JUNE, 1954

The journal of the Limb and Brace profession

Orthopedic and Prosthetic Appliance Journal

Psychology of Physical Handicap

Functional Hand Assist

Assembly Plans

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

DATES TO REMEMBER — 1954-55

What • When • Where

AUGUST

20-21	SIXTH NATIONAL AMPUTEE TOURNAMENT	*Royal Oak, Michigan, Red Run Golf Club*

SEPTEMBER

13-17	SIXTH WORLD CONGRESS, INTERNATIONAL SOCIETL FOR THE WELFARE OF CRIPPLES	*The Hague, Netherlands*
24	FIRST OALMA GOLF TOURNAMENT	*Northfield, N. J. Atlantic City County Club*
24-25	EXAMINATION FOR PROSTHETISTS AND ORTHOTISTS — Conducted by the American Board for Certification	*Philadelphia, Penna.*
26-30	NATIONAL ASSEMBLY OF THE LIMB AND BRACE PROFESSION	*Atlantic City, N. J. Chalfonte-Haddon Hall.*

OCTOBER

3-9	NATIONAL—"EMPLOY THE PHYSICALLY HANDICAPPED" WEEK	
24-27	NATIONAL REHABILITATION ASSOCIATION—Annual Conference	*Baltimore, Md.*

NOVEMBER

3-5	NATIONAL SOCIETY FOR CRIPPLED CHILDREN AND— ADULTS, Annual Meeting	*Boston, Mass.*

1955

JANUARY

29	AMERICAN ACADEMY OF ORTHOPAEDIC SURGEONS—Annual Meeting	*Los Angeles, Calif. Statler Hotel*

APRIL

29-30	TECHNICAL SEMINAR — Sponsored by MOALMA	*New York City Roosevelt Hotel*

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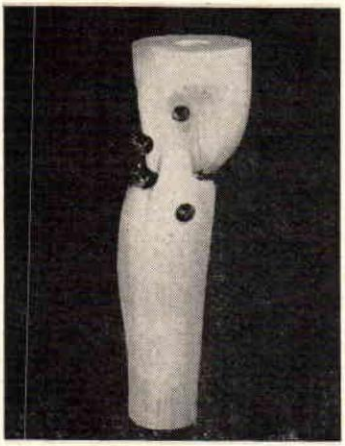

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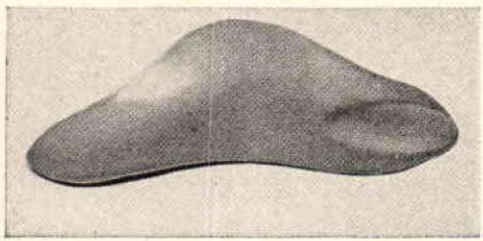

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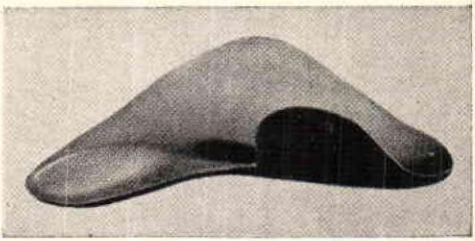

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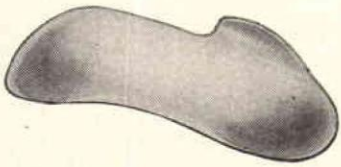

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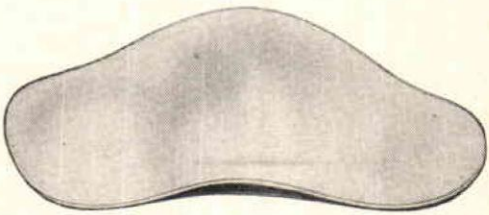

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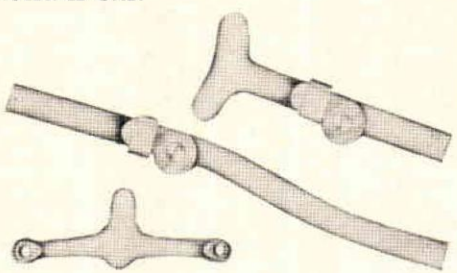

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CONTENTS

DEPARTMENTS

The '54 Assembly to Convene at Atlantic City September 26-30

Fillauer Reveals Outstanding Program for Limb and Brace Profession

Atlantic City, America's greatest vacation center, will play host to the Limb and Brace Profession, when the National Assembly of OALMA and the Certification Board convene there the 26th of this September. The seaside resort, which entertains annually over 15,000,000 visitors on its renowned Boardwalk, is celebrating its 100th anniversary this year with a variety of events for the vacationer's enjoyment. It has long been a favorite meeting place of the American Medical Association and other important organizations which find in it the ideal convention city.

National officers of OALMA and the Certification Board chose the Chalfonte-Haddon Hall in Atlantic City as the site for the 1954 Assembly because of its unrivalled facilities. One of America's famous hostelries, Chalfonte-Haddon is the largest hotel in Atlantic City. Its two buildings provide ideal accommodations for the Assembly sessions, September 26 to 30. A capable and experienced staff has made the Hotel a favorite with travelers who are accustomed to the best that America and Europe have to offer.

ASSEMBLY FACTS

A Handy Check-List

WHAT: 1954 Assembly, sponsored by OALMA and The Certification Board.

WHEN: September 26, 27, 28, 29 and 30

WHERE: Atlantic City, N. J.—Chalfonte-Haddon Hall.

HOW: Registration Forms and full details from OALMA's headquarters—336 Washington Bldg., Washington 5, D. C.

Carlton Fillauer of Chattanooga, Tennessee, has been named Program Chairman of the Assembly and is now at work on arrangements for what should be the greatest Assembly ever known. In a special message to readers of the *Journal,* the Program Chairman urged that visitors combine attendance at the Assembly sessions with a vacation and bring members of their family with them.

Among the features of the program as announced by Mr. Fillauer are:

- Seminars in Plastics, Harnessing of Appliances, and Anatomy for the Prosthetist-Orthotist, taught by leading authorities.
- Amputee Case Study—first detailed report on the clinical study of amputees now underway at Berkeley, California. When com-

Scene of the '54 Assembly

Chalfonte-Haddon Hall on the Boardwalk at Atlantic City

pleted this study will give important data on over 6,000 amputees.

- Leg Brace Fabrication—Methods, Costs and Time Studies—Special reports for you by OALMA members with recent V.A. Studies serving as a starting point.
- What's Going on in Europe—and How it Affects Us—observations by Dr. Craig Taylor, Basil Peters and Carlton Fillauer—reporting on their visits this Summer.
- "Gaits, Normal and Abnormal"—demonstration by Dr. C. A. Mead, Orthopedic Surgeon by profession, a Lieutenant in the U. S. Navy.

Senator Kefauver to Speak

Senator Estes Kefauver of Tennessee has accepted our invitation to deliver the keynote address at the Assembly Banquet. Senator Kefauver will be the guest of honor at the reception which precedes the Banquet.

The Senator has served in Congress since 1939 and has made a distinguished record in both the House of Representatives and the Senate. He was one of the sponsors of the GI Bill of Rights. His energy as well as his patient devotion to the cause of justice and modest manner while serving as chairman of the Special Committee to Investigate Crime in Interstate Commerce brought him national recognition and acclaim.

Mrs. Kefauver is almost as well known as her husband, having toured the Nation at his side when he was a candidate for the Democratic nomination as President of the United States in 1952.

Exhibits

The beautiful Carolina Room in the Chalfonte will house the scientific and technical exhibits. These exhibits by suppliers and inventors have come to be one of the educational features of the Assembly. Many OALMA members consider "booth-hopping" to be the most rewarding experience of their Assembly week.

Fred Eschen of New York City has been named Chairman of the Exhibits Committee. He reports that the leading supply firms are planning the largest exhibits in OALMA history.

"This Is My Problem"

The "Dr. Anthony Problem Clinic," a popular feature of last year's meeting, is being revised and expanded for the Atlantic City session. Lucius Trautman will again star as the "man with lots of problems" and Lester Smith will again be Dr. Anthony, turning to the audience for help in getting Lu out of this year's jams. Trautman promises "bigger and better problems for the limb and brace man."

All This—and Fun Too

Life is not all problems, however, and the program planners have remembered that you are in Atlantic City, whose motto is "We are here so that you can have a good time." Whether your desire is deep-sea fishing, golf, strolling on the famous Boardwalk (or riding in the familiar rolling chairs) or taking in those unique auctions, you'll have the opportunity and encouragement for a real vacation. OALMA's Women's Auxiliary is in charge of the Monte Carlo Party and has plans to keep your wife and family happily occupied while you talk shop with friends from all over. (Other features of Assembly-time such as the Certification Sessions are described elsewhere in this issue).

It all adds up to an exciting and rewarding Assembly. Don't miss it! Mark the dates now and when the Registration blanks come over your desk, put your name down as "one who'll be there, Charlie."

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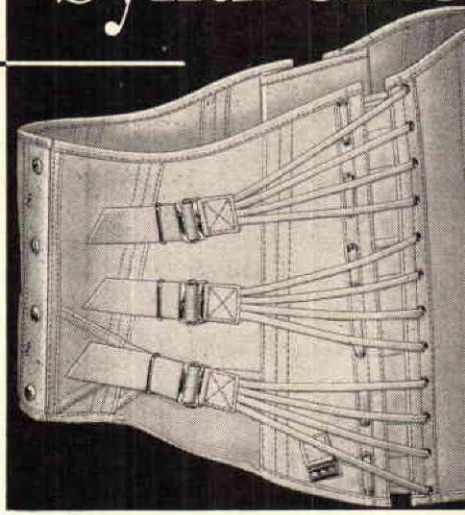

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The President of the Certification Board Reports

I have just come from a two-day session of our entire Certification Board. Meeting with us in Washington on June 11 and 12 were our two Consultants, Chester C. Haddan and David E. Stolpe, Director Glenn E. Jackson, Assistant Director Lester Smith, and the Executive Committee of OALMA. I felt a great sense of accomplishment when we adjourned Saturday evening. While I don't want to take the edge off the reports which you will hear at the National Assembly, I want you to know some of the things that developed from this session.

One of our principal discussions related to educational standards for certification. We will have at Atlantic City a complete detailed outline of the four-year *training and instructional courses* that will be required before new applicants may take the certification examination. For the first time we will have spelled out just what is required in each subject, and how and where an apprentice can obtain the help he needs.

The interest and cooperation of the three surgeon members of our Board is almost unbelievable. Busy as they are, these three men voluntarily took on themselves the tremendous job of developing our course in *anatomy*. I wish you could have been there with me to see their interest and their strong enthusiasm for the certification program.

Our new examination procedures came in for a great deal of discussion. As you know, we have secured the help of specialists and educators in making our tests as comprehensive and as fair as they could be.

The new examination which we have developed is outstanding. Those who take it and pass can be proud of their achievement. This examination is going to be discussed at the Assembly and you will hear what its purpose is and how it was prepared.

We will also review the eligibility requirements, both for certified personnel and for the facilities at which they are serving. The importance of certification for the facility itself will be stressed.

As you will see in the forthcoming program for this National Assembly, we expect to devote considerable time to a meeting of the Advisory Council. I am looking forward to the comments and suggestions this group will bring us.

Besides these specific matters, we gave considerable study to the scope of our movement and to its policies. In the near future you will receive a restatement of some of the major concepts of certification. Here again, our surgeon members, in particular the President of the Academy of Orthopaedic Surgeons, are carrying to their profession our restatement of the certification ideal. Finally, we reviewed all the mechanics of our operation and our present budget with a view to the highest possible efficiency.

It is my hope that every certified prosthetist and orthotist will have the opportunity to be at Atlantic City, to hear how we operate and understand definitely what our movement is trying to do.

Dan McKeever

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You and the Rehabilitation Team: Editorial

Rehabilitation is on the "bandwagon" in this country—the American people realize more clearly every day what it represents in terms of human happiness and national welfare. This means more service will be made available for the physically handicapped—more funds for medical care and for the necessary appliances. More attention will be given to their training and employment.

This is at once a challenge and an opportunity to you and to your national organization, OALMA. The orthopedically handicapped, including amputees, are the largest single group among the disabled. Hence we can't help but be an important part in what's going on in rehabilitation.

It's up to us then, to do our share—to help where we can and be alert to our opportunities. We can do much to keep rehabilitation on the right track, to discourage loose talk about "miracle discoveries" which are actually no improvement—to give realistic advice on braces and artificial limbs—to keep ourselves and our establishments up-to-date.

Let us cooperate whole-heartedly with every good and useful service to the handicapped. But at the same time, we can profit from the example of our medical colleagues who are alert to the dangers of socialized medicine. We are offering a professional service to the handicapped and their physicians. In these days when rehabilitation centers and institutes are springing up overnight, America must not lose its privately-owned and operated facilities. They are an essential part of our way of life.

Your officers and headquarters staff are taking an active part in the current movement. OALMA had a prominent part in the Exposition on Rehabilitation and Employment of the Physically Handicapped, which President Eisenhower's Committee staged at Washington in April.

Glenn Jackson and Lester Smith were members of the steering committee when heads of some fifty national rehabilitation societies met at Atlantic City in May, to study President Eisenhower's proposals for rehabilitation. Private and public agencies alike are showing great interest in our Certification Program. Many of its unique features are being studied and copied by other groups who want to establish Certification standards.

Our members are helping at the local level, in a similar way. Their concern with the handicapped doesn't end at the close of the work day. Many are active in the National Rehabilitation Association, Crippled Children Societies and related organizations. Their voice is heard more and more in the rehabilitation team.

All this is heartening evidence of the professional status we seek and claim, for "the hallmark of a profession is *its sense of duty*."

Lee J. Fawver

TO THE LADIES:

from OALMA's Woman's Auxiliary

The National Assembly in Atlantic City is rapidly drawing nearer. To the ladies who have never attended one of our conventions, I would like to extend a personal invitation to accompany your husbands in September. I personally will see that you are introduced to the members, and you will be assigned a Big Sister to accompany you on our tours and make you feel at home with the group.

Besides benefiting from the programs, you will be seeing Atlantic City, which is one of the most famous vacation spots in the country. The Chalfonte-Haddon Hall is the hotel chosen for the convention, and is about the finest there. Their facilities are marvelous. Let me tell you a little about the hotel. The Boardwalk is at the door for strolling, rolling chairs, or bicycling. There is ocean bathing from your rooms and a private Cabana Colony. Sailing, fishing, tennis and golf are available in the vicinity. In the hotel are seaside lounges, ocean sundecks, health baths, game rooms, children's play room, a library, card rooms, squash courts, concerts, dinner music, movies, lectures, dances and cocktail lounges.

Every afternoon at 4:00 P.M., tea is served without charge to the hotel guests in the Chalfonte Lounge. Another special service the hotel offers is baby sitters. They are available for day or evening at the rate of 75 cents per hour. So don't let the problem of getting someone to take care of your children keep you home.

Our program is not complete yet, but plans are being made for the women to take a sightseeing boat trip around Atlantic City. Also planned is an inspection tour through the Chalfonte-Haddon Hall Kitchens, Laundry, Power House and Garage to see the inside operations of a large hotel. On Tuesday morning, the ladies will attend the assembly session with the men. On Sunday evening, the ladies are undertaking the handling of the Monte Carlo games.

If any of the ladies would like more information concerning the assembly or the Auxiliary, I will be most happy to answer you. Write to 4811 W. 212th Street, Cleveland 26, Ohio.

Sincerely yours,

Kay Leimkuehler

Officers of the Auxiliary, 1953-54:

Kay Leimkuehler, President, 4811 West 212 Street, Fairview Park 26, Ohio. Ruth Finlay, First Vice President, 4534 N. Newhall Street, Milwaukee 11, Wisconsin. Florence Kraft, Second Vice President, 1038 Tifft Street, Buffalo, New York. Frances Aunger, Secretary, 145 E. Van Buren Street, Phoenix, Arizona. Helen Kloene, Treasurer, 736 Galena Street, Toledo, Ohio.

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The Psychology of Physical Handicap*

A Statement of Some Principles

LAWRENCE EDWIN ABT, Ph.D.

We are in the beginning stages only of our understanding of the factors that are important in the psychology of physical handicap. My experience in working with the physically handicapped has been limited both by inclination and opportunity, and I suggest the following psychological principles in only a tentative way. I believe that they are among the more important principles that may ultimately be developed into a full-scale psychology of physical handicap.

1. *The emotions, desires, and drives of the handicapped individual are not different from those of the normal individual.*

This principle insists that with respect to his intellectual and emotional equipment, the handicapped individual is not different from the normal. The particular means by which desires are satisfied and drives satiated depends to a very large extent upon the personality of the handicapped person, the nature and extent of his disability, and the social opportunities available to him for gratification of personal strivings. There may be more similarity between two individuals, one of whom is handicapped and the other of whom is non-handicapped, than there may be between two non-handicapped individuals.

2. *Under conditions in which the handicap has necessitated prolonged hospitalization and convalescence, repression of the activity drive may occur.*

Most individuals by inclination have a strong activity drive which may, however, become greatly modified through certain personality trends. In the same manner, prolonged convalescence may force upon the physically handicapped an attitude that physical activity is neither possible nor desirable. As a result there may occur a considerable restriction of the physical world of the disabled person which does not find its sanction in incapacity to be active.

3. *Trivial disabilities are often sources of intense conflict.*

As a result of injury, there may occur an increased sensitivity toward and interest in the body. Such an interest may find expression in discovering and magnifying bodily defects which all individuals may be presumed to have. Owing to the increased sensitivity, certain trivial disabilities acquire a degree of importance which may be totally unrealistic but which often serve as means for the handicapped individual to work out personal and social problems to which the trivial disabilities are actually unrelated.

4. *The handicapped resent segregation.*

* For a more complete statement of this material, the reader is referred to my chapter, "Psychological Factors in the Adjustment of Amputees," in *Human Limbs and Their Substitutes*, edited by P. E. Klopsteg and P. D. Wilson, New York: McGraw-Hill Publishing Co., 1954.

Actually, many physically disabled individuals have ambivalent attitudes. They both want to be treated as normal individuals, and at the same time, need to be treated as handicapped persons. Such attitudes fluctuate, and may be presumed to be a function of the possibilities of realizing certain goals in different social situations. That attitude is likely to be dominant which is calculated to permit the physically disabled most readily to gratify his needs in different social contexts. On the deepest levels of personality, however, it must be presumed that most handicapped individuals have a strong need to identify with all other people. It is this situation which accounts for their resentment toward any efforts at their segregation.

5. *The handicapped resent sympathy but seek understanding.*

Like the non-handicapped person, the handicapped individual feels that expressions of sympathy place him in a position of social and personal inferiority, force him to entertain ideas of inequality and inadequacy, and disturb his level of self-confidence. Hence, most physically disabled persons develop deep resentment when others extend sympathy to them, since they cannot always be sure of the motivies of the other person which have aroused sympathetic expressions. At the same time, in common with all others, they sense a deep need to be understood and fully accepted in the social world.

6. *The handicapped individual is inclined to be lonely, morose, self-conscious, sensitive, and suspicious of the opinions of others.*

For all his efforts at maintaining himself in the social community and identifying fully with the non-handicapped, the physically disabled person finds it exceptionally difficult, just as the non-disabled person does, to see the world through the eyes of someone else whose physical status is different from that of his own. The inability fully to participate empathically in the larger social environment may increase his sensitivity, sense of non-belonging, and suspicion of others' motives and opinions.

7. *Many handicapped do not have an adequate understanding of the physical and mental aspects of their conditions, and are fearful of the possible consequences of their disabilities.*

Because of a lack of sufficient understanding of the meaning of their disabled conditions, many physically disadvantaged individuals impose unnecessary restrictions upon themselves and their activities with considerable loss to themselves and their adjustment to the social environment.

8. *An underlying anxiety, which may be exacerbated by repeated failures growing out of or related to the disability, may become focused on minor ailments.*

This is similar to principle 3 and differs only in the sense that repeated failures tend to build up in the handicapped individual a "psychology of failure" which pervades his whole life and which may cause him to rationalize his shortcomings not only by means of his disability, but also because of other minor ailments which he may have. His attention is thus more readily directed to such ailments, which tend to increase in their importance to him.

9. *Defects of personal appearance give more worry to the disabled than defects which are not readily visible.*

Visible defects catalyze more anxiety for the disabled individual because they tend to have social psychological implications, invite the attention of other persons, and may force the handicapped individual to explain or even defend his physical status.

10. *The sudden trauma of disability may reactivate whatever fears and anxieties are latent within the individual.*

Every person, normal or handicapped, carries with him at all times a number of fears and anxieties which, through learning, he usually manages to handle in such a way that they affect to a minimum degree his interpersonal relationships. Individuals differ widely in the amount of anxiety which they have learned to tolerate and in the extent to which fears and anxieties may remain latent. Under the stress imposed by severe trauma of sudden onset, anxiety and fears, formerly latent and potential, may become overt and actual.

In addition to the above principles, there is a social psychological aspect of physical handicap that it is helpful to keep in mind. At present it is possible to suggest this only in broad outline.

To understand the social psychological problems of the physically handicapped, it is helpful to think of them as members of a group among whom certain loyalties have become established, certain attitudes developed, and for whom certain behavior has come to be appropriate and to have acquired sanction. The physically handicapped may be considered to represent one of the marginal groups in the culture. As a minority group, the physically disabled, as other minority group members, tend to feel under-privileged.

The physically disabled often find it difficult to identify themselves with the non-handicapped, whom they may regard as a group whose lot in life is more fortunate than their own. On the other hand, there are disabled persons who have learned that, although they may discover advantages in identifying themselves with others who are also physically handicapped, such identifications may seriously restrict their activities and social contacts to an extent that leads to personal conflict and frustration.

The status needs of the physically handicapped can perhaps best be understood precisely in terms of their group-membership in a minority segment of the population toward which non-afflicted individuals frequently express ambivalent and strongly conflicting attitudes. Like other marginal group members, the physically disabled tend to develop special zones of sensitivity that are easily invaded, often quite unconsciously, by the non-afflicted. Because of membership in the marginal group, many physically afflicted individuals think of their

LAWRENCE EDWIN ABT

Dr. Lawrence Edwin Abt holds a Ph.D. degree in psychology from New York University. He is the author of numerous articles on clinical psychology and is a Fellow of the American Psychological Association. Dr. Abt is now serving as Director of Human Engineering, Alderson Research Laboratories, New York City and is a consultant to the U. S. Veterans Administration. He was one of the featured speakers at the MOALMA Seminar in New York at which this paper was delivered.

social and personal status as precarious and have learned that because of the very physical limitations that have made them members of the underprivileged group, their social status cannot be materially improved. Among the physically disabled, therefore, it is not difficult to see why there are those who experience deep and painful feelings of social rejection that often they cannot correct.

Living in a subordinate position in our society, the physically afflicted may come to find that many of the normal cultural goals that they are disposed to strive for are inaccessible. A forced change in the level of aspiration of a handicapped person may lead to deep frustration, and the imposition of a ceiling on their position in society may deepen the feelings of membership in the minority group.

There is another important social psychological consideration to which I should like briefly to invite your attention. I refer here to the importance of the attitudes of the physically handicapped person's family toward the handicap or injury and the extension of this feeling to the disabled person as a whole. Sometimes, for example, the rejection of a cosmetically unacceptable injury spreads into a rejection of the person who has suffered the injury, to the great detriment of the disabled individual.

There are many other social psychological factors that deserve our attention and interest, but I have had to omit them in the service of brevity. In conclusion, I would like to mention one, however, that seems to be of transcendent importance — that is, *our attitude toward our client and his disability.* I cannot stress to you too much the importance of our own attitudes in dealing with clients, for the reservations we may entertain, whether verbalized or not to the client, tend to become known to him and to influence significantly his outlook on the future and his attitude toward his own disability.

"What's New(s)"

• Glenn E. Jackson, OALMA's Executive Director, has been appointed a consultant to the Division of Civilian Health Requirements of the U. S. Public Health Service. These consultants represent various professional organizations and trade groups having special interest in the health field. Director Jackson is authorized to pick OALMA members to work with him in advising the Public Health Service which is responsible for "the over-all problem of maintaining adequate quantities of health supplies and *equipment* for the civilian population."

• CONTINUING ITS PROGRAM of acquainting surgeons with the latest developments in prostheses, the *W. E. Isle Company* was host to a group of surgeons at its headquarters in Kansas City last December. This was a forum discussion on prescribing, measuring and fitting prostheses with Lee Fawver and Ted Smith as moderators. The VA Suction Socket and UCLA Upper Extremity films were shown. Later in the week members of the Isle staff presented these same films to groups at the Kansas City Rehabilitation Institute and the University of Kansas Medical Center in Kansas City, Kansas.

• THE LISTING of the *Horn Surgical Company* in the new OALMA Roster should be under the heading "Associate Members." This firm with headquarters in Philadelphia is a manufacturer of trusses, abdominal supporters, seamless elastic stockings and other surgical appliances. Officers of the company include William H. Horn, 3rd, President, John A. McCaffrey, Vice President, and William B. Christy 3rd, Secretary and Treasurer.

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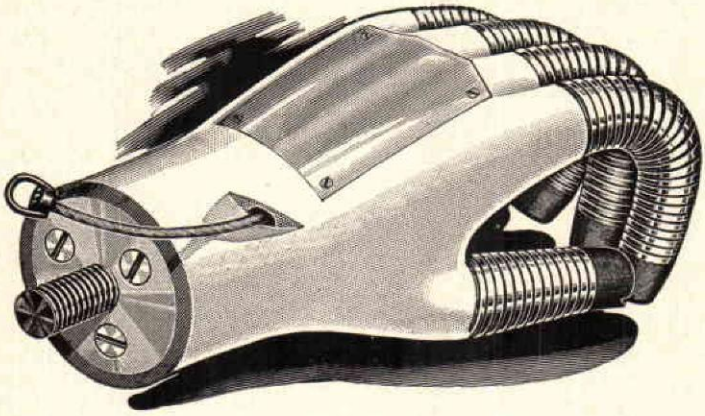

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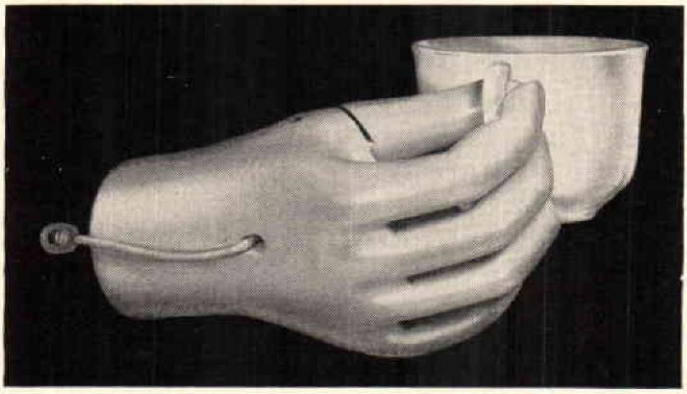

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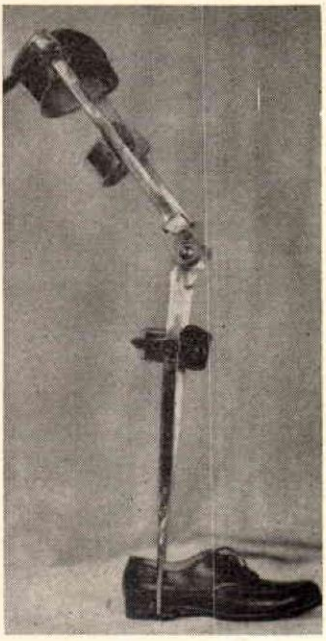

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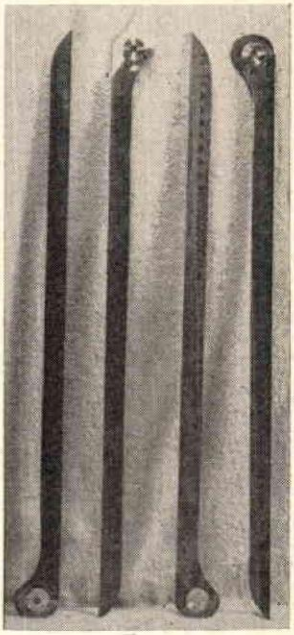

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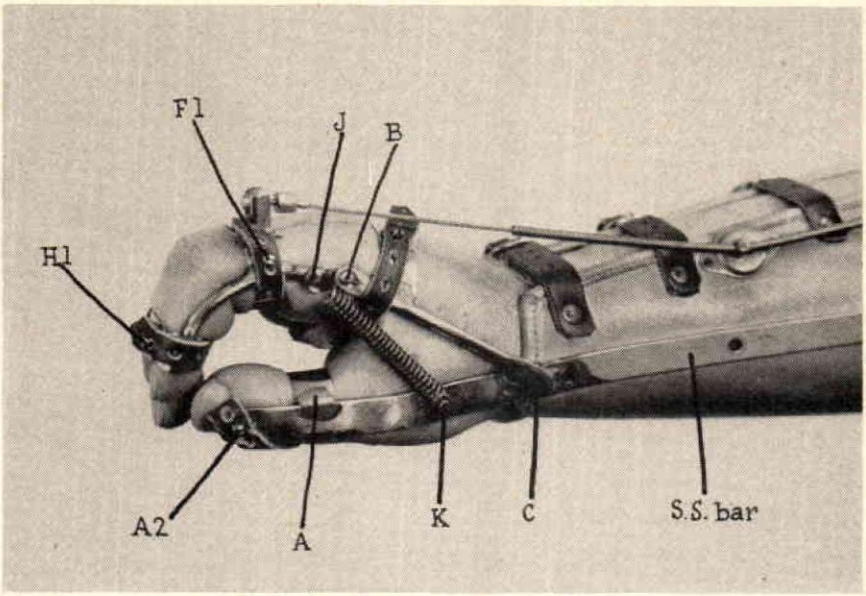

Fig. 1. Functional Hand Assist, radial view

In the rehabilitation of neuromuscular disorders, there is a great need for some type of mechanical hand assist for patients with severe involvement or flail hands. Such a device was developed at the Gonzales Warm Springs Foundation Hospital.

In constructing such a device, it is mandatory to utilize all the prehensive and kinesthetic senses that remain in the involved bodily segment as this will result in better utilization of the appliances. In general, this device is constructed of three parts,—that is, the terminal device, the supporting unit, and the transmission mechanism.

The steps in construction of this appliance are as follows:

1. Make plaster shell of forearm and wrist.
2. Pour mold and dry thoroughly, trim and dress.
3. Make molded leather cuff.
4. Place stainless steel bar (½"x3/32") on cuff in line with thumb in position of opposition. (Fig. 1).
5. Place hook "A" (Fig. 1) on stainless steel bar at center of 1st phalanx of thumb. Hook "A" is made of .040x½" spring temper stainless steel and is silver soldered on to ½"x3/32" stainless steel bar. Apply ⅜" leather strap on hook at "A-1", (Fig. 2) anchoring to stud at "A-2" (Fig. 1).
6. Form out of Monel Wire (Wire drill gauge size 18) the metacarpal joint "B" (Fig. 1) and the angle of the index finger.
7. Silver solder the #18 wire at point "C" (Fig. 1) at wrist on the radial side, being extremely careful that metacarpal joint "B" (Fig. 1) is in alignment with metacarpal joint of index finger. This is very important.
8. Apply metacarpal bar (.040x½" stainless spring temper steel bar) with silver solder at point "D" (Fig 3) allowing enough clearance for extension of index and middle finger. This bar runs across the metacarpals and curves around the 5th metacarpal.
9. Apply leather strap, 3/8" at point "E" (Fig. 2) crossing palm of hand and anchor at stud "D-1". (Fig. 3)

10. Apply bar (.040x½" stainless steel spring temper) at center of 1st phalanx of index and middle finger at point "F". (Fig. 3) Put leather strap, 3/8" at point "G" (Fig. 2) to anchor at stud "F" (Fig. 1). This strap passes under the fingers.

11. Next apply bar (.040x½" stainless steel spring temper) to distal point of 2nd phalanx of index and middle finger at point "H" (Fig. 3). Put 3/8" leather strap, at point "I", (Fig. 2) pass under fingers and anchor to stud "H-I" (Fig. 1).

12. At this point stop and check all parts for proper fit. Be sure metacarpal joint "B" is in line with 2nd metacarpal. You should have at least 1½ inches opening between thumb and two fingers when in open position. Slowly close fingers, check apparatus for freedom of range and motion. When closed, thumb should be in center of first two fingers to give desired pinch.

13. Now we are ready to apply the spring or elastic for closing the fingers. Any desired amount of tension may be obtained by winding different sizes of springs. The spring should be anchored at point "J" (Fig. 1), just forward of the metacarpal joint of index finger, and just back of the metacarpal joint of the thumb at point "K". (Fig. 1) This should be done in this manner so as to leave the web between the thumb and index finger free for grasping larger objects.

14. The post for the cable pull is applied next. This should be put on top of 1st phalanx band at point "L" (Fig. 3). Then the first keeper for cable housing attached to arm cuff, at a point where cable is in direct line of pull. This point is determined by the type of harnessing that is going to be used on the patient.

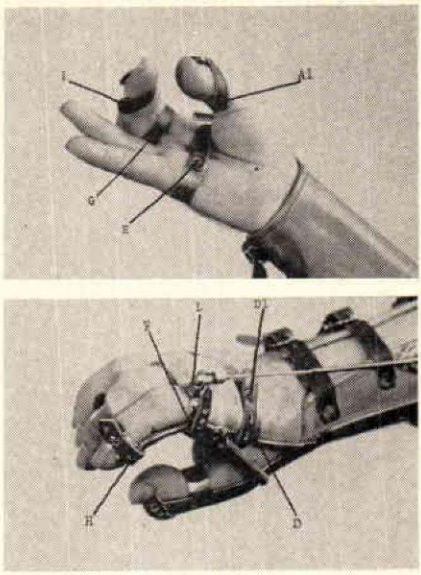

Fig. 2 and 3. Functional Hand Assist.
Top: palmar view
Bottom: dorsal view

The harnessing may be on either shoulder, as it is used in the below the elbow prosthesis, or may be from one of the lower extremities, if the shoulders are flail. In such cases, especially in patients confined to wheelchair, the motive force may be derived from the foot, using dorsi and plantar flexors, or from the thigh using adductors and abductors.

The appliance usually should fix the wrist in 20-30 degrees of dorsiflexion, in the position of function of hand. However, the degree of dorsiflexion should be adjusted individually to permit optimal position to obtain the greatest amount of activity. The stabilized thumb is so arranged in opposition that it meets the index and long finger, which are bound together in a plane of 15 degrees angle to the longitudinal axis of the hand. This prehensive position gives the patient the most comprehensive and universal approach to objects of various shapes and sizes, yet provides as secure grip as possible. The exposed palmar pads of fingers and thumb permit the utilization of the tactile and kinesthetic senses that the patient may have.

This device has been used successfully in patients having flail hands as the result of poliomyelitis or traumatic quadriplegia. It facilitates a greater degree of rehabilitation, as the patients are able to feed themselves, write, brush their teeth, and do other light activities. These activities, though small in themselves, are of utmost importance to the patient in giving him a feeling of independence.

This appliance will not meet the needs of all hand involvements, however, if used where applicable it has proved to be a practical functional assist. It has to be fitted individually and modified to each degree of disability.

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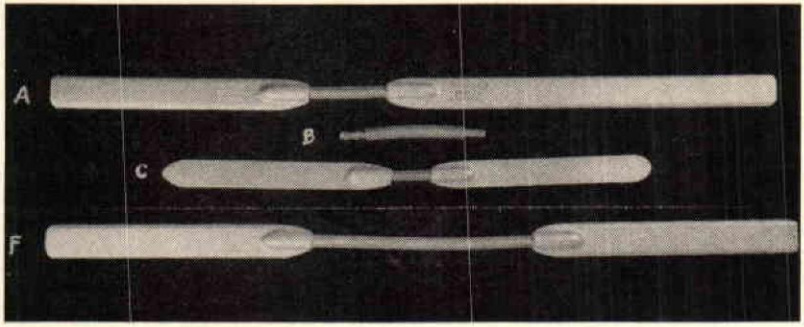
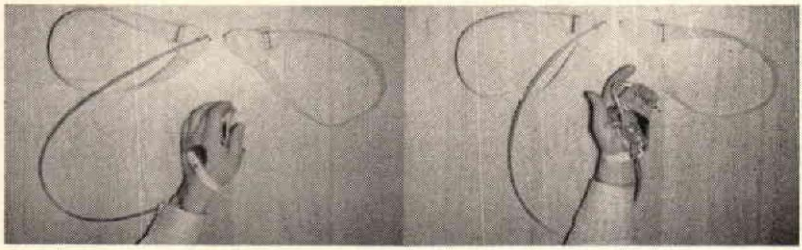
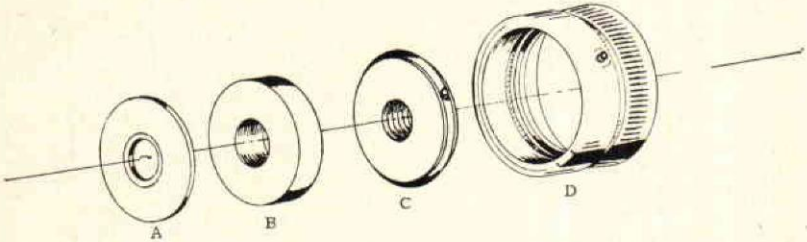


HANDY-HOOK



TUBULAR WRIST UNIT



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Stump and Socket (II)*

BY GABRIEL ROSENKRANZ, M.D., New York

1. There are only two prostheses in the world: The comfortable and the one in the closet.

2. A knowledge of muscles is the beginning and the end in prosthetics (after Sir Arnold Keith).

3. There is no correct alignment that by-passes the mind.

4. The happily aligned leg will tell you so: "I ain't kicking."

5. Fitter (staring at the unyielding roll of flesh protruding over the medial rim of the socket):
   "O! that this too too solid flesh would melt,
   Thaw and resolve itself into a dew"
   (Shakespeare, Hamlet I. 2)

6. When stump edema calls for relief:
   "Never put off until tomorrow,
   What should have been done
   Early in the Seventies"
   (George Ade, the Third and Last Call)

7. The 3-D prosthesis of the inexperienced spells: DISCOMFORT, DISAPPOINTMENT, DISCARD.

8. Knee.
   "The human knee is a joint and not an entertainment."
   (Percy Hammond, quoted by Mark Sullivan in Our Times, III).

9. Mechanical joints: Position is everything in life.

10. A healthy individual has a pair of legs, an amputee has two legs.

11. I recall a case of persistent stump edema in which a sudden crack in the wall of the constricting socket changed the whole picture immediately for the better. A "wise-crack" if there ever was one.

12. Amputee, calling up the man who sold him the "ultra-magic" prosthesis: "I am desperate. Please, tell me once more something good about the prosthesis."

13. Prof. Einstein's formula $E=MC^2$ has its application in prosthetics, too: The excellence (E) of a prosthesis is determined by the multitude (M) of its wearers and more so by the comfort (C^2) it affords.

14. Criticus: "Now what in the world good can this new device ever be that calls for so much watchfulness, understanding and devotion?"
    Foresight: "Well, my friend, of what use is a newborn baby?"

15. A good prosthesis is a thing of joy and glory, and the less conspicuous its presence, the more sparkling its beauty.

---

*See also "Stump and Socket; a New Fifteen Points" in the Sept. 1953 issue of this *Journal* (page 6).

A STRAIGHT LINE IS THE SHORTEST DISTANCE . .

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1. Prosthetic Firms may now procure Good Sierra Prosthetic Devices and Parts *direct from the factory* at Sierra Madre, Calif. Sierra Socket Service has been added to provide complete plastic arms to your cast and measurements. (See our letter of May 14th.)

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Effect of Outer Fiber Stress on Brace Design

By FRANCIS L. SMITH, Fellow,

With JOHN L. YOUNG, Ph.D., Senior Fellow

The Sarah Mellon Scaife Foundation's Multiple Fellowship on Orthopedic Appliances
Mellon Institute

Many bracemakers have probably wondered when a badly bent brace is returned to them for repairs how it is possible for a person who weighs only about a hundred pounds to bend a steel bar which, according to steel company reports, should not deform unless a pressure of 80,000 pounds per square inch were used. That would mean that a bar 1/8 inch by 1/8 inch, or 1/64 square inch cross section, would not stretch until a load of 1,250 pounds were placed on it; yet every bracemaker knows that a bar of orthopedic steel, 3/16 inch by 5/8 inch about two feet long, will take a permanent set if it is fastened by one end in the flat position in a vise and a twenty-pound weight is attached to the other end. How can there be such a difference between fact and figures? The answer is, of course, that forces not apparent to the observer are involved. A very simple but fundamental principal of engineering explains the discrepancy: it is stress on the outer fiber or stress variation in a beam.

In a bar of steel subjected to a pure tensile load, all the material offers the same amount of resistance to the applied load (Fig. 1). This is the method applied by the steel company to get the 80,000 pounds per square inch mentioned in the first paragraph.

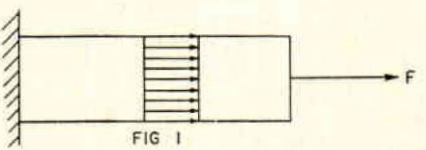


FIG 1

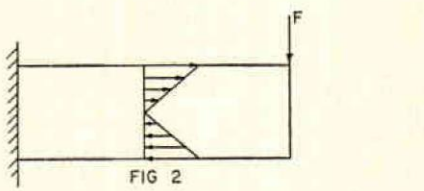


FIG 2

If the same bar is used as a beam with the load at the end, as shown in Figure 2, the material does not offer a uniform resistance. Only the material on the outer surface gives as much resistance as the tensile bar in Figure 1. The rest of the material offers less resistance and some of the material offers no resistance at all. Naturally, since some of the material is not carrying its proper share of the load, the steel used as a beam cannot carry as much load as when used as a tensile bar.

One other factor lowers the amount of load that a beam can carry, and that is the effective increase in load due to leverage. The load on a tensile bar is not increased owing to any leverage, since no leverage is involved, but the load on a beam is effectively increased because of leverage.

A ring stretcher helps to explain both of these factors (Fig. 3). If

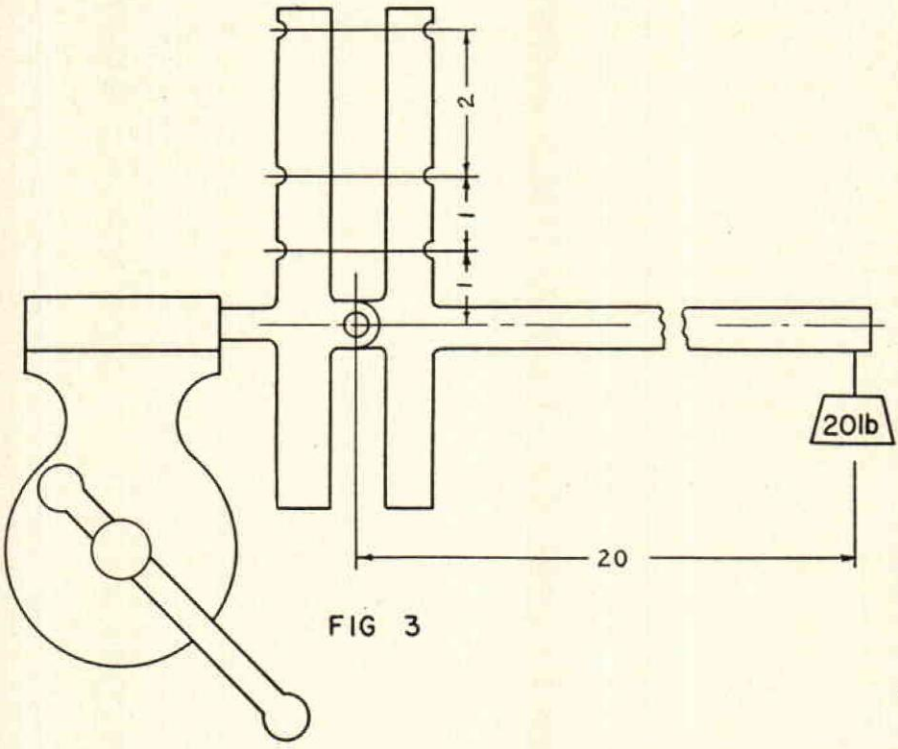


FIG 3

cord or string is used to support the vertical arm, it may take three turns of string in the four-inch position to support the twenty-pound weight. With the string in the two-inch position, it will require six turns of string; and in the one-inch position, twelve turns of string. This fact demonstrates that the material on the outer surface can offer more resistance to the load than the same material can when located close to the hinge.

If the twenty-pound weight remains on the ring stretcher, but the arm is lengthened to forty inches, it will take to support the twenty-pound weight six turns of string in the four-inch position, twelve turns in the two-inch position, and twenty-four turns in the one-inch position. Thus the increased leverage of the applied load acts the same as an increased load.

A beam acts the same as the ring stretcher in that it behaves as though it had a hinge in the center, and the material furthest away from the hinge can provide the greatest resistance to the load. That is why tubing makes a strong, light brace. By increasing the length of the arm on the ring

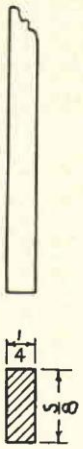


FIG 4

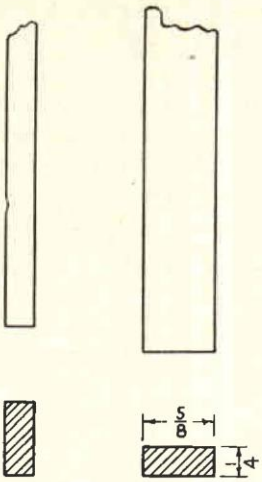
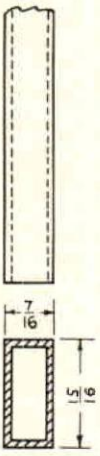


FIG 5

FIG 6



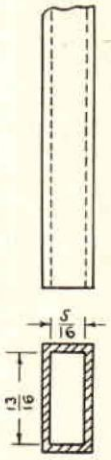


FIG 7

stretcher it was shown that more turns of string were required to support the twenty-pound weight. Obviously the amount of load that a beam can support depends upon how much leverage is involved. It is apparent that a short beam can hold a greater load than a long beam.

By understanding how a beam offers resistance to loads, a bracemaker can often make corrections to various braces that are returned for repairs. He can also alter the design of braces to suit extra heavy patients or very light patients. A slight change in the cross-sectional shape of a beam often times means the difference between quick failure of a brace or long, safe service. It can mean the difference between a heavy, awkward brace and a light, easily handled brace.

The importance of the shape of a

bar can be readily seen on an ischial seat leg brace. If the side bars are made with a cross-section ¼ inch by ⅝ inch, as illustrated in Figure 4, the brace will handle two and one half times as much load as a brace such as shown in Figure 5, yet there is the same amount of steel in both braces. The brace in Figure 4 will take 1.865 times as much load as the one in Figure 6, yet both have the same amount of material. Figure 7 shows a brace made of tubing with the same amount of material as in Figure 4, yet this tubing will handle over twice as much load as the solid bars in Figure 4.

If it is desired to increase the strength of the brace in Figure 4, it can be done by increasing the amount of material. If the shape is changed to ½ inch by ⅝ inch, an increase of material in the side direction, the brace will carry twice as much load. But if the dimensions are changed to ¼ inch by 1¼ inch, an increase of material in the front to back direction, the brace will carry four times as much load, yet the increase in material is the same in both cases.

It can readily be seen that, when brace parts act as beams, any material that is added to increase the strength should be added in the same direction as the loading. It is for this reason that material is added in the side direction on a leg brace to handle a flail knee. In a similar manner, hip joints are strengthened by adding material in the side direction and back checks for artificial legs are strengthened by adding material in the front to back direction.

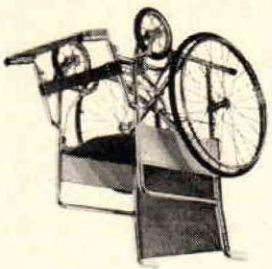
As a matter of interest to bracemakers who might like to experiment it should be noted that stress is something that cannot be seen. On the other hand, deflections are apparent. Beam strength, or load-carrying capacity, cannot be compared by comparing deflections. Beam strength varies as the square of the dimension in the direction of loading, while beam stiffness varies as the cube of the same dimension. If the dimension of a beam is doubled in the direction of loading, it will be four times as strong but eight times as stiff. A mild steel beam and a high-strength alloy aluminum beam with the same cross-section and length can carry the same load, but the aluminum beam will deflect three times as much as the steel beam. A good high-strength steel beam will carry more load than a cheaper low-strength steel beam, yet they both will deflect the same amount. The best way to compare the strengths of beams is to apply more load gradually until the beams take a permanent set. The beam that takes the most load is the strongest.

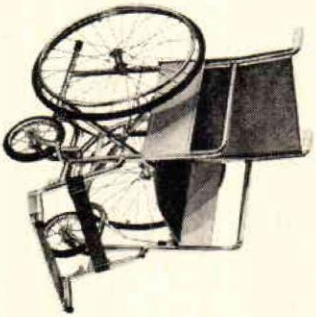
WHAT'S NEW(s)?"

• Hyman Jampol has an article "Physical Therapy Program for the Upper Extremity Amputee" which appeared in the November 1952 issue of the *Physical Therapy Review*. Reprints may be borrowed from OALMA, 336 Washington Building, Washington 5, D. C.

• Horcolite coated Nylon is now available as a covering for braces, trusses and pads and may be obtained from OALMA member, L. Laufer & Co., 461 Fourth Ave., New York 16, N. Y. This product is a lightweight synthetic resin coated fabric. Among the advantages claimed for the product are these: it is crackproof, shrinkproof and resists most greases, oils and chemicals ordinarily encountered in hospitals; it does not become sticky when heated, nor will it crack when exposed to cold.

It can be boiled and will not peel. Horcolite is available in white or brown, both 45" wide. Samples and prices are available on request to L. Laufer & Co.





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Centralized Manufacturing — An Asset To The Prosthetist and Orthotist*

By LUCIUS TRAUTMAN

Four years ago at the National Assembly of OALMA in Chicago, I predicted that the time was coming when centralized manufacturing would become the standard practice in the orthopedic and prosthetic field.

I was convinced then, and I am even more convinced now that this will be a great boon to the prosthetist and the orthotist. Certainly, the certified prosthetist and orthotist should devote his main energies to the successful fitting of the appliance on the patient. He simply doesn't have the time, nor should he take time to do the rough work of manufacturing and the menial tasks of sawing, polishing, finishing on a limb or brace. Since that time new procedures have come into our field which have made it possible for the certified technician to spend less time on the manufacturing stage and more time on the professional level of service to his patient.

With the use of the adjustable knee to obtain maximum alignment of the AK amputee, the technician now can see the patient, measure him, pull and fit a socket within a few hours and have the patient walking—all in the one day. If he and the patient are not satisfied with the fit, he can continue to have the patient walk and work with him until the leg is in as near perfect condition as can be obtained today. This leg can then be sent to a central manufacturing establishment, where the balance of the limb can be made, transferred and returned to the prosthetist. The prosthetist can then make delivery with a considerable saving of time and effort for all concerned.

Now that the below-knee adjustable leg is available, the same thing can be done with the below-knee limb. This enables the certified prosthetist to fit the patient, get him walking and get the ultimate in lineup because of the ease with which adjustments may be made.

Centralized manufacturing has another advantage — improved service for the unusual amputations. The majority of prosthetists now employed in small establishments do not have the opportunity to become widely experienced with such conditions as hemipelvectomies, disarticulations, and Chopart's amputations. When cases such as these in a wide area are referred to a centralized manufacturer, his staff will become experienced in their treatment. They will do better jobs because they have a larger volume of experience. I like to compare this development to the situation in the medical profession. There the general practitioner can do and on occasion has to do, almost anything in the medical line. However, he finds it helpful to refer his patients to specialists for certain conditions. For example, he may send a patient to an orthopedic surgeon who does nothing but bone surgery.

It is important, also, to have some large establishments in our field which are financially able to spend money for development and research. When they are able to do so they will help keep up-to-date the small establishments which use them for part of the manufacturing. The larger centralized manufacturing company can also purchase material and equipment to advantage, since it will be buying in greater quantities.

* Delivered at the University of Buffalo's Seminar on Prosthetics, February, 1954.

Similar opportunities exist in the field of upper extremities. The local certified prosthetist should be able to make the socket, do the fitting, and then be able to call on the centralized plant for the parts, elbows and forearm fabrication if he does not have the time to do it himslf.

Brace Parts

Prefabricated parts offer similar advantages to the orthotist. Several manufacturers have developed parts which are adaptable to any size brace. There is a wide variety of sizes offered, and many of them are interchangeable. Complete stocks of parts are maintained. Prompt delivery allows the orthotist to handle more customers than he otherwise would be able to do. Use of these prefabricated parts means lower overhead costs.

Since the orthotist has more time to spend with the patient there is more assurance of an excellent fit.

The Future

I sincerely hope and pray for the day when all contacts with the patient are made by certified fitters. When we reach this point there will no longer be time enough for the prosthetist to spend going around the country trying to develop business—

Mr. Trautman is one of the world's leading authorities on the alignment and fitting of prostheses. A member of the American Medical Association's Advisory Committee on Prostheses, he serves also on the Technical Advisory Committee to the Committee on Artificial Limbs. After leaving the presidency of OALMA he was elected a director of the American Board for Certification.

he will be too busy taking care of the handicapped who are contacting him. This means we are going to need more certified technicians in more communities. I can visualize the day when every city of 50,000 or more people will have at least one certified prosthetist.

With the steady increase in the population of this country there are inevitably going to be more handicapped who need our services. To serve them effectively and professionally we must take advantage of every labor-saving device which can be developed. In this lies the future of the limb and brace profession.

Welcome

The following firms have been elected to membership. Their names should be added to your copy of "The OALMA Roster; Leading Firms in the Orthopedic and Prosthetic Appliance Field":

Alaska Orthopedic Appliance Co., A. O. Rogers, Owner, 618-8th Avenue, Anchorage, Alaska.

Alpha Orthopedic Appliance Co., A. A. Tilton, President, 401 W. Pico Blvd., Los Angeles 15, California.

Jack Vollmer, Jack Vollmer, Owner, 208 South Western Ave., Los Angeles 4, California.

Minneapolis Artificial Limb Co. of Oklahoma, Ray A. Wilson, Owner, 305 Wright Bldg., Oklahoma City, Okla.

Pierre W. Delaby, Pierre W. Delaby, Owner, 127 Rowland Circle, Fayetteville, North Carolina.

House Of Bidwell, Inc.; Richard G. Bidwell, President, 525 North 27th Street, Milwaukee 6, Wisconsin.

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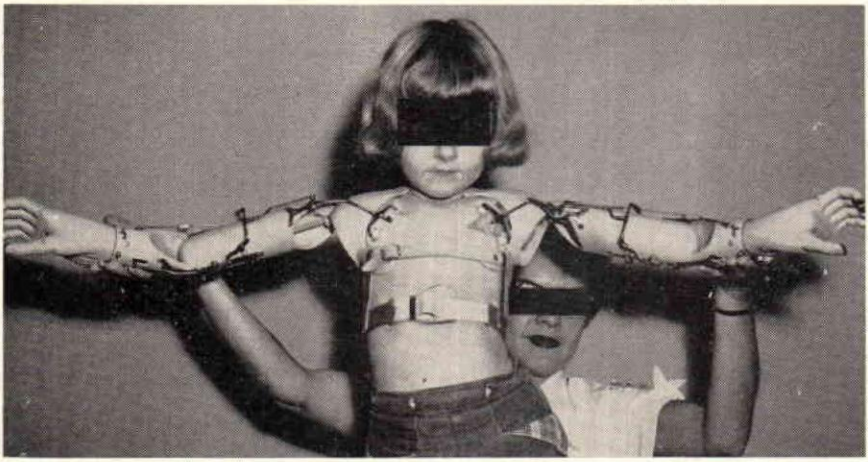

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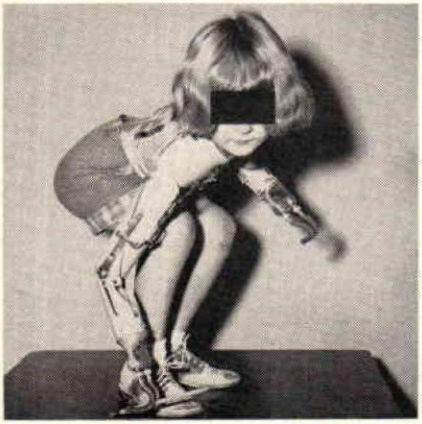

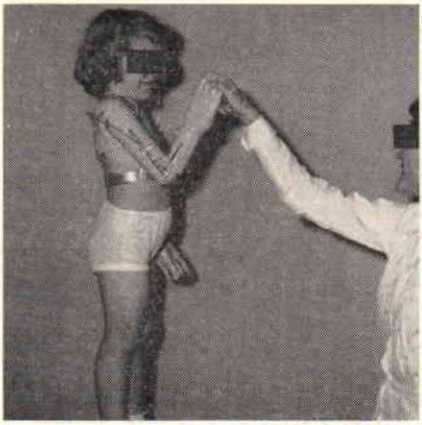

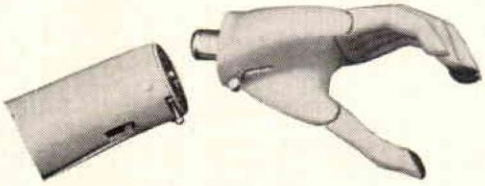

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Glossary For Prosthetists

EDITOR'S NOTE: *This brief glossary was obtained from Mr. Steven Purka, Clerk in the New York City office of the Prosthetic and Sensory Aids Service, Veterans Administration. The Glossary was compiled from a number of sources. Readers will recall that Mr. Purka was the compiler of "Good Reading for Growing Technicians", which appeared in the* JOURNAL *of OALMA, August, 1951, 33-36.*

GENERAL

Anatomy—The science of the *structure* of the body and relation of its parts.

Biomechanics—The science which deals with *forces* which act on the body.

Kinesiology—The study of muscular and joint *movements.*

Physiology—The science of the *functions* of the body and its parts.

Rehabilitation—The restoration to useful activity of individuals who have been injured so as to suffer from physical or emotional disability, such restoration including treatment of the disability and training to fit the individual for occupation in industry.

Therapy—The science that deals with *diseases and remedies. Occupational therapy* is the use of an occupation or training in an occupation for remedial purposes. *Physical therapy* is the treatment of disease by physical means.

ANATOMICAL

Abduction—The withdrawal of a part from the axis of the body; of the foot—rotation of the foot outward, on its own axis. To move away or to be away from the mid-line of the body. (For a part to be further away from the mid-line than normal).

Adduction—Any movement whereby a part is brought toward another or toward the median line of the body. A part of the body is nearer the mid-line of the body than normal when in adduction.

Acromion—The lateral projection of the spine of the scapula forming the point of the shoulder.

Anterior—Situated in front of or in the forward part of.

Arm—The portion of the upper extremity between the acromion and the epicondyles.

Axilla—The armpit.

Cervical Vertebra—7th—The most prominent of all the vertebrae. When the head is bent forward, the 7th cervical vertebra is the prominent bulge at the back of the neck.

Clavicle—The collar bone.

Condyle—A prominence or swelling of a bone at a joint, especially when occurring in pairs. Condyles of the tibia ordinarily take bearing in a prosthesis for amputation below the knee.

Distal—Remote, farthest from the center, origin, or point of attachment. (Opposite: Proximal).

Dorsal—Pertaining to the back or to the posterior part of an organ or of the body.

Epicondyles—The bony prominences of the distal end of the humerus.

Eversion—A turning outward. Eversion of the foot, turning the sole away from the mid-line of the body.

Extension—A straightening out, especially the muscular movement by which a flexed limb is made straight.

Femur—The thigh bone.

Fibula—The outer, smaller bone of the leg below the knee.

Flexion—The act of bending; the condition of being bent.

Forearm—The portion of the upper extremity between the epicondyles and the styloids.

Humerus—The bone of the upper part of the arm.

Hyperextension—Excessive extension. Hyperextension of the knee is that beyond 180° as by stretching of the hamstrings in the normal knee or by compression of a bumper in an artificial knee.

Inferior—Lower. Also toward the feet.

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* Reviewed in the Veterans Administration and published with the approval of the Chief Medical Director. The statements and conclusions published by the author are the result of his own study and do not necessarily reflect the opinion or policy of the Veterans Administration.

Inferior Angle of the Scapula—The angle of the lower point of the scapula.

Inversion—The act of turning inward.

Ischium—The lower and rearmost of the principal bones in either half of the pelvis; the seat bone. In ischial bearing, the weight of the body is supported on the rear wall of the top of the prosthesis as on a bicycle seat.

Lateral—Toward the outside. (Opposite: Medial).

Medial—Toward the inside or center. (Opposite: Lateral).

Neuroma—The new growth made up of nerve cells and nerve fibers found at the end of cut nerves.

Normal Limb—A remaining, unamputated limb.

Palmar—Pertaining to the palm of the hand.

Patella—The knee cap.

Plantar—Pertaining to the sole of the foot.

Posterior—Placed behind or to the back of a part; behind.

Pronation—The act of turning the palm of the hand downward. (Opposite: Supination).

Proximal—Nearest to the body, or center, or some other point considered as the center of a system.

Radius—The shorter, thicker bone of the forearm.

Residual—Remaining in the stump, refers to motion, function, etc.

Rotation—Movement about an axis.

Sagittal—Pertaining to the anteroposterior median plane of the body (sagittal plane), the median vertical plane of the body dividing it into right and left halves.

Styloid of the Ulna—The bony prominence at the lateral side of the wrist when the palm is turned down.

Superior—Higher, denoting the upper of two parts. Also towards the head.

Supination—The turning of the palm of the hand upward. (Opposite: Pronation).

Tibia—The inner, front, larger bone of the leg below the knee.

Transverse—Crosswise; at right angles to the longitudinal axis of the body.

Trochanter—Bony prominence at the top of the femur.

Ulna—The inner, longer bone of the forearm.

ABBREVIATIONS

AE—Above-elbow.

AK—Above-knee.

BE—Below-elbow.

BK—Below-knee.

CKJ—Effective center of rotation of knee joint, about ¾" above the joint space.

EB—End-bearing. Also Elbow-bearing. (Disarticulation by analogy).

KB—Knee-bearing. (Disarticulation.)

OPERATIONS

Chopart—An amputation of the foot consisting of a disarticulation through the tarsal joints, leaving only the os calcis and the astragalus.

Cineplasty—A plastic surgical procedure to produce a muscle motor used to initiate motion of a prosthesis.

Disarticulation—Separation at a joint; amputation through a joint—the proximal part of the joint being left in the stump.

Gritti-Stokes—(For amputation above the knee-joint). The patella is preserved in a long anterior flap, and, having had a thin slice removed from its deep surface, is secured in apposition with the femur, the latter having been deprived of its articular surface by being sewn through the condyles. Stokes—the same as Gritti's operation, except that section of the femur is made above the condyles. Intended to give end-bearing.

Lisfranc—A disarticulation of the metatarsal bones from the tarsus.

Pirogoff—(For amputation through the foot). A partial osteoplastic operation in which the os calcis is sawed through obliquely from above and downward and forward, and the posterior portion is brought up and secured against the surface made by sawing off the lower ends of the tibia and fibula. Intended to give end-bearing stump; formerly used in Europe.

Syme's—Amputation at the ankle joint, the malleoli being sawn through and a flap made with the skin of the heel. Intended to give end-bearing.

Tenoplasty—Plastic surgery of a tendon.

PREFERRED USAGE

Suction Socket—(Preferred to vacuum socket). Socket for limb held to the stump by wearer with atmospheric pressure when the limb is unsupported.

Socket—(Preferred to "bucket"). Any container for amputation stump; may or may not be integral with structural member.

Shank—(Preferred to "shin piece"). Lower portion of an artificial limb, between the knee and the ankle.

PROSTHETIC TERMS

Active Operation—Operation of a device by means of a control attached to the harness without using the other hand. (Opposite: Manual Operation).

Breakout—The hollow, plaster mold which is used to form the plastic socket. (Also called the "slush mold").

Build-Up—The wax or plaster extension which is added to the stump replica to represent the amputated section of the arm or forearm.

Cable—Stainless steel cable, 3/64" in diameter, used for operating prosthetic devices.

Cable Housing—Small diameter, stainless steel wire wound similar to extension spring, through which the control cable passes. The housing which is held in position by retainers, decreases the bending of the cable and thereby increases efficiency and decreases wear.

Cast—The plaster of paris bandage socket which is obtained directly from the stump. Also called the "primary wrap."

Check Socket—A wax or paraffin impregnated stockinette socket which is made over the master mold and then fitted to the stump to determine proper shaping of the master mold.

Dual Control—A control system in which one cable is used for both forearm lift and terminal device operation. A second cable operates the elbow lock.

Fair Lead—A section of cable housing or tubing which serves to guide the control cable smoothly around a bend.

Flexible Hinges or Joints—Non-rigid or non-fixed center hinges for below-elbow prostheses.

Gainer Hinge—A below-elbow hinge which provides a greater amount of motion in the forearm than in the stump socket which drives the forearm. Also called "step-up hinge."

Housing Cross Bar—A small cylindrical metal piece through which cable housing is threaded. The housing cross bar is held in a leather retainer attached to a triceps pad in certain below-elbow harness types.

Insert Hinge—A below-elbow hinge which has a fixed pivot center, but is attached to a leather arm cuff to give slight, independent motion of the forearm with respect to the cuff.

Manual Operation—Operation of a device by means of the normal hand. (Opposite: Active Operation).

Master Mold—The solid, plaster reproduction of the stump which is obtained by pouring the primary wrap full of plaster.

Negative Mold—A form into which plaster is poured to form a male, or positive mold. This may be the Primary Wrap taken on the stump or the split mold from the solid, plaster mold of the stump.

Primary Wrap—The plaster of paris bandage wrap made on the stump as the first step in the fabrication process.

Purchase—The amount of leverage obtained by the stump in the socket.

Retainer—A small brass fitting threaded to receive the cable housing. The retainer swivels in a base plate which is attached to the prosthesis in such a position as to guide the control cable along the most efficient line.

Rigid Hinge or Joint—A steel hinge consisting of forearm and arm sections which have a fixed or constant pivot location and a single plane of motion.

Single Control—The below-elbow control system in which the control cable is used only to operate the terminal device.

Split-Mold—A two-piece mold formed around the solid plaster mold of the stump, which is used to make hollow molds, or "breakouts", the same shape and size as the master.

Torque—The force which causes rotation about a pivot. It is the product of the applied force times the perpendicular distance of that force from the pivot.

Triceps Pad—A below-elbow prosthesis component which is located on the posterior portion of the arm and to which is fastened the harness straps and housing cross bar loop or base plate.

Triple Control—A control system in which three separate control cables are used; one of which operates the terminal device, one the forearm lift, and one the elbow lock.

Voluntary Closing—A device in which the closing is controlled by the amputee through his harness, while springs or other mechanical means control the opening.

Voluntary Opening—A device in which the opening is controlled by the amputee through his harness, while springs or rubber bands control the closing.

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CROSS-COUNTRY REPORT

What the Regions are Doing

REGION VIII SITS FOR ITS PHOTOGRAPH
Members on hand for the Oklahoma City Meeting, March 20

New York Plans '55 Seminar

Spurred on by the success of this year's Seminar, the Metropolitan Association is already making plans for the 1955 Seminar with the promise that it will be "bigger and better." Scheduled again for the Roosevelt Hotel on April 29 and 30, the two-day technical sessions will be directed by a Committee headed by Mrs. Mary Dorsch. Other members included A. A. Margoe, Leo Waller, Fred Eschen, Lester Smith and William Spiro, Secretary.

Glenn E. Jackson, Executive Director of OALMA, was the featured speaker at the 1954 Medical and Technical Assembly conducted by the Metropolitan Association and Region II of OALMA, April 30 and May 1.

Among the outstanding specialists who took part in the two-day program were:

1. Dr. Lawrence E. Abt, whose paper appears on page 19 of this issue.

2. Dr. Allan Russek, Director of Prosthetic Service, New York Rehabilitation Institute, who reviewed "The Relationships Between the Medical Profession and the Prosthetist."

3. Dr. T. Campbell Thompson, President of the Academy of Orthopaedic Surgeons.

4. Dr. John L. Young of the Mellon Institute of Industrial Research.

5. Miss Signe Brunnstrom of New York University Center who spoke on "The Bio-Mechanics of the Standing Position."

6. Dr. Arthur S. Abramson, Chief of the Physical Medicine Service at the Bronx VA Hospital, whose paper on "The Bracing of Paraplegics" has been scheduled for the September issue of this *Journal.*

A panel of experts headed by Nathan M. Slater, reviewed "Compensation and Its Relationship to Amputee Beneficiaries." Mr. Slater is Senior Counsellor for the New York Division of Rehabilitation.

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OALMA'S EXHIBIT IN WASHINGTON

OALMA was one of 25 organizations taking part in the "Exposition on Rehabilitation and Employment of the Physically Handicapped" in Washington, April 28-30. Shown above viewing the Exhibit are, left to right, front row: Henry C. Feller and Harry Montgomery of the J. E. Hanger Co.; Charles Ross of R. & G. Orthopedic Appliances; back row: Jack Virando and Victor L. Caron of Universal Artificial Limb Co.

Miss Rosemary Becker, concert pianist from St. Paul, Minn., attended the Seminar with her father and presented a delightful program of piano selections. Her appearance at the Seminar banquet evoked memories of past occasions at which her talents have delighted OALMA members.

REGION I—THE NEW ENGLAND STATES

At our April meeting we had a panel discussion on Public Relations as used by the Orthotists and Prosthetists. We approached the problem both from the patient's standpoint and the viewpoint of the various agencies. It was a very interesting evening, and I think all the men present profited a great deal. The most important point brought out was that of service and the consensus of opinion was that it is the service and attention to the needs of the handicapped which makes for a good facility.

Our May meeting featured Jerry Leavy, of Hosmer-Dorrance, speaking on New Development in Upper Extremity Prostheses. We're always glad to see Jerry and hope he comes back soon.

The New England Council extends a cordial invitation to all OALMA members to meet with them whenever they are in Boston.

JOHN BUCKLEY,
Secretary

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REGION V—OHIO, WEST VIRGINIA AND MICHIGAN

Region V held their Regional Meeting on May 8th and 9th in Toledo, Ohio at the Commodore-Perry Hotel. The meeting opened with cocktails on Saturday evening followed by dinner. Mr. Glenn Jackson from the Washington office attended and gave a talk on his National Tour. Jerry Leavy, a double arm amputee, gave an impressive demonstration on the use of two hooks. Saturday evening was topped off with an excellent show by a Magician.

Sunday morning, the meeting opened with the film "Dust or Destiny". Dr. Young of Mellon Institute talked on plastics and braces; Paul Leimkuehler of Cleveland gave a demonstration of leg alignment with a Bock jig; Adele and Milton Tenenbaum gave an instruction class on hand cast techniques; and Mr. Peach of Pope Foundation talked on new braces. The Convention closed with a business meeting, at which time Karl Brenner of Detroit was elected President of the Region to act as Chairman of the next meeeting; Lou Barghausen of Columbus was elected Vice President; and Al Kloene of Toledo was elected Secretary and Treasurer. Paul Leimkuehler of Cleveland is still the Regional Director. The meeting was attended by fifty OALMA members.

Region VI Members Attend Sierra Workshop

Prosthetists and therapists in the Chicago area were enrolled in the first workshop Seminar held by the Sierra Engineering Company in Chicago on May 1. The Seminar was planned for the pooling of knowledge with the manufacturer supplying information on the parts used in the prosthetic prescription, and in turn receiving suggestions for improvements from the prosthetists.

The Program included lectures on 1. "Using Accounting Data To Control Operations" by H. L. Daulton; 2. "Plastic Arms, Their History and Fabrication" by Robert V. Bush, and 3. "Installation and Maintenance of the Sierra APRL Hand" by F. A. Ritterrath.

Robert Bush and James O'Brien of Sierra served as instructors in the practical workshop during which U/E appliances were taken apart and reassembled by the interested prosthetists and therapists.

The registration for the Seminar included:

CHICAGO: Alvin S. Carlstrom, American Limb Co.; Louis Cotovsky, University of Illinois; Dr. Clinton L. Compere; Alfred Denison, of J. E. Hanger, Inc.; S. J. Houtz, University of Illinois; Evelyn Horton, Div. of Voc. Rehab.; Kenneth Heltsley, Bardach-Schoene Co.; C. C. Scott, Koebers Artificial Limb Co.; Robert Thompson, V.A. Regional Office; Joseph Vesely, J. E. Hanger, Inc.; Edward R. Valestin, Bardach-Schoene Co.

HINES, ILLINOIS: Bonnie Below, Eli A. Ellis; E. Houk; Walter J. Piotrowicz, Carl C. Purcell, Nancy J. Shook, Marcella Shipton, Erma Smith, F. R. Stilwell and Mrs. Fred Skinner, all of the Veterans Hospital, at Hines.

MILWAUKEE: R. G. Bidwell, Robert N. Bidwell, R. G. Fehn, Glenn Grant, Ray Gustin, and Tokio Shiomichi, all of the House of Bidwell.

SPRINGFIELD, ILLINOIS: Roy W. Brooks, Div. of Voc. Rehab.

OAK PARK, ILLINOIS: Alma Bond, of Hines Veterans Hospital; William, Gus and Al Scheck, and Patrick E. Siress, all of Scheck & Siress Prosthetics.

DAYTON, OHIO: H. P. Murka, Fidelity Orthopedic.

PEORIA, ILLINOIS: W. R. Barnett and Rudolph G. Jungst of Rudolph Jungst Artificial Limb Co.

DETROIT, MICH.: Charles Wright of Wright & Filippis, and Harold A. Caton of the E. H. Rowley Co.

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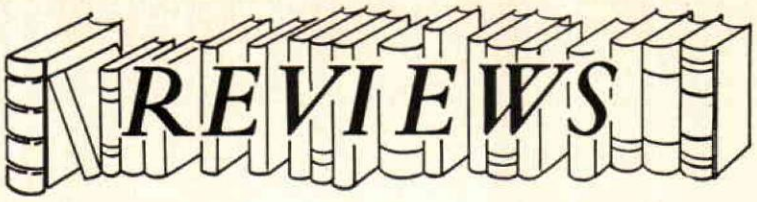

SURGICAL APPLIANCE TECHNICIAN'S HANDBOOK

By Howard L. Boyland, M.D., Cincinnati, Ohio, Surgical Appliances Industries, Inc. 1954. 459 p. illus. $10.00.

Reviewed by Mrs. Betty Hanicke, Secy., P. W. Hanicke Mfg. Co., Kansas City, Mo.

Dr. Howard L. Boyland, author of "The Surgical Appliance Technician's Handbook", is associated with Surgical Appliance Industries as their Medical Director and for the past number of years has conducted schools on anatomy, selection and fitting of corrective mechanical appliances, and the operating and managing of a surgical appliance department.

I have had the privilege of attending one of Dr. Boyland's schools and it was certainly time well spent. One might think that since the school is conducted by a commercial organization, it would be purely for sales promotion purposes. For those of you who have not attended, may I say that it is far from that as Truform products are not specifically mentioned but are used only for demonstration and teaching purposes. Dr. Boyland's classes are quite thorough and one can't help but return home with much knowledge on anatomy as well as on correct and practical fitting procedures.

"The Surgical Appliance Technician's Handbook" is a must for your library as an excellent reference and should be within easy reach of every surgical and orthopedic appliance technician. This book is written on a highly ethical plane.

The first ten chapters are devoted to the anatomy of the anterior portion of the torso, the different types of hernias and the proper selection and application of supports. It is written with a minimum of technical terms and is well illustrated. The anatomy given is only that which is important to us so that we may better understand the underlying principles and reactions of internal forces with regard to proper application of supports.

The next several chapters are on orthopedics, giving an anatomical background on common orthopedic conditions for which we make braces and supports. This portion of the book describes the spinal column, pelvic girdle and gives quite a thorough description of all component parts of the posterior portion of the torso. Also included in these chapters are disorders of the sacro-iliac and lumbosacral joints; herniated discs and fractures; curvatures of the spine, and cervical and pelvic traction.

The following chapters cover obesity; ptosis conditions; postoperative, pre-natal and post-natal conditions; disorders of the veins of the lower extremities; elastic hosiery, and scrotal supports.

The last section of the book is concerned with the surgical appliance department in your store. This takes care of the fitting rooms, stock control, equipment necessary, cooperation with medical profession, sources of business, etc.

While this book is written primarily for the surgical appliance technician there is valuable information for every member of our industry regardless of whether they specialize in one certain phase.

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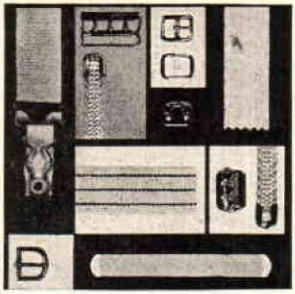

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REVIEWS—(Cont'd.)

PHYSICAL MEDICINE AND REHABILITATION

Edited by Basil Kiernander

Published by Charles C. Thomas, Springfield, Illinois, 1953-610 p. $12.85.

Reviewed by R. V. Horne, Horne Orthopedic Appliance Company.

This book has been compiled from work submitted by twenty-six different authors on this subject. It is recommended to all who deal with the handicapped and patients needing the aids and facilities of physical medicine, especially physicians, surgeons, physical therapists, occupational therapists, and those directly or indirectly connected with the rehabilitation of a patient after a physical illness.

Very little is mentioned throughout the book as to the importance of the orthotist and prosthetist or anything connected directly to his work, except for a few statements in several brief paragraphs mentioning that splints and appliances are sometimes used in the rehabilitation of some types of physical ailments.

The book has some good charts and illustrations of the nerve, muscle and motor systems of the body, as well as good posture illustrations. Also, it will give the orthotist and prosthetist a better understanding of the duties and problems of those connected with physical medicine and how our profession can educate these people as to the help and service the orthotist and prosthetist can give to them.

TRIUMPH OF LOVE

By Leona S. Bruckner. Simon & Schuster, New York, 1954.

213 p. $3.00

Reviewed by Kay Leimkuehler.

Billy Bruckner, now four years old, is the subject of the story. He was born without arms, and has only three vestigal fingers at the short stump of a right arm. The story is written by his very charming Mother, whom I had the pleasure of meeting when she was in Cleveland. She is a native Clevelander, now living in New York. This is her first book, and I think she has done a very excellent job.

She tells the story from the time Billy was born and those terrible first few months after they decided to tell everyone their son had died. They considered not raising the child themselves, but after a crisis in the baby's illness and some blunt talk by a great-hearted paraplegic physician, they became convinced they should rear Billy in their own home, and with their daughter, who was then three years old.

Mrs. Bruckner tells in detail her and her husband's efforts to raise their son as a normal youngster, and the mental and physical obstacles overcome in teaching an exceedingly bright and smiling youngster to adjust himself to handicaps imposed by nature. There were emotional adjustments to be made between themselves, between themselves and the child, and between themselves and too curious outsiders. The uphill struggle is recorded frankly and with just the right touch of maternal sentimentality.

FUNDAMENTALS OF CLINICAL ORTHOPEDICS

By Peter A. Cassagrande, M.D., and Harold M. Frost, Jr., M.D.

Published by Grune & Stratton 1953 New York, N. Y. 582 pages.

Reviewed by: Joseph J. Ufheil, Orthopedic Technologist, Prosthetic and Sensory Aids Service, Veterans Administration.

This publication gives a comprehensive perspective of Orthopedics. Primarily this work is intended for the student of medicine, as a ready reference of basic and scientific material. The authors, utilizing their experience to edit a vast amount of clinical material, embodying the hard

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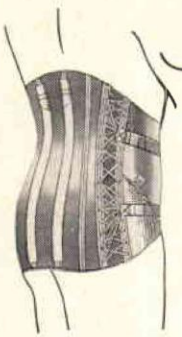

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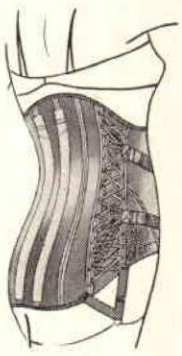

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earned knowledge of a great many men, have developed an abridged treatise and a ready reference volume of the multiple orthopedic subjects for the busy reader. The orthotist or prosthetist, who works in conjunction with the orthopedic surgeon will find that this publication will satisfy, to some extent, his desire to further his knowledge and understanding of the Fundamentals of Clinical Orthopedics.

The authors have arranged this book in nine sections. Section I deals with Basic Science as it applies to Clinical Orthopedics and consists of seven chapters. Chapter 2 of this section should be of special interest to every orthotist and prosthetist as it defines and illustrates scientific information concerning the skin, the nervous system, collagenous tissues, muscle and bone. Chapters 5, 6 and 7 deal with the Physiological Consideration of Joints, Function of Joints, Trunk Dynamics, The Upper and Lower Extremity, Function of the Foot, Union, Delayed Union and Non-Union of Fractures, Immobilization, Splinting and Plaster of Paris Techniques.

Sections II, III, IV, V, VI, and VII are devoted to lucid discussions of the various forms of affections of the anatomy; among which are Congenital Affections, Affections of the Bone, Affections of the Nerves, Muscle and Blood Vessels. Tumors and Allied Disorders classified in anatomical areas are given separate consideration.

Chapters 31, 32 and 33 of Section VIII are devoted to amputations, prostheses, braces, clinical application of braces, shoes and shoe corrections. The foregoing topics deal directly with the immediate problems of the orthotist and prosthetist and should receive a hearty welcome. Mr. Eric Balke, a certified orthotist of Buffalo, New York, is credited with contributing material for this section.

In summary, this treatise is a comprehensive and lucid discussion of Clinical Orthopedics and should be a valuable reference when the orthotist or prosthetist is confronted with and has to manage orthopedic problems as they apply to prostheses, braces and their application.

REHABILITATION CENTERS IN THE UNITED STATES

By Henry Redkey.

Published by the National Society for Crippled Children and Adults, Chicago, 1953. 128 p. $1.00.

Reviewed by Wm. J. Ferris, Jr., Director, Region I, OALMA.

This informative, up-to-the-minute recent publication is comprehensive in its analytical coverage of the facilities established for rehabilitation in this country.

The report outlines the needs and requirements of trained personnel, physical facilities and patient load potential for the establishment of additional centers or clinics.

To the prosthetist and orthotist this report must indicate professional thinking and trends vitally affecting our profession now and increasingly so in the future.

A study of the report and a personal knowledge of local centers and clinics indicate the manner in which control and supervision of patients requiring prosthetics or orthopedic appliances is being extended and emphasized.

It follows, our people must progressively make ourselves known to these facilities as to professional standing, standards, code of ethics, available services, and desire to cooperate to the fullest extent possible.

Our people in New England have had some ten years, experience in cooperating with several different types of facilities for rehabilitation and have been successful in establishing a very desirable recognition professionally to the extent we are so consulted and invited to participate in the various programs.

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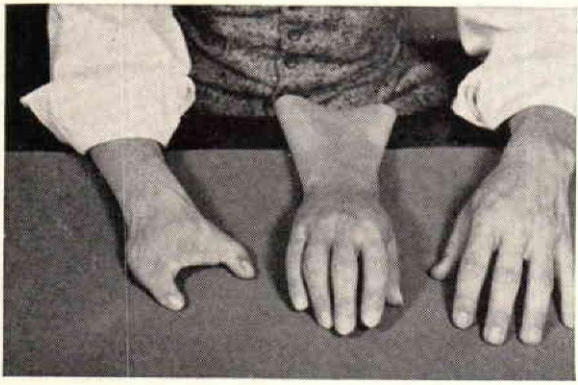

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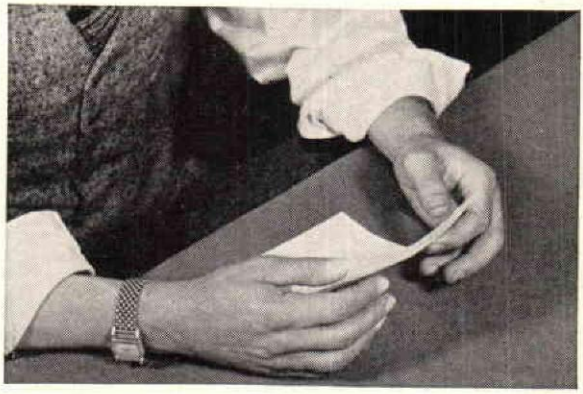

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REVIEWS—(Cont'd.)

Our complete co-operation and recognition of necessity must result in much improved business relations.

In many instances the close working relationship has resulted in release from disturbing situations we encounter in our work, in that consideration is given our referral of the patient back to the clinic or center and it was medically determined that remedial action was other than prosthetic or orthopedic.

It is recommended the prosthetist and orthotist read and study this report to determine possible economic effects these facilities may have in their local areas and the ways in which they might otherwise benefit.

In Memoriam

LARRY WEINBERG, owner of the Expert Surgical Company, Jamaica, New York, died suddenly April 16. Mr. Weinberg was trained as an orthopedic technician in Germany. Arriving in the United States in 1935 he was associated with the Park Surgical Company, the Eisen Surgical Co., and the Fulton Surgical Co. In 1943 he opened his own company at Jamaica. This prospered and in 1948 he moved to a larger building which the company now operates. Mr. Weinbegr was a member of the MOALMA and served on the 1953 Journal Committee. He is survived by his wife, Mrs. Irene Weinberg, who is continuing as head of the Expert Surgical Appliance Company.

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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.