statistical survey of our findings in these 228 cases, we will consider the more significant errors of management encountered and briefly outline a comprehensive program for the management problems. Such a program can be divided into four phases: surgical management, postoperative care, prosthetic restoration plus training, and vocational guidance.

Surgical Management

If we were to select one phase of amputation management recognized by all as the primary responsibility of the surgeon it would be the actual amputation of the limb at a site acceptable for the fitting of a prosthesis. The rehabilitation of the amputee begins with the surgeon's decision to amputate. The type and site of amputation established by the pathology necessitating the amputation frequently determines the patient's entire future and always determines the amputee's ability to be fitted with, and successfully use, a prosthesis. How well is this being carried out? Evaluation of 246 stumps in the present series revealed that but 64% of the lower extremity and 41% of the upper extremity amputations had been performed at acceptable sites of election. Admittedly difficult to accurately evaluate, a review of the history in these cases revealed that the pathology necessitating abalation probably accounted for but 38% of the unsatisfactory stumps, the other 62% resulted from failure on the part of the surgeons to apply modern surgical knowledge and proper surgical judgment.

We do not intend to discuss surgical technics or various types of amputations. However, certain principles of amputation must be included to establish a standard.

* *This article originally appeared in the Bulletin of the Tulane Medical Faculty, Nov. 1952. It is reprinted here by permission.*

The success of the guillotine or open amputation at the level of trauma or infection followed by later reamputation or revision of the stump has been proved by vast military and civilian experience. The disadvantages of a second operation are greatly outweighed by the resultant conservation of life, limb length, and the quality of stump obtained.

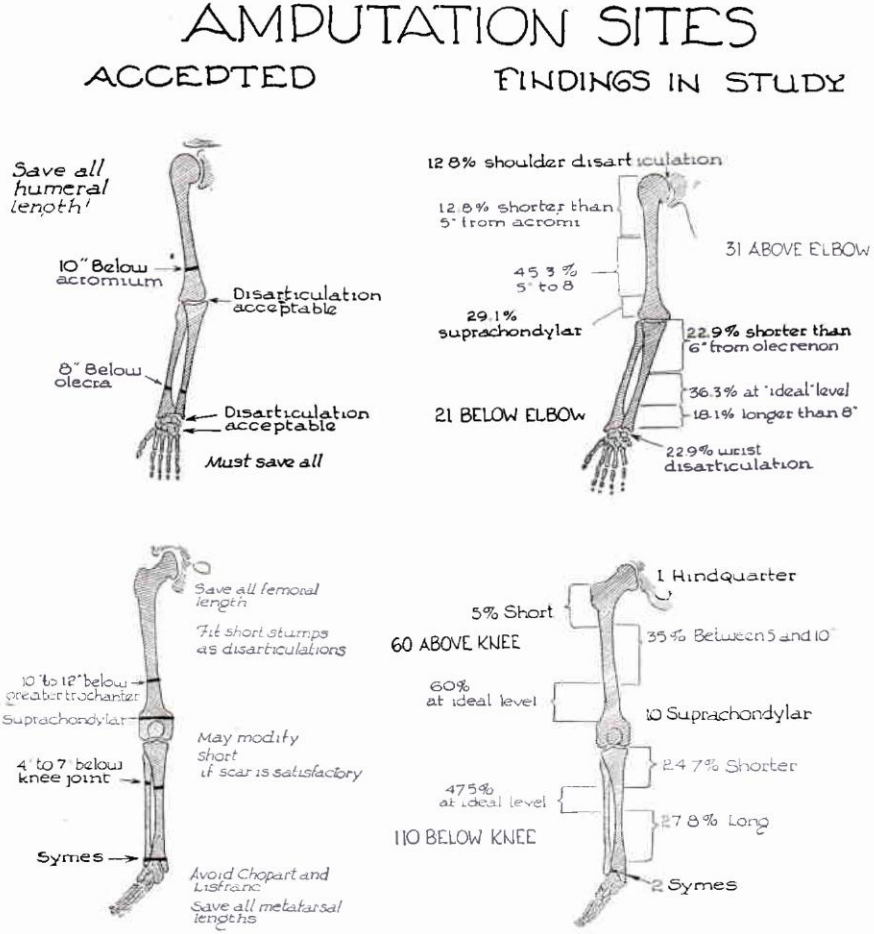
From experience gained by the surgeons and prosthetists both in this country and abroad, certain sites of amputation are obviously most satisfactory from the standpoint of function, prosthesis fitting and stump durability. Although authorities differ slightly, the following sites of election have been defined in the lower extremity. The accepted sites of election for major amputations are at Symes level through the ankle; through the lower leg 4½" to 7" below the knee joint; through the femur at the supracondylar level; and through the thigh 10" to 12" below the tip of the greater trochanter.

In the upper extremity the accepted sites of election for major amputations are through the distal third of the forearm 6" to 8" below the olecranon and through the upper arm 10" below the acromion. Disarticulations through the carpal bones, wrist and elbow have been revived recently and prove effective sites of amputation, although they present certain problems of prosthesis fitting.

Amputations which cannot be done at the sites of election should be performed according to established principles. Amputations through the foot should conserve all possible metatarsal and phalangeal length. However, amputations at Lisfranc's and Chopart's level have not proved acceptable and should be avoided in most cases. Amputations through the hand demand that all viable tissue be conserved and that no part be sacrificed except when a well planned reconstructive procedure is carried out to improve function in the remaining portion of the hand.

Modifications of the stump or the use of special prosthesis may frequently be used to compensate for amputations performed at sites other than those of election. For example, the short below-knee stump, modified by section of the medial hamstrings or by using a "slip socket," may be fitted successfully with a prosthesis that retains knee function. The short below-elbow stump may be fitted with a prosthesis that retains elbow motion by using the double socket with polycentric joints or modified by section of the biceps tendon. Amputations performed through the thigh or upper arm above the sites which can be fitted with regular above-knee or elbow prostheses, should conserve all possible bone length, rather than resort to disarticulation through the joint above, because of better stump contour and greater ease of fitting a prosthesis designed for disarticulation stumps.

The position of the scar from the standpoint of the patient's comfort as well as scar irritations and disruption is not adequately appreciated. Because of variations in circulation and soft tissue pliability, it appears less difficult to secure satisfactory scars at certain sites than others. For example, the scars were satisfactory in 89% of the above-knee stumps but were satisfactory in only 68% of the below-knee stumps examined. Some concept of scar importance can be gained from the fact that over 70% of the difficulties encountered in fitting below-knee prostheses resulted from unsatisfactory scars. In general, the stump scar should be terminal and slightly posterior, narrow, and non-adherent to nerves or bone. In planning reconstructive procedures on lower extremity amputees or potential amputees, procedures which produce scars on the thigh or lower trunk must be avoided if possible and those producing scars about the upper trunk and shoulder also must be avoided in arm amputees when possible.



The archaic practice of covering bone ends with muscle flaps to "cushion" the bone ends, only hinders stump shrinkage, adds to the difficulty of prosthesis fitting and frequently requires secondary revisions to correct. Attempts to conserve or increase stump length or secure closure of an open amputation by skin grafting, whether split or full thickness, as a definite procedure, are mentioned only to be condemned.

Post-Operative Care

In reviewing our cases it was evident that many technically correct surgical procedures were nullified by the poor quality of post-operative care. The post-operative care and preparation of stumps for the fitting of a limb remain the responsibility of the surgeon. Too frequently this care is allocated to ancillary workers and members of the house staff with insufficient knowledge of proper technique and of the importance of post-operative care.

The most frequently encountered evidence of poor post-operative care in our series was unshrunken or poorly shrunken stumps, joint contractures and excessive muscle wasting. All delay the proper fitting of prostheses and often account for subsequent difficulty in using prostheses.

The immediate post-operative care of lower extremity amputations war-

rants special consideration. After surgery the below-knee stump should be splinted with a posterior plaster slab, with the knee in extension, until complete wound healing has occurred, usually for a period of three to four weeks. This allows for proper fixation of soft tissues in the stump and healing of the skin, and also prevents flexion contractures of the knee. Other amputation stumps usually require less time to heal.

Thigh stumps must not be supported or elevated on pillows at any time during their post-operative course because of the marked tendency for flexion and abduction contractures to develop at the hip. As soon as the above-knee stump is healed, and decrease in tenderness will allow, the patient should spend at least half of his time while in bed lying prone. The avoidance of prolonged sitting in managing the above-knee stump to prevent flexion and abduction contractures of the hip joint should also be stressed. Postoperatively, upper extremity amputees usually require only proper application of pressure dressings with elastic bandaging to the stump.

Once stump healing is complete, the only methods of physiotherapeutic consequence are the proper application of elastic bandages to secure shrinkage of the stump and intensive exercises designed to maintain muscle power and normal range of motion in the remaining joints of the extremity. Elastic bandages must be applied with great care to prevent unequal pressure, constriction of the stump end, and stumps with contours difficult to fit with prostheses. The importance of exercise is applicable to all amputees. Above-elbow and above-knee amputees especially should be forced to carry out progressive resistance exercises to prevent atrophy and loss of muscle power about the shoulder and hip. This may be secured by the use of improvised slings and pulleys arranged to accommodate each individual case.

Prosthetic Restoration

The success with which a prosthesis is used depends on the surgical and post-operative management of the amputee, the selection and fit of the proper type prosthesis and the adequacy of training in its use. The manufacture and fitting of prostheses is obviously the primary concern of the limb fitter; never-the-less, it remains the responsibility of the surgeon to prescribe the type prosthesis and to inspect and approve the fitting of the prosthesis. It demands close liaison and cooperation between surgeon and limb fitter if the amputee is to receive satisfactory prosthetic restoration.

In our series of 228 cases, 147 had been fitted with prostheses prior to our initial examination. Only 12% of these 147 patients had had their prosthesis specifically prescribed or inspected by a physician. The other 88% had been furnished their prostheses without prescription, supervision or inspection. This represents the weakest link in the chain of amputee management. Both surgeon and prosthetist can gain much from the reciprocal exchange of knowledge. The greatest beneficiary, however, is the amputee. It is impossible to properly solve many problems of limb fitting without this close liaison. Only the more general principles of limb fitting will be considered here.

The ideally successful prosthesis for the lower extremity must first of all be of the proper length, provide stability on weight bearing without discomfort or mal-alignment and provide motion at the joints in correct alignment to allow walking without an obvious limp.

The most frequently repeated errors in fitting above-knee prostheses encountered in our group of cases were insufficient length, inaccurate seating of the ischial tubercle, improper socket size, faulty alignment of hip joint, ankle and knee and absence of the proper degree of valgus at the knee.

In examining below-knee prostheses, the most commonly encountered errors of fitting in their order of frequency were improper seating of the stump in the socket, faulty contour of the socket posteriorly, improper knee joint alignment and inadequate length of thigh lacer.

The prosthesis for an upper extremity must fulfill two requirements: function and appearance. The prosthesis should be light in weight, lifelike in appearance and incorporate the structures essential to imitate the functions of the normal arm and hand and must substitute mechanical devices for muscles and joints lost at amputation, to imitate the function performed by the various elements of the hand and arm.

Careful selection of upper extremity amputees for prostheses bears consideration. Thirteen of the thirty-one above-elbow amputees and two of the 21 below-elbow amputees were rejected for prosthetic fitting because of length of elapsed time since amputation, unsatisfactory stump, inadequate initiative and cooperation, or satisfaction of their status without prostheses. The greatest difficulty encountered in fitting upper extremity prostheses was proper design, adjustments and alignment of suspension apparatus and grasp control straps, especially in above-elbow prostheses. Faulty prosthetic joint alignment at the elbow produced the greatest number of difficulties in fitting below-elbow prostheses.

The fitting of a prosthesis requires utmost skill, patience and perseverance on the part of the prosthetist with numerous minor adjustments and alterations. Once the correct fit is secured the patient must be impressed with the importance of proper care and routine checks of the stump and prosthesis by the surgeon and prosthetist, especially during the first year of wear.

Prosthetic Use and Training

All patients who are fitted with a prosthesis must receive training in use of the prosthesis. This should be carried out under the supervision of the surgeon with the assistance of a physiotherapist.

Training the amputee to use his prosthesis is much easier in properly equipped centers with adequately trained personnel. However, adequate training can be carried out anywhere with little special equipment or personnel if complete cooperation on the part of the amputee, prosthetist and surgeon can be obtained. Advanced age, obesity, debility, and inherent awkwardness and incoordination are factors which increase the amount of effort and time required in training but need not prevent the development of proficiency in the use of artificial limbs.

Only four percent of the 147 amputees who were wearing prostheses at the time of our first examination had received any type of prosthesis training other than a few pointers which the limb fitter or salesman may have made when delivering the prosthesis. This lack of training was evident from the larger number of cases with faulty habits of walking or prosthesis manipulation which we found in this group, faulty habits which frequently defied all efforts at correction.

A total of fifty-eight lower extremity amputees in our series received special training in the use of their new prostheses. Twelve had previously worn prostheses and were referred because they were poor walkers. This training started with balancing exercises, walking between parallel bars, graduating to Canadian type crutches and stair climbing instruction augmented by walking before a mirror along a chalk line at home. Approximately an hour three times weekly for three to six weeks was spent in supervised training. Fifty-five percent of these trainees became proficient walkers and were classified as good.

Twenty-four percent had persistent limps, faulty body alignment, or became fatigued, and were rated as fair. The other 20% were classified as poor because of obvious limp or lurch and inequality of stride. Nine of these had previously worn prostheses and had been referred for training as "poor walkers."

Thirty-five upper extremity amputees received some supervised training in the use of their prostheses. This consisted of manipulation of the grasp mechanism with elbow and shoulder in various positions; practice on a "gadget" board with door knobs, light switches, etc.; training in use of common hand tools, eating utensils, etc.; and demonstrations in dressing. Sixty-five percent became sufficiently proficient to use prostheses in working; twelve percent were classified as fair, remained awkward but used prostheses in working; and twenty-six percent did not use their prostheses at work or abandoned them all together. Upper extremity amputees especially exhibited striking individuality in the manner in which they manipulated their prostheses.

Vocational Planning

Securing employment which allows full utilization of the amputee's abilities and yet is adapted to the limitations imposed by his handicap requires careful cooperation between the surgeon, prosthetist, rehabilitation counselor and employer. Since each case must be individualized, only the broader principles will be discussed.

When the amputee is referred to a Vocational Rehabilitation Service, the counselor must secure information from a number of sources. This consists of the client's educational and employment record, results of aptitude, intelligence and psychological tests, general physical examination and orthopedic recommendations as to the condition of the stump, the advisability of fitting a prosthesis, the specific type of prosthesis and the limitations of activity imposed by the client's disabilities. Individual job analysis, particular job hazards and the possibility of job modification plus the type of transportation available to and from the site of employment must be considered. With this additional information available, the counselor must attempt to match the particular client's abilities and limitations with the mental, physical, and psychological requirements of a particular job. The accuracy with which he accomplishes this balance between client's abilities and job requirements determines to a large degree the client's success at becoming and remaining self-sustaining.

The following cases are cited to illustrate the complexity of problems encountered and their solution:

Case (1). E. A. 36 year white female, obese, double below-knee amputee. Amputation at age 7 (traumatic). Referred for replacement of worn prostheses. Required stump revision because of verrucoid scar and reduction of weight. Fitted with prostheses, one with ischial weight bearing thigh corset. Returned to work on assembly line against orthopedist's recommendation, work unsatisfactory. Reevaluated, trained as switchboard operator and successfully employed as such past 33 months. Only problem is control of obesity by diet.

Case (2). A. L. 32 year colored male, single, right below-elbow amputee. Traumatic amputation 1948. Fifth grade education, laborer. Aptitude revealed manual dexterity. Referred for examination prior to purchase of prosthesis, October 1949. Rejected because of median nerve neuroma and stump edema. Neouroma excised December 1949; stump shrunk, fitted with prosthesis February 1950. Employed as tool room checker after two months' prosthesis training. Returned to former job on car-loading (because of higher pay) successfully manipulating two-wheeled truck with heavy loads during past 21 months.

Some idea of the success of such a coordinated program can be gained from the fact that over eighty-nine

percent of the 228 amputees in our study completed successful employment records after having received the required stump revisions, proper prosthetic restoration and training in a job suited to their physical limitations.

Summary

The results of a survey of 228 amputees evaluated between January 1948 and January 1951 have been reviewed. The more common errors of amputee rehabilitation as seen in this series have been discussed together with an outline of a program which would have prevented many of the difficulties encountered.

The importance of recognition by the surgeon of his responsibilities to the amputee as actuator of proper surgical management and post-operative care, as consultant to the prosthetist and vocational counselor, and as coordinator of all activities designed to restore function and independence to the amputee has been stressed. Failure to recognize these responsibilities accounts for many failures in amputee rehabilitation.

References

1. Alldredge, R. H.: Major Amputations, *S. J. & O.* 84:759-764 (April) 1947.
2. Blaire, Harry C. and Morris, Harry D.: Conservation of Short Amputation Stumps by Tendon Section, *J. Bone Surg.* 28:427-433 1946.
3. Craft, A. W. J.: Amputations, Limb Fitting and Artificial Limb, *Am. Ref. Coll. Surg. Eng.* 5:190-207 1949.
4. Daniel, Earle H.: Amputation Prosthetic Service, *Williams & Wilkins Co., Baltimore, Md.* 1950.
5. Kessler, H. H.: Definitive Surgical Management of Amputations, *U. S. Naval Med. Bull.* 44:1133-1148 (June) 1945.
6. Morris, Harry D.: Amputations: The Cyclopedia of Medicine, Surgery and Specialties. *F. A. Davis, Philadelphia* 1950.
7. Slocum, Donald: An Atlas of Amputations, *C. V. Mosby Co., St. Louis* 1949.
8. Thomas, Atha and Haddan, Chester: Amputation Prosthesis, *Lippincott, Philadelphia* 1945.

— REVIEWS —

THE EXTREMITIES

By Dr. Daniel P. Quiring, Beatrice A. Boyle, Erna L. Boroush, and Bernardine Lufkin. Lea & Febiger, Philadelphia 1952. $2.75.

Reviewed by Chester C. Haddan, Consultant to the American Board for Certification.

This is a unique book in that it has no text, being composed entirely of diagrams of the extremities, together with a descriptive legend with each plate.

The drawings are excellently executed and do not confuse the student with unnecessary detail, but rather emphasizes the major termini of muscles and the principal arteries and nerves related to them.

This book of 117 pages is a must for every student of functional anatomy, equally suited for the practicing physician, the physical therapist or the orthotist-prosthetist. It should be a required book for all orthotist-prosthetists.

It is a practical reference that should have daily usage in every prosthetic or orthopedic office. Its content table and excellent index makes it particularly useful as a daily reference.

(Other Reviews on page 60)

VA Proposes Simpler Forms for Next Year's Contracts

Mrs. Adenia Stearn, Chief of the Service Contracts Section, Procurement Division, Supply Service, of the Veterans Administration, who is responsible for all artificial limb contracts, has informed us that she and her assistants, Don Zimmerman and Joe Pitrone, have been busily engaged for the past three months revising the Veterans Administration quotation forms for use in making contracts to begin January 1, 1954. All contracts except one or two which were to expire June 30, 1953 have been renewed for six months.

This revision involved a great deal of research and study, and is an important step toward the development of a procedure which will simplify the procurement of the enormous number of different types and combinations of artificial limbs which are available on the market today.

Praising the revision, D. A. McKeever, President of the American Board for Certification, said, "We feel that this is a very good rearrangement. It allows maximum flexibility with a minimum of paper work. The V. A. should be complimented on their efforts."

The major change in the contract form is the re-arrangement of the Price Schedule to make it easier for bidders to insert prices and descriptions and easier for the Service Contracts Section to examine.

The new form emphasizes the "substitution of parts" procedure to provide a maximum number of different combinations of limbs under contract with a minimum number of line entries. The "substitution of parts" procedure has been used for the past year and its applicability to artificial limb contracts has been demonstrated. The new form will improve this procedure to the point where a firm quoting on an average number of items need only complete approximately 135 description spaces in the new form as compared to approximately 360 spaces heretofore. Wherever possible standard descriptions have been printed in the form.

The new simplified form is designed to insure that bidders will show the same descriptions for identical items under Group A (complete legs) and Group D (parts for legs). Descriptions will be entered only under Group D and identical component parts under Group A will be indicated by completing the Group D item number. In the past, the submission of incomplete, inaccurate and non-standard description of items by many firms has been one of the main causes for delay in their contracts. It has been an indirect cause for delay in consummating contracts with firms who properly described items. Therefore, the new form has been designed to simplify the furnishing of item descriptions.

Mrs. Stearn says that artificial limb firms can materially aid in the processing of their contracts by double checking their quotations before returning them to the Veterans Administration to be certain that they have followed all instructions, that all pertinent spaces on the form have been properly completed and that all copies of the quotations are identical.

Reprints of articles are available. Inquire of OALMA, 336 Washington Bldg., Washington 5, D. C.

The Educational Program for Prosthetists and Orthotists: Further Progress Made Toward The Goal of Professional Standing

By McCARTHY HANGER, JR.

First Vice President, OALMA; Chairman, Education Committee

The Education Program of our industry made a major step forward in October 1952, when the Federal Bureau of Apprenticeship approved the new "Apprenticeship Standards for Prosthetists and Orthotists." This article reports the efforts which led to this development, and describes the steps which remain to be taken before our hoped-for goal of professional standing is realized.

The Apprenticeship Standards for Prosthetists and Orthotists include the "Schedules of Work Processes," or on-the-job training outlines developed by the OALMA Education Committee, the related academic courses selected by the Advisory Committee on Educational Standards of the American Board for Certification, and various other requirements for apprentice standards, such as wages, supervision, and records. These standards, which were developed with the assistance of Mr. Carl B. Madson of the Bureau of Apprenticeship, had been presented in August 1952 to the Federal Bureau of Apprenticeship, of the U. S. Department of Labor, which has jurisdiction over National Apprenticeship Standards.

The need for an Education Program to improve the proficiency of persons in the industry and to train others had been recognized for many years. A great deal of effort and thinking has been devoted to this need. For example, in 1943 the directors of the Association of Limb Manufacturers of America, whose President was then Chester C. Haddan of Denver, prepared an outline of a training program for disabled veterans of World War II. Atha Thomas, M.D., Assistant Professor of Orthopedic Surgery, University of Colorado School of Medicine, and Mr. Lee Dodge, State Supervisor of Apprenticeship Training, Denver, Colorado, give valuable assistance in preparing this outline. This program was to include on-the-job training in Orthopedic Braces and Artificial Limbs and also selected courses of study in medical schools.

In 1944, a special committee of the Association of Limb Manufacturers of America prepared an Apprenticeship Program as a further development of the 1943 program, covering both veterans and non-veterans, to cover apprenticeship training on the job, together with related academic studies.

The system of developing trained limb- and brace-makers and -fitters by apprenticeship has been in use for many years. These skills were taught by actual supervised experience. In many cases, this experience was specialized or limited rather than well-rounded experience. Many sons of limb- or brace-makers came into the field under the supervision of their fathers, and this situation still continues.

While the need for related academic training had been recognized for years, no concerted effort was made to establish actual classes or courses in suitable subjects until an apprenticeship school was set up by members of the industry in the Los Angeles area in 1947. They set up a Trade Advisory Committee which established Apprenticeship Training Standards, and a School to supplement the on-the-job training. Through the cooperation of the Los Angeles Board of Education, a three hour class, one night a week was set up with J. J. Vollmer as instructor. This class continued until 1951 when the permanent Education Committee was established with Harvey G. Lanham as Chairman. The school program is still being run successfully in Los Angeles. They hold classes for 24 weeks each year in anatomy, physiology, orthopedic surgery, and other subjects. All the members of the industry in this area are due a great deal of credit for establishing and continuing this training program, which was a true pioneer effort.

The 1944 Plan

It is interesting to note that in the 1944 proposed program, our Association recognized that apprentices in this field should receive 144 hours of related instruction for each year of apprenticeship, in conformity with the accepted Federal Standards for Apprenticeable Occupations. Furthermore, it was agreed that four years of on-the-job experience was necessary to develop an untrained apprentice into a "mechanic" of acceptable competence. Finally, this report recommended a plan for awarding certificates to "mechanics," who completed the training or otherwise qualified under standards to be approved by the association. The committee report stated, "Such a plan for Certified Technicians or Mechanics, and possibly for Certified Artificial Limb and Appliance Shops, operating under standards recognized by the industry could be used in building confidence and good will on the part of the public and the Orthopedic Surgeons toward those shops which adhere to such standards." In other words, here was one of the early steps leading to the Certification Program.

After the American Board for Certification of the Prosthetic and Orthopedic Appliance Industry was established, one of its first projects was the establishment of an improved Education Program. In 1949, the Board requested Dr. George H. Young, Assistant Director of the Mellon Institute of Industrial Research in Pittsburgh, to establish a committee to advise the Board on educational standards for the training of those who wish to become Certified Prosthetists and Orthotists. It was to make any other recommendations it saw fit on the educational needs of the industry.

The committee was established on October 28, 1949. Members are: Dr. George H. Young, *Chairman;* Dr. Harold E. Weaver, Senior Fellow at Mellon Institute, *Secretary;* Mr. W. L. Cooper, Area Coordinator of Trade and Industrial Education, Department of Public Instruction, The Commonwealth of Pennsylvania, of Pittsburgh; Dr. Ward Darley, Dean, Department of Medicine, University of Colorado Medical Center, Denver; Professor K. L. Holderman, Director of Engineering Extension, Pennsylvania State College, State College, Pennsylvania; Dr. C. P. Scott, Associate Professor of Vocational Education, University of Pittsburgh at Pittsburgh; and Mr. R. H. Wilson, Director of Apprenticeship, Department of Labor and Industry, Commonwealth of Virginia at Richmond.

This committee was divided into these four subcommittees:

Subcommittee 1—To set standards for Apprenticeship Programs.

Subcommittee 2—To survey by questionnaire the thinking of the Industry on its educational needs.

Subcommittee 3—To establish the requirements of a formal college level training program.

Subcommittee 4—To study and recommend extension type courses applicable to our industry.

The Questionnaire Subcommittee (No. 2) has completed its work, which was used to guide the work of the other committees.

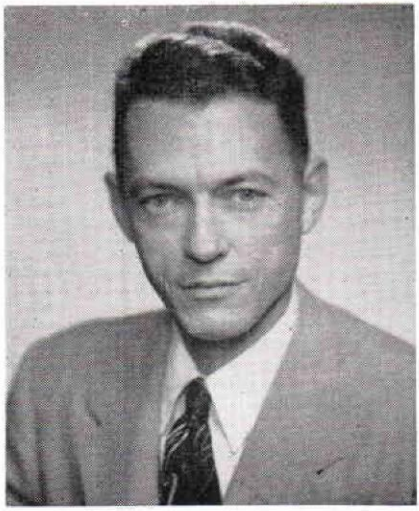
The Subcommittee on college level training (No. 3) is still working on its program. It has made certain general recommendations, however. Members of the committee feel that the student in this course should have a three year basic program in an accredited engineering school, in mechanical engineering or equivalent, followed by a two year special course of study in a medical school. The last year should be followed by or paralleled by supervised training in an approved limb or brace shop. The need for this type of trained personnel is important, but it may be quite limited.

The Subcommittee on extension work (No. 4) has done certain preliminary investigation, but is awaiting further development of the other programs before proceeding.

The recommendations for Apprenticeship Programs were considered by the Advisory Committee to be in final form as far as educational standards were concerned, and they were presented to the American Board for Certification (along with a report on the status of the remaining part of the committee's work) on March 3, 1951.

First, the Committee recommended that the minimum standard for training persons who wished to stand for examination as a Certified Prosthetist or Certified Orthotist should conform to the general pattern laid down by the Federal Committee on Apprenticeship. In other words, they re-examined and confirmed the conclusions previously reached by leading members of our Association, that our skilled craftsmen should have an apprenticeship of at least four years in duration, which should include related academic instruction of 144 hours per year.

Secondly, the committee pointed out the real heart of the Apprenticeship problem; "Training in the making and fitting of orthopedic devices and prostheses cannot and must not be compared directly with apprenticeships in other mechanical arts such as masonry, plumbing, carpentry, powered-machinery operation, et-cetera. The difference is not a specious nor a philosophical one. Craftsmen in this field deal directly with a most vulnerable segment of the country's population, namely, the



McCARTHY HANGER, JR.

McCarthy Hanger, Jr., though still a young man, has had 15 years' experience in the artificial limb field. After graduating from Duke University and taking a Master's degree in Business Administration from the University of Pennsylvania, he began work with J. E. Hanger, Inc. at Philadelphia in 1938. During World War II, Mr. Hanger was an officer in the U. S. Naval Reserve. After the war, he moved to St. Louis to become Vice President of J. E. Hanger of Missouri, Inc. He was elected president of the company following the death of his father, McCarthy Hanger, Sr., in September, 1949.

"Why Train an Apprentice?"

The need for additional skilled fitters has become more and more obvious. This need was expressed in the early days of World War II and has steadily become more acute. Dr. Miles Anderson, speaking in terms of general skilled trades, has stated that the average working life of skilled workers is twenty-eight years. This means that replacements must be obtained at a rate of 3.6 per cent each year, to maintain a sufficient supply of skilled craftsmen. Since we have in the neighborhood of 1,000 Certified Prosthetists and Orthotists, this means that we must put into training approximately fifty apprentice fitters every year, so as to allow for the number who drop out.

If we are to put into training fifty apprentices each year, then at any given time we should have about 175 to 200 apprentices in various stages of training. In other words, one half to two thirds of the recognized and certified limb facilities should have an apprentice in training.

While the need for these apprentices is obvious, the decision for any one firm to have an apprentice in the training program is up to the manager of the individual firm. Also, each individual firm must face squarely the fact that, if it is a one-man firm, which either wishes to expand its service to its patients, or wants to avoid decreasing that service as the owner becomes older and less active, then it needs an apprentice. Any firm larger than a one-man firm is subject to turnover and loss of its personnel. To safeguard its service against this contingency, such a firm needs an apprentice. *It is a necessary cost of doing business to train apprentices, just as necessary as paying rent.*

lame, the injured, the handicapped persons. The results of bad workmanship, or unethical or ignorant practices, have far wider humanitarian consequences than can be true of any other craft. Thus, the working orthotist or prosthetist much more nearly resembles the trained practicing nurse, the clinical laboratory technician, the medical corpsman, than he does the journeyman electrician, skilled mechanic, or building craftsman; and this despite the fact that he is basically a *fabricator of a special device or appliance.*"

Therefore, the Advisory Committee recommended that special emphasis be given to on-the-job training in limb and brace shops designated and approved by the Association to offer such training. The training centers must be subjected to investigation, selection, and a salutary measure of control, preferably through our own industry organizations, voluntarily and eagerly working with the various State and Federal Vocational Educational Bureaus. Finally, the recommendations of the Advisory Committee as to length and type of apprenticeship, and the related academic courses, were to be considered a basic foundation, a minimum which must be given to apprentices. They recommended more lengthy training be considered as a goal, to be established as it became practical and possible in future years.

In the closing days of his term as President of OALMA in 1950, Mr. Daniel A. McKeever had appointed an Education Committee of the

OALMA, consisting of McCarthy Hanger, Jr., of St. Louis, *Chairman;* Lee Fawver of Kansas City (now President of OALMA), and Herman C. Hittenberger of San Francisco. The function of this committee was to put into operation a program which would meet the standards developed by the Advisory Committee on Educational Standards for the American Board for Certification.

This committee met with Dr. Young's committee and examined his report on Educational Standards and concurred in his findings, stating its belief that the Standards were capable of attainment. Therefore, as soon as the American Board for Certification accepted the Standards for Apprenticeship Programs, the OALMA Education Committee was ready to proceed to put its principles into effect.

Four Years Training for Fitting

At the Meeting of the American Board for Certification at which the Educational Standards were accepted and approved, it was agreed that the four year training program would be considered adequate for training only in the *fitting* of artificial legs (not including arms) or orthopedic braces. Such training would include enough of the essentials of leg *making* or brace *making* to enable the fitter to perform the function of fitting satisfactorily, but would not permit an apprentice to become an expert leg maker *and* fitter or an expert orthopedic mechanic *and* fitter. It was agreed that an apprentice in a shop which makes both limbs and braces could complete apprenticeship programs in both leg and brace fitting in a total of five years, because of the many skills which are common to both types of work. The problem of training in artificial arm fitting was to be given further study.

To carry out these principles, the outline of on-the-job training, or *Schedule of Work Processes for an Apprentice Prosthetist* requires the equivalent of about two years of training in the mechanical processes of artificial leg making and two years of leg fitting. The *Schedule of Work Processes for an Apprentice Orthotist* requires about two and a half years of training in the mechanics of brace making, one and a half years of fitting. The *Schedule of Work Processes for an Apprentice Prosthetist-and-Orthotist* requires about three years of training in mechanics and two years of fitting legs and braces.

As to the qualifications of the shops in which apprentices ought to be trained, it was agreed that such standards should correspond to the standards set for certified shops or facilities.

Mr. Lee Fawver developed the *Schedule of Work Processes for a Prosthetist.* Mr. Herman C. Hittenberger developed the *Schedule of Work Processes for an Orthotist.* Then Mr. Fawver completed the very exacting task of combining these two programs to form the Program for the Apprentice Prosthetist-and-Orthotist.

Both of these men have had many years of practical experience in the industry. Their accomplishments are too well known to require further description here. In developing these programs, they studied and used the best points from many different on-the-job training programs, which have been in actual use in limb and brace shops.

After these programs were initially developed, they were reviewed intensively by the entire committee and also by Chester C. Haddan, Lucius Trautman, and Howard Thranhardt, leading members of the OALMA, who are also the Industry Advisory Committee to the government research program.

These on-the-job programs or schedules of work processes, therefore are the result of years of development and are now considered to be the National Standard. However, their purpose is not to set up an artificial,

TABLE I.

Course	*Total Hours*
Functional Anatomy for Orthopedic Trainees (Including Normal and Abnormal)	144
Sketching and Plan Reading, Pattern Making and Principles of Alignment	36
Welding (Including Brazing and Silver Soldering)	36
Heat Treating and Forging	36
Elementary Mechanics and Mathematics (Including Strengths of Materials)	36
Applied or Business Psychology	36
Elements of Cost Accounting	36
Plastics	18
Leather and Textiles	18
Ethics of the Trade	18
Public Speaking	36
Gait and Posture Training	18
Techniques of Physical Therapy and Rehabilitation	18
Tool Care and Usage	18
Business English	36
Sketching and Drawing: the Human Form	18
Business Economics	18
Total Hours in Course	576

rigid, or arbitrary schedule, which must be followed to the letter in the training of every apprentice fitter. Their purpose is to set forth a well-rounded program which can be used flexibly enough in any shop or facility to make apprentice training practical and thorough. For example, due to variations in work loads, no matter what the size of the shop, an apprentice cannot be started at a certain point of training and trained in an ideal succession of processes straight through his entire program, without skipping around among the various processes. Nor can he adhere rigidly to a schedule of a set number of hours for each process. However, by using the hourly schedule set forth in the work schedule as a guide, and by keeping track of the amount of time spent on the various processes, it can be determined whether the apprentice is being given a well-rounded and thorough training.

A system of reports and records has been developed to record the progress of Apprentice Prosthetists and Orthotists, and is being tested in the New York and Minneapolis Pilot Schools. When this system has been perfected, it will be used for all apprentices being trained under the National Apprenticeship Program.

The Advisory Committee on Educational Standards gave a great deal of thought to the related academic training. They recommended courses with an approximate number of hours for each course, as listed above in Table I. Such courses are to be superimposed on a high school level of education or its equivalent.

Certain of these courses such as Welding, cover shop practices, and are designed to teach the apprentice thoroughly some of the techniques he will be called on to use in his mechanical work. Other courses, such as Functional Anatomy, are designed to give him a more thorough professional background. Other courses, such as Public Speaking and Business English, will round out his general education with subjects which are particularly useful in contacts with patients, and will increase the apprentice's confidence in himself.

Business Economics and Cost Accounting are included to give a knowledge and appreciation of the economic factors in our service to the handicapped.

Some of these courses are readily available in local adult night classes in the high schools or in trade schools. Some of them would be suitable for use in those schools with a little alteration or guidance from our craft as to just what was necessary for our apprentices. However, seven of the courses are entirely unique to our craft, or the subject matter as commonly given is not applicable to our craft. The problem arose as to how to teach those courses.

There would be very few cities in the United States where a class of apprentices could be gotten together, which would be large enough to warrant engaging a teacher in special classes or to obtain classrooms and assistance from the local public schools. While the public schools are interested in apprentice training and are willing to assist, they require a minimum number of students ranging from eight to twenty. Although the OALMA Education Committee is willing to assist in setting up such special classes wherever the minimum requirements of the schools can be met, it is obvious that the great majority of our apprentices will have to be taught by some other method.

The solution now being developed is one of several alternatives which were considered by the OALMA Education Committee. It is developing lessons in the special courses in "Unit Lesson" form, similar to a correspondence course, which can be used by the isolated apprentices to study the required courses. Such apprentices can, with the assistance of their employer, enlist the aid of an interested local surgeon, high school teacher, or some other qualified person, to solve the most difficult problems in his studies, learning as best he can outside of his working hours, just as do students of many well known correspondence courses. This method of teaching has received more and more approval as a practical method of learning in the last few years, and has a much greater standing than formerly, due largely to the increase in the number of courses set up on an extension basis by colleges throughout the country. Periodic examinations will be given to these apprentices to determine the extent of their progress in learning.

To obtain basic material for the Unit Lessons, pilot schools have been set up in New York and Minneapolis, to teach these subjects to local apprentices. A "Teacher-Trainer" is working with these classes to take notes on the lectures and organize them in lesson form. These notes will be edited and elaborated on and illustrations will be provided, along with related outside reading, to make it possible for the apprentice to study at home.

The Pilot School at Minneapolis held its first class on October 14, 1952, and th New York School started classes on February 3, 1953. The members of OALMA in both New York and Minneapolis have given the pilot schools their enthusiastic support, and the response among fitters and apprentices has been excellent. Many obstacles had to be overcome to bring these pilot schools into being. Many more obstacles must be faced and overcome in keeping them in operation. While many people have contributed to the progress of the schools, special credit must be given to Mrs. Adele Tenenbaum and Mr. Robert C. Gruman, the Chairmen of the local Education Committees in New York and Minneapolis respectively, and to their committees.

It is not considered feasible to require that apprentices generally in cities outside of New York and Minneapolis start taking the related academic courses until the special courses listed above are well on their way to final development. While this means a delay in the academic training of these apprentices, it is felt that once the

apprentice starts his academic training, it should be continuous until the end of his training program. Therefore, at the earliest practical point, an announcement will be made concerning the starting of the required courses.

The American Board for Certification plans gradually to increase the scope and difficulty of its examinations for Certified Prosthetists and Orthotists, timing this gradual increase to be coordinated with the introduction of the related academic courses among apprentices generally.

In other words, if it may be estimated that apprentices can be expected to start their required academic training throughout the country by January 1955, then by 1959 all apprentices completing their training will have taken the entire set of required academic courses and will have been trained in accordance with the on-the-job training outlines set forth in the Apprenticeship Standards. The examination for certification at that time will be based on the level of difficulty corresponding to this required training. Apprentice Prosthetists and Orthotists who are part way through their training when the required academic training is available will be given credit for all of their training to date, which is applicable to the standard program, and will be required to complete their program of on-the-job training in accordance with the Apprenticeship Standards.

The progress made and the decisions reached by the OALMA Education Committee have been reviewed periodically by and have met the approval of the officers of the OALMA and the American Board for Certification.

It is beneficial that different approaches to education be tested and the results be used to improve our overall education program. Therefore, due recognition should be given not only to the pioneer work in the Los Angeles area, but also to other educational efforts. Firm owners and key personnel in the San Francisco area have started an experimental school to test the value of various subjects and to develop courses for later use by apprentices. The Suction Socket Schools, of course, are an educational effort which has advanced substantially the standing and technical ability of the Prosthetic Appliance field. The Mellon Institute Symposia on Orthopedic Appliances under the auspices of the Sarah Mellon Scaife Foundation were acclaimed by everyone connected with them as an outstanding contribution to orthopedic appliance techniques. Lastly, we owe much gratitude to all concerned in the establishment of the schools in plastic arm fabrication, fitting and harnessing now underway at the University of California in Los Angeles.

"What's New(s)"

• JERRY LEAVY has resigned his position at the University of California to become associated with the Hosmer Corporation at San Jose, California. In his new work, he will visit as many limb shops as possible and advise about the practical problems involved in prosthetic devices. While at UCLA, he was in charge of prosthetic training in the case study program.

• MEDICAL FABRICS CO,. INC., a prominent manufacturer of Elastic Bandages, has added to its line Plaster-of-Paris Bandages. This combination of Elastic Bandages and Plaster-of-Paris Bandages, obtainable from one source, is available to all limb dealers. A report on the preparation of amputation stumps with this combination pressure bandage has been prepared by Dr. Ludwig Popp of New York City. It may be borrowed from OALMA Headquarters. Medical Fabrics Co., Inc. has joined our list of advertisers and its first ad appears in the center fold of this issue.

"PAINFUL FEET"*

By REX L. DIVELEY, A.B., M.D.

Assistant Professor of Orthopedic Surgery, Kansas University;
Chief Orthopedic Consultant, U. S. Veterans Administration

The individual with painful and aching feet is a real invalid and deserves careful consideration and helpful advice. He is also often an economic problem from the standpoint of employment. Unfortunately, most doctors and many orthopedic surgeons feel that treatment for the individual with a functional foot disorder is beneath their dignity and level of interest, yet it has been estimated that aproximately forty per cent of the civilian population over the age of twenty years has some foot disorder of a degree sufficient to cause lowered efficiency and, in many instances, serious disability. During the late war, it was shown only too often that disabling foot conditions slowed down the training of large sections of our army.

It is not my intention this evening to take up all the intricacies of the etiology, diagnosis, and treatment of functional foot disorders, but rather to discuss the more common conditions which cause pain and disability in the feet and outline to you the kind of treatment which will give relief.

We should start in childhood to train the feet to grow along correct lines. During the first months of life, the foot is not called upon to function in a weight-bearing capacity and needs no support; therefore, any soft-soled, wide-toed shoe which allows free movement of the foot and toes may be worn. When weight bearing starts, however, the environment of the foot changes materially and it has an entirely new set of conditions to meet—namely, supporting the entire body weight. The superimposed weight at this age is thrown upon a foot in which the bones are still immature, the muscles not yet developed, and ligaments weak. As the child takes its first steps, his rudimentary sense of equilibrium makes him insecure in his balance so that he stands with the feet spread wide apart. This position of the feet causes the line of transmitted weight to fall through the inner side of the foot, or even medial to it, so that the body weight is concentrated on the inner side of the foot which tends to roll downward and inward under the stress. Such a position is known as pronation; with continued pronation, the foot flattens out and no longitudinal arch develops.

The child whose feet are allowed to remain in and be used in a position of pronation is a potential foot case of the future.

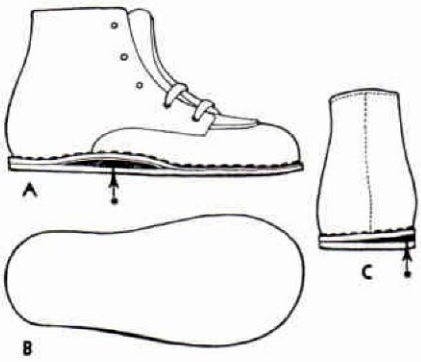


Fig.

Fig. 1. The correct shoe for the growing child after walking begins. A. Side view showing the wedge of the sole which elevates the longitudinal arch; B. Shape of the sole—gives ample toe room; C. Rear view showing heel wedge which tilts the foot on the medial side—tends to overcome pronation.

* Delivered at the Orthopedic Appliances Symposium, National Assembly of the Limb and Brace Profession, OALMA, Washington, D. C., October 13, 1952.

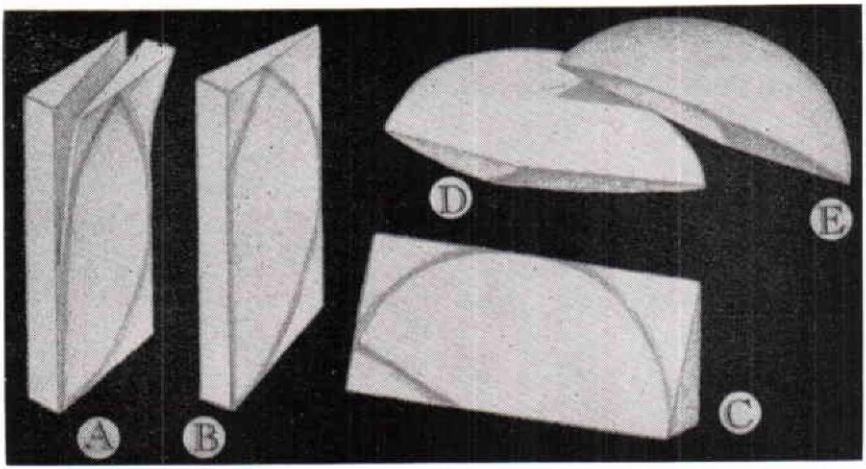


Fig. 2. Method for cutting felt inlay support. A. Unit block is split into a pair of wedges. B. C. D. Flat bottom side of inlay with bevel to fit inside of shoe. E. Support skived to a feather edge forward, lateral and to the rear side.

A shoe which will hold the growing foot of the child in a correct position and tend to overcome pronation should have these characteristics: The shoe should be wide in the toe to permit free movements of the toes. The sole should be heavy enough for protection and preferably the medial side of the heel of the shoe should be raised to overcome any pronation and inrolling of the foot, thus tending to hold the foot in a properly balanced position for growth. (Figure 1).

If the foot is properly shod, most children will develop normal feet and legs. However, a fair number continue to pronate under such mild correction and fail to develop an arch. Such pronation in childhood is generally associated with knock knee, bowlegs, or tibial torsion of varying degrees due, as a rule, to faulty calcium balance. Correction can be brought about by balancing up the shoe already described in such a way as to alter the weightbearing stresses on the lower extremities so that, as the child grows, the leg bones will gradually straighten themselves out. Effective correction of faulty weight-bearing stresses on the growing leg bones and bones of the arch can be secured by these simple shoe alterations:

1. Shaped hard felt support placed in the shoe to elevate the inner side of the foot and roll it out, thus encouraging the development of the arch. The correction of inrolling and pronation at the same time corrects the faulty weight stresses on the bones of the lower extremities, whether this faulty weight stress is due to knock knee, bowlegs, or tibial torsion. (Figure 2-3).
2. Wedging the heel one-eighth inch on the inner side, unless the shoe used already has such a wedge. (Figure 4).
3. A small wedge, or dutchman, one-eighth inch high is placed in the outer side of the sole opposite the base of the fifth toe to prevent the foot from sliding outward in the shoe and to keep the foot firmly on the arch support. (Figure 5).

The foot of childhood is the precursor to the foot of adolescence and adult life. The correction of foot faults during this period is much simpler

than in later life when the foot bones have become set in a faulty position. Attention to foot faults in childhood frequently saves the individual from pain and disability, and even incapacity, during the most active period of his or her life.

The causes and treatment of functional foot disorders in the adolescent and adult are essentially the same and may be discussed together. Time does not permit a discussion of the etiology of functional foot disorders in adolescents and adults. It must suffice to say that in addition to incorrect foot attitude dating back to childhood, there are a variety of causes for symptom-producing foot conditions in the mature foot. The purpose of this discussion is to describe briefly the forms of foot imbalance which are responsible for the most of the suffering and disability which accompany foot disorders, to outline some simple conservative measures which you may find useful in treatment, and indicate what additional means are available if conservative measures prove unavailing to relieve pain and restore the individual to normal activity.

The Shoe of the Adolescent and Adult

In adolescence and adult life shoes can support and protect the feet from the strains and fatigues of use if properly designed, or can throw strain on and distort the foot if they are of incorrect design. While not admitted by all authorities, it is generally conceded that ill-fitting and incorrectly designed shoes are important factors in the development of functional foot ailments. The feminine part of our population seem to have made style their god, and are inclined to follow its every change and dictate. This style worship of footwear may account, in part at least, for the high incidence of foot disorders in women today.

Men, as a rule, wear shoes which will protect and support the feet, and prevent foot strain with its sequelae.

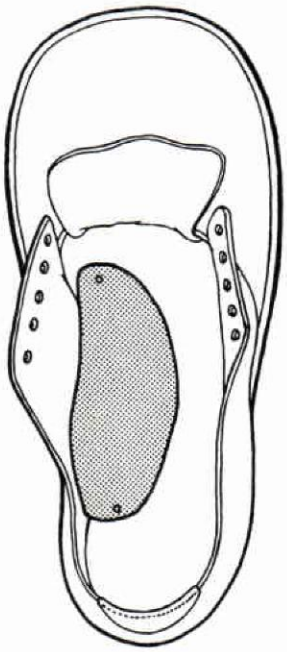


Fig. 3. The placement of the oval inlay support in a child's shoe to overcome pronation.

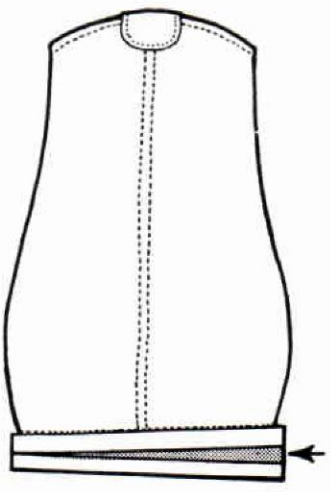


Fig. 4. Rear view of child's shoe showing the heel wedged on the inner side to overcome pronation.

Women seldom, however, care to wear a sensible supporting shoe even while at work, where they are frequently called upon to spend long hours at occupations which require a great deal of standing and little walking about. High-heeled, flimsy pumps, or low-heeled sandals, cannot, under such circumstances, give adequate support and protection to the overworked feet, and the stage is set for foot strain and general tire and decreased efficiency which follows. Actually, the design of shoes for men and women should follow the same general pattern, only differing in style. Such a shoe should be of a val or blucher oxford type, and have straight lines along the inner side with a well-rounded toe. There should be ample room in the cap and ball of the shoe for normal function of the toes and metatarsal arch. The sole should be of a flat type and sufficiently heavy to give protection and support. The shank should be rather broad and carry a built-in steel support. The counter should be narrow enough to fit the heel snugly, and the vamp should lace firmly over the instep. The heel should be of a straight side type, the height for men 6/8 inch and for women from 12/8 to 14/8 inch.

Most shoes for men conform to these requirements, but women's shoes do not. Therefore, it is important that women who are on their feet extensively, be they factory workers or housewives, wear a shoe of proper construction or design during the working hours of the day. Certainly, no other type of shoe lends itself to the corrections which are necessary to gain relief from foot strain. Such shoes may be replaced by a more pleasing and lighter shoe for dress and evening wear.

To catalogue all the ills which affect the foot would be a task of some magnitude. I, shall then only call to your attention briefly the more common forms of foot disorders in

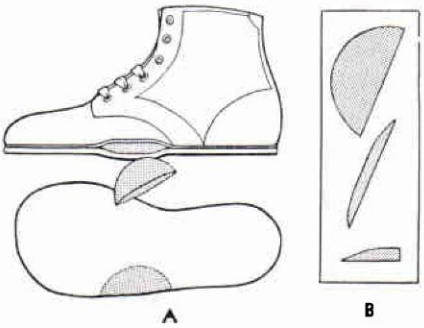


Fig. 5. Position of metatarsal wedge on the outer side of the sole. B. Shape of wedge.

which you as brace makers will be interested:

1. Depression of the longitudinal arch or flat foot is the most common.
2. High arched foot or pes cavus is seen most often in women.
3. Depression of the anterior arch or metatarsalgia may be associated with either one of the afore mentioned conditions.

(1) *Flat Foot.* This condition characterized by inrolling or pronation of the foot and depression of the longitudinal arch. A low-arched foot is in itself not necessarily abnormal; it may be for that individual the normal foot conformation. When, however, depression of the arch is associated with inrolling of the foot or pronation, a real architectural weakness is present, and the foot must be classed as abnormal. A foot which is architecturally weak is mechanically insufficient and cannot perform the work demanded of it. Inrolling of the foot is important because it brings about a concentration of the superimposed body weight on the innner border of the foot, so that the entire thrust of the body weight is thrown on the longitudinal arch, which breaks down under the burden and becomes painful.

Subjectively, a flat foot causes tiring and discomfort in the longitudinal arch, and in the calves of the legs. This discomfort may, and usually does, increase in severity and in time becomes a real and often disabling pain. As time goes on, general tiring and lack of endurance develops, the knees may become painful, and discomfort and tiring in the low back and thighs may be eventually complained of. The knee and back pain is the result of constant strain on these regions due to faulty attitude of the entire body, for which flat foot is responsible.

Objectively, flat foot shows depression of the longitudinal arch to a greater or lesser degree. Pronation or inrolling causes the scaphoid bone and the internal malleolus to become prominent. Pain is elicited on pressure beneath the longitudinal arch and over the scaphoid bone.

Treatment

Since in pes planus we have inrolling of the foot, displacement of the line of transmitted weight toward the medial border of the foot, depression of the longitudinal arch, and tired and often spastic muscles, our problem of correction is three fold:

1. Correct pronation and bring the line of transmitted weight toward the lateral border of the foot.
2. Elevate and support the depressed arch.
3. Build up the natural support of the arches, the muscles and ligaments with proper exercises, so that they may function as efficiently as possible.

Correct distribution of weight stress and elevation of the longitudinal arch are brought about by bringing the foot into balance, or approximately so. To accomplish this, the foot must be first fitted in a well designed and strong shoe as described. A support must be placed under the foot which will roll it outward, thus shifting the transmitted weight toward the lateral border of the foot, and, at the same time, provide support for the relaxed and depressed longitudinal arch. Such a support may be made of metal, the Whitman plate, or a support may be fashioned of sponge rubber or hard felt. We prefer the molded sponge rubber supports, since they are more comfortable and much more easily adjusted than the metal type. (Figure 6). Whatever material is used, the support must be molded to the foot if it is to accomplish the twofold purposes for which it was designed—outward rotation and support. Since such a support rolls the foot outward in the shoe, a wedge or dutchman, one-eighth to three-sixteenths of an inch high should be placed in the sole of the shoe opposite the fifth metatarsophalangeal joint to prevent the foot from sliding outward in the shoe and off the support. In severe cases, the inner side of the heel may be elevated one-eighth of an inch; in extreme

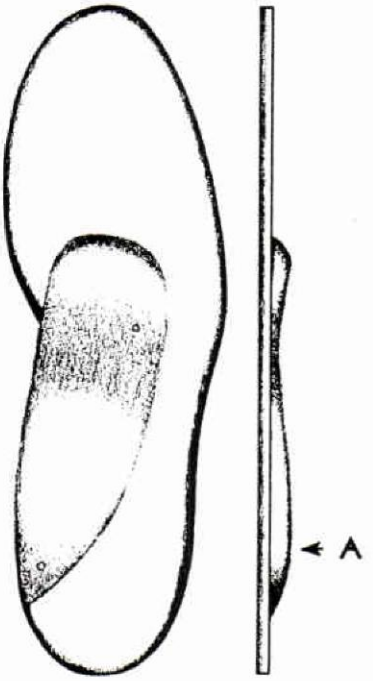


Fig. 6. Shape, contour and placement of the support for pes planus or flat foot. A. Indicates high point of support.

cases, the extended or Thomas heel should be used.

To build up muscle and ligamentus tone, which is the third requisite in treatment, physical therapy and exercises should be employed.

With the proper shoe and correctly designed support, it is nearly always possible to relieve pain in the feet, overcome muscle tire, knee ache, back ache, and to increase the efficiency and endurance of the individual.

(2) *High Arched Foot.* High arched foot, or pes cavus, is characterized by a high longitudinal arch with little or no pronation, but with a contractured plantar fascia and prominence of the ball of the foot.

Subjectively, pain is complained of in the ball of the foot, and cramps are noted in the calves of the legs. A tiring sensation in the long arch is a constant symptom, and back ache is often complained of.

To bring such a foot into balance and relieve symptoms, we must redistribute the weight over the foot so that all the bones of the foot will carry their proportionate part and the metatarsal arch will be relieved of the burden of bearing the major portion of the body weight.

The inlay or support in this case should be moderately high under the central portion of the longitudinal arch, but cut off or well skived out under the heel. (Figure 7). In this type of foot, there is little or no pronation or inrolling. Therefore, the foot must not be tilted outward, but the high longitudinal portion of the inlay used only to take the strain off the plantar fascia and the longitudinal arch of the foot. The anterior portion of the support should be fairly high and carried as far forward as is possible with comfort, as in this type of foot, the strain falls principally on the metatarsal arch.

(3) *Depression of the Metatarsal Arch, Metatarsalgia.* The metatarsal arch is formed by the heads of the metatarsal bones; it extends transversely across the forefoot forming

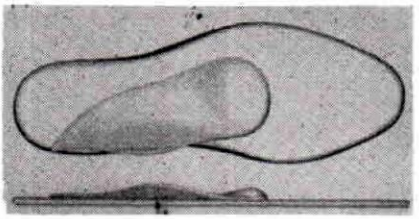
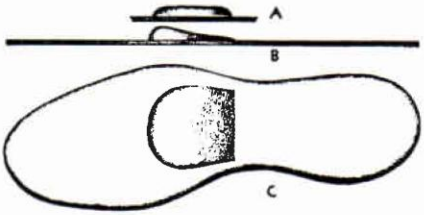


Fig. 7. Shape, contour and placement of inlay support for pes cavus or high-arched type of foot. A. High point of support well forward under the apex of the longitudinal arch.

the ball. Depression of the metatarsal arch may occur as a separate entity. As a rule, however, depression of the metatarsal arch is associated either with pes planus or pes cavus. Depression of the metatarsal arch is more common in individuals over thirty years of age and occurs much more frequently in females than in males.

As in flat foot, depression of the metatarsal arch is due to improper distribution of weight stresses over the foot. Such improper stress on the heads of the metatarsal bones, which comprise the metatarsal arch, is usually due to failure of the foot as a whole to function in a normal manner because of some skeletal defect or because of a depressed longitudinal arch, or one which is congenitally abnormally high. High-heeled, narrow and pointed-toed shoes play an important role in the descent of the metatarsal arch, as shoes of this type throw most of the burden of weight-bearing upon the metatarsal arch and at the same time compress the forepart of the foot and toes, thus interfering with normal use and muscle action.

When the metatarsal arch is depressed, the discomfort complained of is generally in the ball of the foot. Often the statement is made that it feels as though the weight was being borne directly upon the heads of the metatarsal bones. In severe cases, an acute cramp-like pain is complained of in one or two toes; usually the second or fourth toes, the so-called Morton's toe.



Above: Fig. 8. Shape, contour and placement of support for transverse arch (Anterior heel). A. Front view. B. Side view rounded in front and skived gradually to the rear. C. Position on the insole of the shoe.

At right: Fig. 9. Metatarsal bar on the sole of the shoe.

Examination of the foot with a fallen metatarsal arch will reveal loss of the normal concave line of the heads of the metatarsal bones; instead, the metatarsal heads are flat to the plantar surface of the ball of the foot. With the dropping down of the metatarsal heads, there occurred contractures of the toes which assume a hammertoe position. Callous formation is present across the ball of the foot, or at least under the heads of metatarsals, one, two, and/or five.

The treatment of this type of foot is aimed toward the correction of weight distribution over the foot, so that the metatarsal arch will be relieved of the excessive burden of weight bearing that is placed upon it. The support must be shaped and fashioned to elevate the depressed metatarsal arch (Figure 8) and also re-distribute the weight over the remaining portion of the foot as a whole. If a pes planus is present, the support must correct this fault; if a high arch is noted, the support must be designed to fill in the space between the high arch and the shank of the shoe so that the entire sole of the foot is in contact with the weight-bearing surface, not merely with the heel and the metatarsal heads. Unless the high arch is compelled to bear a portion of the weight, the pressure over the metatarsal heads will not be relieved.

In severe cases of depressed anterior arch, it may be necessary to place a bar of leather one-half to three-fourths of an inch in width across the sole of the shoe just posterior to the ball of the foot. (Figure 9). This metatarsal bar, as it is called, shifts the major part of the weight to a point posterior to the heads of the metatarsal bones and so relieves them of part of their burden. A metatarsal bar may be used alone or to augment other corrections.

Exercises designed to build up the intrinsic muscles of the foot and overcome contracture of the toes are very helpful and should be used. Picking up marbles or jacks with the toes is a useful exercise for this purpose.

To summarize: Careful supervision of the foot of childhood to insure its development along normal lines will prevent a great deal of foot disturbance in adolescent and adult life.

Most cases of functional foot disorders in later life can be relieved by wearing correctly designed shoes balanced to correct the architectural weakness responsible for the pain and disability.

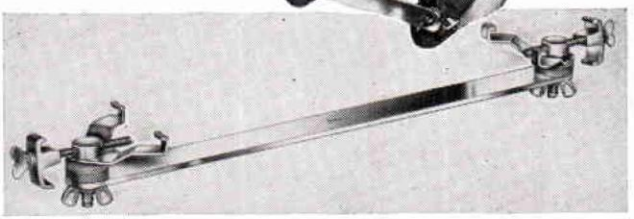
Severe grades of foot imbalance that do not respond to intelligent conservative treatment as a rule can be relieved by properly planned surgery in competent hands.

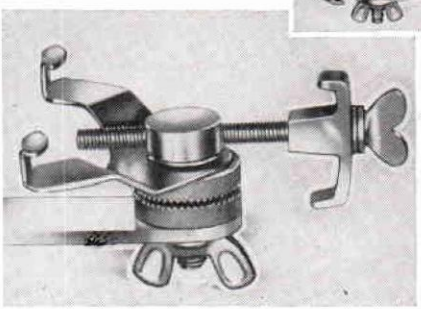
Fillauer DETACHABLE NIGHT SPLINT

NOW UNIVERSALLY ACCEPTED

Orthopedic surgeons are enthusiastic about this versatile splint. It affords decided advancements for treating club feet, positional deformities, tibial torsions, flat feet, congenital hip dislocations. Use of the Fillauer Splint minimizes the necessity of manipulations, plaster, tenotomies and anesthetics. Satisfactory results are confined to children under 3 to 4 years of age.

WRITE FOR DESCRIPTIVE FOLDER





Stainless bronze serrated discs permit 50 different rigid settings. Fits any shoe —double-post swivel clamp adjust easily to any shoe up to 4-yr. old sizes. Special flange for club foot or wedged shoes. Splint lengths: 6″, 7″, 8″, 9″, 10″, 12″, 14″, 16″, and 18″.

Fillauer Specialties

- **NYLON LACQUER** • **LEATHER LACQUER**
- **STAINLESS STEEL WIRE DROP FOOT SPLINTS**
- **STAINLESS STEEL LEG BRACE PARTS**

CHILDREN'S SIZES ADJUSTABLE FOR GROWTH

- **EXTRUDED ALUMINUM BARS** • **RUBBER BOWLS**

Write for further information

Fillauer SURGICAL SUPPLIES, INC.
Box 1678, CHATTANOOGA, TENNESSEE
Manufacturers of Orthopedic Appliances ESTABLISHED 1914

SURGICAL APPLIANCES

Made Up To A Standard . . .
Not Down To A Price!

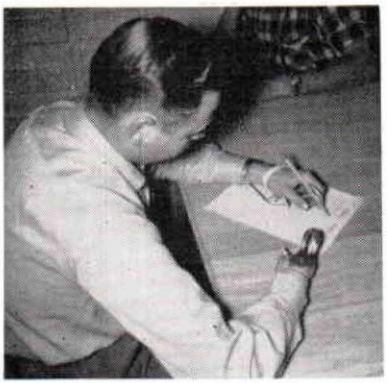
- √ *Trusses*
- √ *Elastic Hosiery*
- √ *Supports*
- √ *Surgical Corsets*
- √ *Suspensories*
- √ *Bust Forms*

Write for FREE
64-Page Catalog

CHESTERMAN-LEELAND COMPANY

PHILADELPHIA 25, PENNA.

Products by Robin-Aids



Robin-Aids
HANDY - HOOK

The Robin-Aids "Handy Hook" is an all purpose utility device designed for frail and paralyzed hands.

In some cases the "Handy Hook" has been used as a partial hand prosthesis.

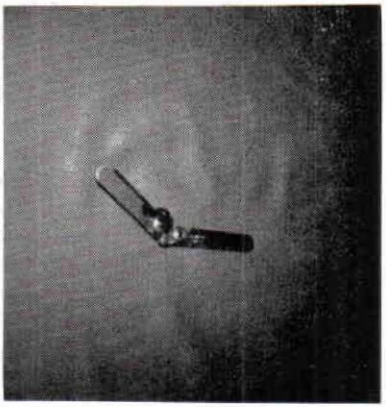
Available in Kit-Form.

Stainless steel construction with small Aluminum Hook.

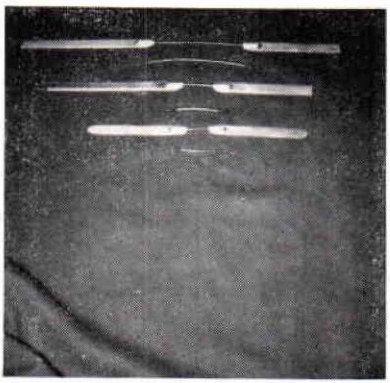
This "Locking Lever Hinge" was primarily designed for those short B/E amputees.

Provides the short B/E with a full range of flexion, plus positive lock, which will tolerate as much weight as the individual can tolerate.

Only 12° of stump motion required to easily operate this unit.



Robin-Aids Locking Lever Hinge



Robin-Aids Flexible Elbow Joints

Robin-Aids Flexible Elbow Joints does away with alignment worries; an arm may be fitted in a shorter period of time.

Allows the amputee more freedom of movement, and provides additional pronation and supination.

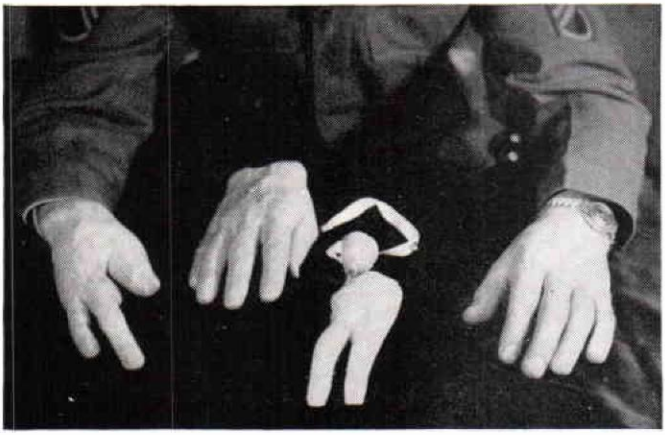
ROBIN-AIDS MFG. CO.

2015 Broadway • Box 101 Vallejo, California

Phone 2-2727 Vallejo

Wholesale *PLASTIC ARMS* *Retail*

Realastic REHABILITATION—

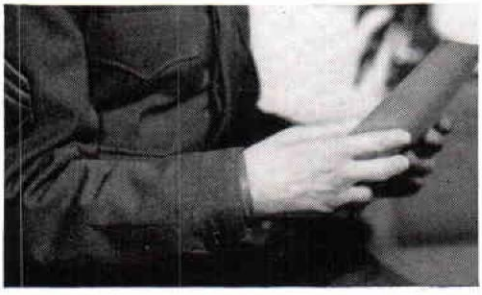


Saving the Taxpayers' Money

Difficult Partial Hand Restoration for Korea Veteran — Showing Amputation, REALASTIC Glove and Inserts filling out Thumb, Index and Middle Fingers.

from unretouched photographs

Formerly, the Sergeant would have been retired with his disability at great cost to the government — in pension expense and in the training of an adequate replacement. Now he is allowed to continue his chosen career and everyone gains. Improved surgical techniques and enlightened Department of Army policy have made this possible. An integral part of this program is rehabilitation made possible by a *Realastic* Restoration.



Realastic
Prosthesis adds to the Sergeant's effectiveness in his new job as Army Ordnance Instructor.

Above he is getting ready for the day's work — picture on the left shows how hand looks on the job.

It's *Realastic* for Partial Hands, Fingers, Gloves for Mechanical Hands

PROSTHETIC SERVICES OF SAN FRANCISCO

171A JESSIE STREET
SAN FRANCISCO 5, CALIF.
DOUGLAS 2-2865

*Realastic**
"Looks REAL—It LASTS"
*Trade-Mark

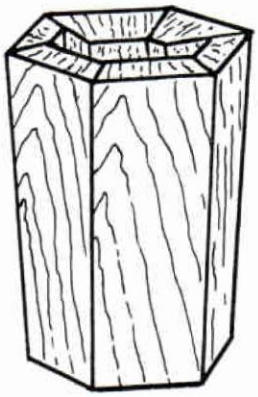
NEW BLOCKS

You can save time and money with these thigh socket blocks. These straight grained, thoroughly dry blocks enable you to pull sockets in half the time.

All blocks 14" long
Wall thickness 1¾"

Size 6	$ 4.35
Size 7	4.90
Size 8	5.50
Size 9	7.25
Size 10	9.60
Size 11	10.25

Size is inches across flats at top



NEW PRICES

Materials for making SEE 8 Orthopedic Appliances

SEE 8 RESIN

¼ Unit **$4.80**
½ Unit **8.85**
1 Unit **15.00**
5 Unit **13.50 (per unit)**
10 Unit **12.00 (per unit)**

1 Unit consists of ½ gallon of 8A and 1 pint 8B

SEE NET

38" wide cloth—1 to 10 yds. **$2.55 yd.**
38" wide cloth—11 to 50 yds. **2.30 yd.**
38" wide cloth—125 yards **1.95 yd.**

P.V.A. SHEETING

40" wide 1 to 5 lineal yds..... **$0.45 yd.**
40" wide 6 to 15 lineal yds..... **40 yd.**
40" wide 16 to 30 lineal yds.... **.35 yd.**
40" wide 31 over..... **.30 yd.**

NEW POWDER

Ampu-Talc—The IDEAL Amputee's Powder
Satin smooth—Ideal for SUCTION SOCKETS
Odorless—No agitating perfumes
Retards perspiration—not medicated
1 pound can—$1.00 Retail

DISTRIBUTORS

MINNEAPOLIS ARTIFICIAL LIMB CO.

410 Portland Avenue, Minneapolis, Minnesota

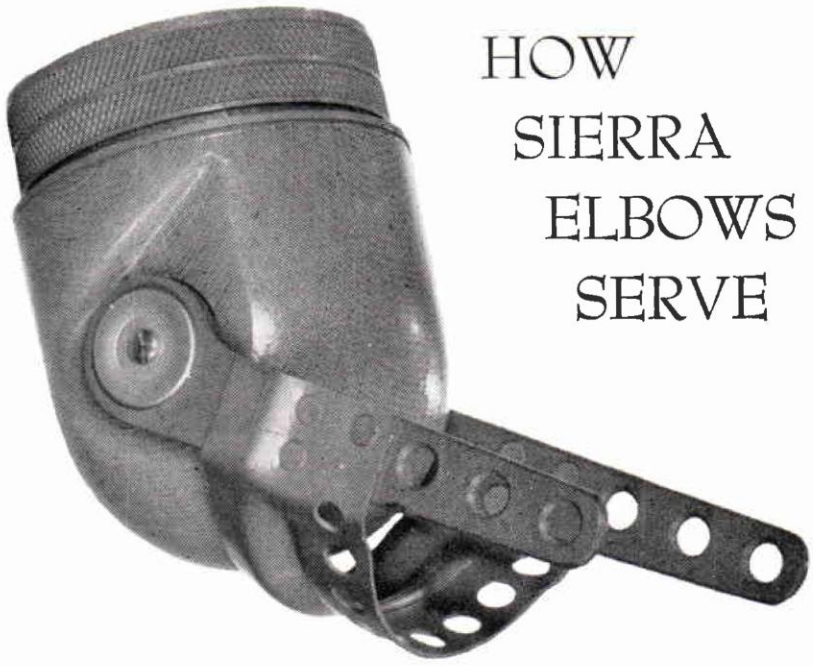
Prices F.O.B. Minneapolis, Minn.

For the Southeast:

SOUTHERN PROSTHETIC SUPPLY CO.

134 Baker Street, N.E., Atlanta, Georgia

Prices F.O.B. Atlanta, Ga.



HOW SIERRA ELBOWS SERVE

Easy to train . . . Easy to use . . . SIERRA Elbows Serve Both Prosthetist and Wearer by PROVIDING:

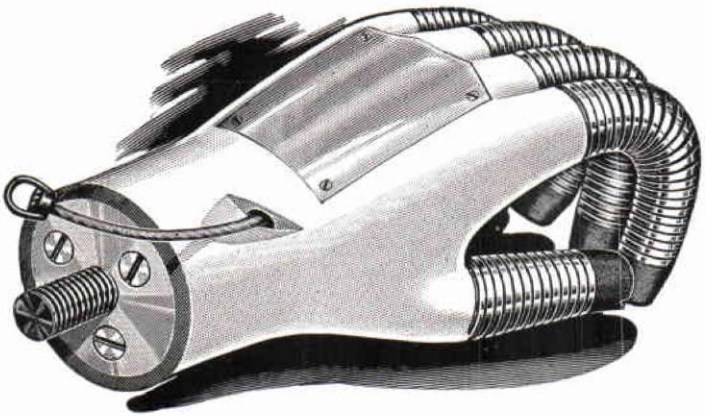
1. **A SHORT LOCKING CABLE TRAVEL . . .** ONLY 9/16 INCH TO LOCK OR UNLOCK IN ANY POSITION OF FOREARM FLEXION. THE STEEL LOCKING CABLE WON'T STRETCH TO INCREASE THE EXCURSION.
2. **EASY LOCK OPERATION . . .** 1.8 POUNDS OF CABLE PULL LOCKS OR UNLOCKS IN ANY FOREARM FLEXION POSITION.
3. **SAFETY . . .** INVOLUNTARY MOTIONS ARE LESS APT TO UNLOCK THE ELBOW . . . THE AMOUNT OF PULL TO UNLOCK RISES RAPIDLY WITH THE AMOUNT OF WEIGHT SUPPORTED BY THE ARM.
4. **POSITIVE LOCK . . .** A HARDENED TOOL STEEL BAR DROPS INTO THE TEETH OF A GEAR SECTOR.
5. **A METAL SADDLE . . .** FOR A STRONG AND DEPENDABLE FOREARM CONNECTION.

—These good elbows are priced competitively—
—They're sold through Sierra distributors—
—Write for a list—

Sierra ENGINEERING CO.

123 East Montecito Ave. Sierra Madre, Cal.

SEE THE NEW LOCKGRIP HANDS



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

WITH naturally shaped and molded rubber finger tips.

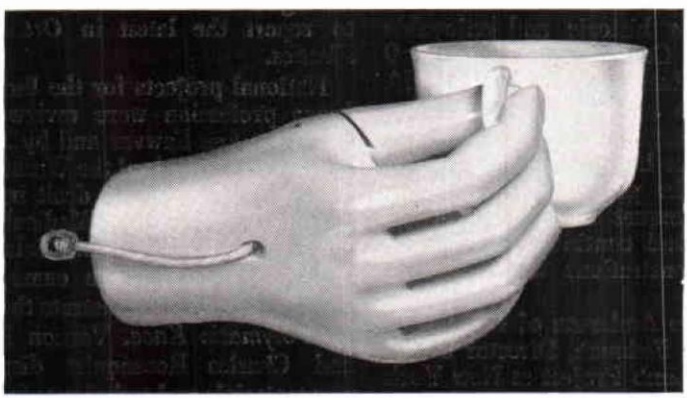
WITH Finer gauged and stronger flat finger spring wire, adding to the jointed fingers flexibility.

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

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

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

LOCKING



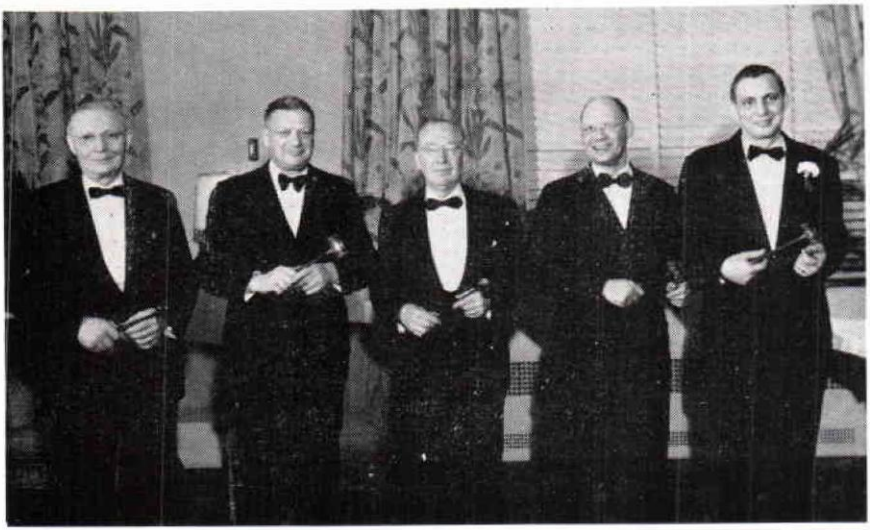
SNAP THUMB

D. B. BECKER CO.

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

CROSS-COUNTRY REPORT

What the Regions are Doing



NEW YORK HONORS ITS PAST PRESIDENTS

MOALMA presented honorary gavels to its Past Presidents at its Medical Assembly banquet, April 17. Left to right: John N. Eschen, Walter R. Sievers, David E. Stolpe, Arthur Beitman, and Fred J. Eschen, President for 1953.

REGION V HOLDS FIRST ASSEMBLY (OHIO, WESTERN PA., WEST VIRGINIA & MICH.) PAUL E. LEIMKUEHLER, REGIONAL DIRECTOR

It was a historic and enjoyable "first" in Columbus, Ohio May 9 and 10, when members of OALMA from Ohio and neighboring states held their first annual assembly. Paul Leimkuehler had planned a program which broke precedent by opening with a banquet and reception on Saturday and continued on Sunday with demonstrations and technical papers.

Dr. Miles Anderson of UCLA and Dr. Sidney Fishman, Director of the Artificial Limb Project at New York University came to Columbus to give a comprehensive report on the Upper Extremity School. Marlow Perrin, Director of Vocational Rehabilitation for Ohio discussed the *Rights of Amputee Claimant under the Workmen's Compensation Law.* Dr. John L. Young came from Mellon Institute to report the latest in *Orthopedic Plastics.*

National projects for the limb and brace profession were reviewed by President Lee Fawver and by Assistant Director Smith of the Washington Office. Joseph Spievak dealt in helpful fashion with the "Medical Contacts," and with the Ohio Sales Tax situation. Rich Greene came from Pennsylvania to demonstrate the *Henzel Polymatic Knee.* Vernon Murka and Charles Rosenquist displayed new materials and techniques in brace making. Dr. H. L. Boyland, closing speaker, discussed the Surgical Appliance department as a desirable adjunct to the limb and brace firm.

At the business meeting Sunday, members agreed unanimously to forego the election of officers other than Regional Director Leimkuehler, and selected the Magnetic Springs Foundation, as the site of next year's assembly.

Dr. John L. Young with Joseph Spievak, President Fawver and Paul Leimkuehler at Columbus.

Miss Lena Walter, Administrative Assistant in the Services for Crippled Children at Columbus, was a guest of the Assembly. Leonard Madison made a complete recording on tape of the two-day session. We are indebted to Mrs. Edwin Arbogast for pictures of the Assembly.

REGION VIII—TEXAS, OKLAHOMA, ARKANSAS, WESTERN LOUISIANA AND NEW MEXICO

Region VIII of OALMA held its annual conference April 25 and 26 at the Jefferson Hotel in Dallas, Texas. The program was arranged by Regional President Alvin L. Muilenberg, Mrs. D. E. Hedgecock and G. E. Snell. Lee J. Fawver, President of OALMA was guest of honor and gave a detailed report on the Association's efforts to advance the status of the brace and limb technician.

Members who had attended the UCLA School described the training received there in upper extremities. Procurement procedures of Texas rehabilitation agencies were reviewed.

Lester J. Sabolich of Oklahoma City was elected president of the region for the year ahead and will be in charge of the 1954 meeting at Oklahoma City. Randolph N. Witt, chief orthotist with the Gonzales Warm Springs Foundation, was named secretary-treasurer, and Flavel L. Lake of Oklahoma City was elected vice-president.

—Mrs. D. E. Hedgecock
Director, Region VIII.

REUNION AT DALLAS. Members of Region VIII have their picture taken with President Fawver, April 26.

HEADLINERS AT REGION X MEETING. Left to right: Harvey G. Lanham, Herbert J. Hart, President Fawver, Chester C. Haddan and Glenn E. Jackson, Executive Director of OALMA.

REGION X NORTHERN CALIFORNIA AND NEVADA—AS REPORTED BY HERBERT J. HART

Following up last year's successful party, Region X again sponsored a Western Regions Conference in San Francisco June 6 and 7. June 6 was given over entirely to the examination of applicants who wish to be certified as orthotists or prosthetists. Through the courtesy of Captains J. N. C. Gordon and T. J. Canty, the unrivaled facilities of the Naval Hospital Limb Shop at Oak Knoll were made available to the Certification Board. The exacting examination scheduled kept the corps of officials busy from 8:30 in the morning until after dark. Director Glenn Jackson acted as assignment officer, routing the applicants to the classrooms where written and oral tests were given by Chester C. Haddan, Consultant to the Board and ABC Directors, Dr. Charles O. Bechtol of Oakland and M. J. Benjamin of Los Angeles. Lee J. Fawver of Kansas City, now President of OALMA, who was a member of the first ABC Board, was on hand to give valuable assistance.

The following day, with examinations over, members of OALMA held a series of meetings at the Hotel Whitcomb during which current issues and future prospects of the limb and brace profession were given intensive consideration. National President Fawver, attending his seventh regional conference since his election, gave a comprehensive report on the activities of our National Association. A thumbnail sketch of the Research Program was offered by Dr. H. D. Eberhart of the University of California. "Projects, Policies and Ethics That Affect Us All" was the topic of Director Jackson. From Dr. Charles O. Bechtol, Prosthetic Consultant to the VA, members heard a report, "Our Industries' Service to the U. S. Veterans Administration."

On hand to give news of other regions were Harvey Lanham, Director of Region IX of OALMA, M. J. Benjamin of the Certification Board and Charles Hennessy, President, Western Orthopedic & Prosthetic Society. *A Progress Report on Certification* by Chester C. Haddan was the feature event of the dinner meeting.

TO THE LADIES:

from OALMA's Woman's Auxiliary

Recently a minister, in going through our shop remarked, after having been shown some of our accomplishments, "You must get the same satisfaction out of your work that a minister gets out of his." He recalled that some ten years ago he spent a good many hours in our shop with his small son who needed a leg brace. Today he tells us the son has won many tennis honors and engages actively in a number of sports.

I wonder if, in the rush of getting the jobs completed, we ever stop to realize how many of your patients and ours are benefited by the years of experience and the working out of new ideas. How true it is that when you see a handicapped patient leave your shop ready to go out and take his place in the world, you know without a shadow of a doubt, that all the long hours of work were time well spent.

In the past few months our radio and TV stations in Kansas City have had a number of programs to acquaint the public with what is being done to aid the handicapped. We are so happy that we, in our own way, are able to serve some of these persons. If the public could be awakened to this tremendous need, the problems confronting all of us in our field would be lessened considerably. As wives we can take an active part in helping to educate the public regarding the problems of the handicapped. A number of these programs which I referred to above were put on by women. Perhaps our various churches, clubs and organizations can be used as a medium to accomplish this goal.

In planning your schedules for late summer and early fall, don't forget to include plans for attending our 1953 Assembly in Chicago September 27th through October 1st. This gives each of us an opportunity to extend the hand of fellowship to our fellow members. From the suggestions that are coming in, this will be an interesting program and one which none of us will want to miss. I'm looking forward to seeing all of you there.

Betty Hanicke

BETTY HANICKE

P. S. This is a reminder that membership in the OALMA Auxiliary is open to any lady employed in a limb or brace establishment or to the wife of any fitter or other employee. Our initiation fee is one dollar and dues are one dollar per year. Anyone interested in joining should send that money to our secretary, Mrs. W. Schoene, 1929 North Spaulding Avenue, Chicago, Illinois.—B.H.

In Memoriam

WILLIAM E. ISLE, founder of the Knit-Rite Company and the W. E. Isle Company of Kansas City, died April 19 at the age of 68, after a long illness. "Billy" Isle, as he was affectionately known to a host of friends, was a life member of the Association, The Shrine and the Masonic Order.

Mr. Isle became interested in the field of artificial limbs following an accident in 1906, when a leg was amputated. From then until 1915, he was manager of the Kansas City office of the J. F. Rowley Artificial Limb Company. He was then called to Europe where he established limb factories for World War amputees.

Returning to Kansas City in 1920, he established his own organization. The manufacture of the stump socks was developed under the capable direction of his wife. Both companies flourished under his wise direction, and are now managed by his daughter, Mrs. Loraine Isle Dillard, and two of his proteges, Lee J. Fawver and T. W. Smith.

Mr. Isle is survived by his wife, Mrs. Anna Coen Isle, three daughters: Mrs. Loraine Isle Dillard of Kansas City, Mrs. Burton J. Davis and Mrs. John Hakman, both of Los Angeles, and three sisters: Mrs. George Phillips, Mrs. L. L. Dougan, and Mrs. Frank Wright.

Progressive in his outlook and devoted to the welfare of the handicapped, Mr. Isle was a consistent supporter of OALMA and the Certification Movement.

COL. JOHN N. SMITH, JR., Director of the Institute for Crippled and Disabled in New York City died June 13 in New York after a brief illness. A West Point graduate in 1912, Col. Smith had a distinguished career in the service, and after 1928 in rehabilitation work. During his service as Director of the Institute it became an Associate Member of OALMA.

MRS. ELLA HANICKE, mother of Erich and Werner Hanicke of Kansas City, died April 22, at the age of 81, after a short illness.

OALMA and the American Board for Certification join in extending heartfelt sympathy to their families, friends and associates.

REVIEWS—Cont'd.

BLAKISTON'S ILLUSTRATED POCKET MEDICAL DICTIONARY

Edited by Norman L. Hoerr, M.D. and Arthur Osol, Ph.D., The Blakiston Company, Inc., 575 Madison Av., New York 22, N. Y., 1032 pages, 60 illus., thumb-indexed, $3.75.

Reviewed by David E. Stolpe, Director, Region II of OALMA, and Consultant on Examinations to the American Board for Certification.

This is a comprehensive and well-arranged dictionary. Specialist-editors in the medical and allied fields have selected the most important and most frequently used terminology. It is up-to-date and contains the latest additions to the medical vocabulary. There are full, unabridged definitions of over 33,000 medical terms thoroughly and completely defined, as in large dictionaries.

For convenience and easy reference all tables are grouped in a special 194 page section in the appendix; and all anatomical charts are grouped in a 24 page section at the end of the book. There are 60 illustrations—16 in color on 24 plates. The book is printed in clear, easy to read type, on a very good grade of paper.

OALMA OFFICERS AND DIRECTORS

LEE J. FAWVER, *President,* Kansas City
MCCARTHY HANGER, JR., *First Vice President,* St. Louis
M. P. CESTARO, *Secretary-Treasurer,* Washington
W. FRANK HARMON, *Second Vice President,* Atlanta
LUCIUS TRAUTMAN, *Past President,* Minneapolis
GLENN E. JACKSON, *Executive Director,* Washington
LESTER A. SMITH, *Assistant Executive Director,* Washington

REGIONAL DIRECTORS

Region I—WM. J. FERRIS, Boston
Region II—DAVID E. STOLPE, New York
Region III—E. A. WARNICK, Wilkes-Barre
Region IV—D. WILMORE BREMER, Jacksonville
Region V—PAUL E. LEIMKUEHLER, Cleveland
Region VI—MCCARTHY HANGER, JR., St. Louis
Region VII—LUCIUS TRAUTMAN, Minneapolis
Region VIII—MRS. D. E. HEDGECOCK, Dallas
Region IX—HARVEY G. LANHAM, Los Angeles
Region X—HERBERT J. HART, Oakland
Region XI—O. A. BERGESON, Portland, Ore.

AMERICAN BOARD FOR CERTIFICATION OFFICERS AND DIRECTORS

DANIEL A. MCKEEVER, *President,* Atlanta
CLINTON L. COMPERE, M.D., *Vice President,* Chicago
WALTER R. SIEVERS, *Secretary-Treasurer,* New York
CHARLES O. BECHTOL, M.D., Oakland
T. CAMPBELL THOMPSON, M.D., New York
LUCIUS TRAUTMAN, Minneapolis
MILBURN J. BENJAMIN, Los Angeles

CONSULTANTS

CHESTER C. HADDAN, *Consultant to the Board,* Denver
DAVID E. STOLPE, *Consultant on Examinations,* New York

STAFF

GLENN E. JACKSON, *Executive Director,* Washington
LESTER A. SMITH, *Assistant Executive Director,* Washington

Our Code of Fair Trade Practices

Below is a digest of the rules governing fair trade practices as promulgated by the Federal Trade Commission, April 1946 and adopted by the American Board for Certification in August 1948.

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 that 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 the industry member is possessed of the requisite competence to assure his ability to fulfill such guarantee. A prosthetic device 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.

(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.

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.