

Notes and News

The Bulletin of Prosthetics Research welcomes contributions to this department. Receipt of clippings, meeting programs listing speakers and titles, or other material that calls our attention to a newsworthy event, will be appreciated.

DR. LARRY T. MCKINSTRY NEW HEAD OF REHABILITATION IN THE VA

A former combat physician in Vietnam, Larry T. McKinstry, M.D., has been selected as Deputy Assistant Chief Medical Director for Rehabilitation Services in the Veterans Administration. The appointment, made by Chief Medical Director Donald L. Custis, M.D., gives Dr. McKinstry responsibility for VA's services in rehabilitation medicine, spinal cord injury, prosthetic and sensory aids, audiology and speech pathology, and blind rehabilitation.

Dr. McKinstry was one of the first Vietnam veteran physicians employed by the VA. He served with the U.S. Army's First Cavalry (Air Mobile) Division in Vietnam during 1965 and 1966. Following discharge in 1966, Dr. McKinstry joined the VA Medical staff at Los Angeles VA Medical Center and later became chief of rehabilitation medicine at the Biloxi, Mississippi, VA Medical Center and a faculty member at Louisiana State University School of Medicine.

In his 14 years with the VA, Dr. McKinstry has had an opportunity to apply his special knowledge of Vietnam veterans in a variety of VA positions. He was chief of staff of the Knoxville, Iowa, VA Medical Center and special advisor to VA Central Office for the development of rehabilitation policies. In his new position, he serves as special assistant to the chief medical director for rehabilitation programs throughout the VA's nationwide system of 172 medical centers.

Born in Monticello, Arkansas, Dr. McKinstry earned his B.S. degree at Centenary College, Shreveport, Louisiana, and his M.D. at Louisiana State University Medical School in 1963.

HOLSBERG RETIRES AS ACTING DIRECTOR, PSAS

Wilfred G. Holsberg, Acting Director of the Prosthetic and Sensory Aids Service in VA Central Office, and Editorial Consultant to the Bulletin of Prosthetics Research, retired February 29, 1980. He received from the Administrator the Distinguished Career Award, a gold medal and certificate for his 34 years of outstanding service.

Mr. Holsberg graduated from Wentworth Technical Institute in Boston in steam and electrical engineering in 1939. During World War II he served in the Army Air Corps, where he received the Distinguished Service Cross. While serving as navigator in action over Toulon, France, he was wounded; as a result he became a bilateral below-knee amputee. After rehabilitation, he returned to active duty as Air Force liaison officer at Walter Reed Hospital from November 1944 until his discharge in December 1945. For this work he received the Army Commendation Medal.

Mr. Holsberg joined the Veterans Administration in March 1946 as a contact representative. Beginning

in the early days of the unique VA prosthetics program, he was prosthetics representative in Boston from 1946 to 1952, then prosthetics area chief of the Boston Medical Area (covering New York and New England) from 1952 to 1964. He then moved to VA Central Office in Washington where he served in several increasingly responsible roles until his retirement. He also served on a consultant advisory panel for the House Committee on Science and Technology.

He has maintained his engineering interests and award-winning energies and talent into retirement. His recent welded metal sculpture of geese won a prize in a Montgomery County contest.

NEW VA PROSTHETICS SERVICE HEAD APPOINTED

Frederick Downs, Jr., a combat-wounded Vietnam veteran and VA employee since 1974, was appointed Director of the VA Prosthetics Service to succeed Wilfred Holsberg, a bilateral below-knee amputee from World War II, who retired Feb. 29, 1980.

Mr. Downs, whose war experiences are described in his book, *The Killing Zone*, won the Silver Star, the Bronze Star (with "V" for valor), the Vietnamese Cross of Gallantry, the Combat Infantryman's Badge, and four Purple Hearts while serving in Vietnam as an infantry officer. One of his combat wounds was the loss of his left arm.

The new director, who earned his bachelor's and master's degrees at the University of Denver will oversee the specialists in the VA's system of hospitals who are responsible for providing artificial limbs and other mobility devices, and sensory aids, to veterans in need of them.

NARIC HAS NEW DIRECTOR

Eleanor Lynch Biscoe has been appointed director of the National Rehabilitation Information Center (NARIC), it was announced recently by Dr. Elizabeth Stone, the Center's Program Manager.

Ms. Biscoe succeeds Judith Senkevitch who resigned after having served in the post since the Center's founding in 1977. Ms. Biscoe, for the past year, has been program director for a project on Statewide Systems of Continuing Education for Librarians at The Catholic University of America. Previously, she was assistant Professor and Staff Development Officer for the University of Tennessee, Knoxville Library, the university from which she received her Bachelor, Master in Library Science, and Master in Public Administration degrees.

Ms. Senkevitch, at a recent reception, received high tribute for her role in the founding and growth of NARIC during her three years as director.

WILLIAM BERENBERG, M.D. RECEIVES HARVARD AWARD

Dr. William Berenberg, Project Director of the Harvard-M.I.T. Rehabilitation Engineering Center, recently received The Charles A. Janeway Award from Harvard University. This award is presented annually to a member of the staff for excellence in teaching. Dr. Berenberg has primary responsibility for clinical teaching in the area of rehabilitation engineering for Harvard Medical School students.

CLINIC NAMED IN HONOR OF DR. VERNON L. NICKEL

At the formal dedication of a new 32-bed addition to the clinic building at Rancho Los Amigos Hospital, Downey, California, the clinic building was named the Vernon L. Nickel Building in honor of Dr. Nickel, recently Director of the nation-wide Rehabilitation Engineering Research and Development Service for the Veterans Administration, and previously Medical Director and Chief of Surgical Services at the hospital.

Dr. Nickel was largely responsible for the comprehensive rehabilitation program at Rancho Los Amigos for physically handicapped patients, for which the hospital is internationally known. He joined the hospital staff in 1952 when it was a center for patients recovering from poliomyelitis, and pioneered many of the rehabilitative programs in use today. The new addition to the Nickel Building contains 20 surgical nursing beds and a 12-bed surgical intensive-care unit. The 18,000-square-foot addition, made possible by federal funding, was completed after 5 years of planning and construction.

Dr. Nickel, guest of honor at the dedication ceremonies, was presented with a plaque commemorating the occasion by Dr. Robert L. Waters, currently Chief of Surgical Services at the hospital.

1980 MIGEL MEDAL AWARDS

The Migel Medal, presented annually by the American Foundation for the Blind for outstanding service in work for the blind, was awarded for 1980 to Miss Josephine L. Taylor, education program officer, Division of Personnel Preparation, Bureau of Education for the Handicapped, U.S. Department of Education, and to Morton Pepper, Esq., a member of the New York law firm of Pepper and Pepper, and currently first vice-president and chairman of the Nominations Committee of the National Accreditation Council for Agencies Serving the Blind and Visually Handicapped.

The awards were presented on Foundation Day, October 23, at AFB headquarters in New York City. Foundation Day is also the day of the AFB Board of Trustees annual meeting.

The medal, established in 1937 to honor the late M. C. Migel, first president of the Foundation, is given annually in recognition of outstanding contributions in

education, rehabilitation, and social welfare concerned with blind persons, both directly in the field of blindness and outside the blindness system.

Miss Taylor received the professional award and Mr. Pepper received the layman award.

FOUNDATIONS OF ORIENTATION AND MOBILITY

Foundations of Orientation and Mobility, edited by Richard L. Welsh and Bruce B. Blasch, was published by the American Foundation for the Blind, 15 W. 16th St., New York, N.Y. 10011, early in 1980. Readers of this Bulletin will recall the article on "Mobility Devices" by Leicester W. Farmer (BPR 10-30, Fall 1978), pre-printed from this 672-page book where it now appears as Chapter 11.

The Preface by Russell C. Williams, retired Chief of Blind Rehabilitation in VA Central Office and for many earlier years Chief of the Blind Rehabilitation Center at Hines VA Hospital, recounts something of the history and philosophy of orientation and mobility training for the blind. He notes the effort to give scientific validity to the budding profession.

Though this book is intended primarily as a textbook for students of orientation and mobility training for the blind, much of the book has information directly useful not only to research workers but to clinicians working with many other handicaps. Indeed, Dr. Blasch now heads a program on "generic mobility" to train mobility specialists to work with individuals having a wide variety of handicaps or combinations. Many of the chapters surveying other fields (such as audition) for the benefit of the O&M instructor might well be useful for those working in orthopedic appliance clinic teams with elderly patients. Chapter 7, "Low Vision" and Chapter 12, "Additional Handicaps," should be particularly helpful to specialists in many other fields. Chapter 14, "Environmental Modifications," discusses architectural barriers in relation to low vision and blindness.

Numerous references and illustrations are provided. There is an index.

THE DEMOGRAPHY OF BLINDNESS THROUGHOUT THE WORLD, A NEW REPORT FROM AFB

Statistics on the numbers of individuals with various types of impairments are notoriously incomplete, to the frustration of planners, researchers, prospective manufacturers, budgeters, and administrators. Even if researchers are willing to attempt to solve the obvious problems of small numbers of readily visible disabled persons, in the absence of data there may be difficulties in securing continuing support for the necessary transition to broader evaluation, tooling, and refined production models. If the problems of demographic data are difficult with an easily recognizable, literally clean-cut disability like amputation, they are far

more complex with a diffuse and broad-spectrum problem such as paralysis or visual impairments, ranging from trivial to severe.

A new report, *The Demography of Blindness Throughout the World*, by Hyman Goldstein, Ph. D., New York, American Foundation for the Blind Research Series No. 26, 1980, addresses the problems of definition of blindness, the causes of blindness, and methods for obtaining data. It then discusses the value and limitation of data on the incidence (newly diagnosed cases) and the prevalence (total cases alive, still blind, and still residing in the area of concern).

The report then presents and discusses a wide variety of statistics and estimates for the United States as a whole or for certain states in the U.S. Model Reporting Area representing about $\frac{1}{3}$ the total U.S. population. Blindness prevalence is then estimated in different countries throughout the world, attempting to compare data for countries using the same definitions of blindness. The problems and the needs for research are discussed.

An appendix by Dr. Goldstein and Molyi-Eldin Said, F.R.C.S., Ed. describes the Blindness Registration Demonstration Project in Egypt, 1965–68, under an agreement between the University of Alexandria and the National Institutes of Health Special Foreign Currency Program under P.L. 480. This study was carried out, after a publicity campaign, by six teams examining 4 percent samples of the populations of two districts of Alexandria and of a series of rural villages.

Though the reader cannot find a simple, accurate number of "the blind," he will find a wealth of provocative data and numerous challenging problems.

NATIONAL CRYSTAL IDENTIFICATION CENTER PROPOSED BY VETERANS ADMINISTRATION

A new National VA Crystal Identification Center has been proposed and is currently being assessed for potential usage by the VA Central Office. The new Center, once approved, will be incorporated into the existing Molecular Structure Laboratory, Research Service, Wood (Wisconsin) VA Medical Center to provide a key facility for the care of veteran patients and in VA medical research.

The Center, as proposed, will specialize in high resolution X-ray powder diffraction analysis for the identification of crystal materials, with emphasis on the crystal-deposition diseases and renal stone disease. In these diseases, the identification of the crystalline agents is often crucial in the differential diagnosis and assessment of proper therapeutic regimes. A positive identification is based on the identification and characterization of crystalline deposits in joint, cartilaginous structures, tissues, organs, or urine. The Center is envisioned as a supplemental clinical and research laboratory for the identification and complete characterization of crystalline materials for which the

preliminary characterization has been problematic, rather than as a general clearinghouse for crystalline identification.

The accuracy and sensitivity of the X-ray powder diffraction method affords the ultimate standard in the characterization of crystalline substances, and is especially applicable to the analysis of medical specimens. Many of the crystalline substances observed in vivo are not uniquely characterized with the standard microscopic, chemical, and refractive oil techniques. By providing exact and complete characterization of both in vivo and in vitro crystalline samples, the proposed Center will form a strong addition to the excellent laboratories throughout the VA medical system.

As projected, VA Medical Centers will forward crystalline samples to the proposed Center, probably in one of four forms: 1) synovial fluids, 2) tissues or biopsies, 3) renal calculi, and 4) research samples. After analysis turnaround time of 3-to-5 days, copies of the diffraction analysis of the samples will be sent directly to the referring VA Medical Center and a copy will be retained at the National VA Crystal Identification Center.

Questions or comments regarding the applicability and implementation of the proposed Center should be addressed to:

Dr. Neil Mandel
Chief, Molecular Structure Laboratory
Research Service 695/151
VA Medical Center 5000 West National Ave.
Wood, (Milwaukee) Wisconsin 53193

IMPROVED IN-FLIGHT ACCESS SLATED

"Access to the Skies," an international, two-phase program to make all commercial passenger planes more accessible for the disabled and elderly, was announced by Rehabilitation International U.S.A. (RIUSA). The first phase of the new program involves making the lavatory more accessible, creating an onboard wheelchair, and providing movable arm rests. The second phase will focus on all other needs of the disabled and elderly in airplanes.

Presently targeted are the wide-body planes now being built; the 747, 767, L-1011, DC-10, and Airbus A-300. About 50 air carriers to date, from the United States, Europe, Africa, and the Far East either are participating or have expressed interest in doing so. Several have ordered new planes with more accessible features.

Prototype chairs are already available and some items have been flight tested. A systematic testing and evaluation program is also underway and the first access-improved planes are scheduled to fly late in 1980.

A special committee of the Aerospace Industries Association is spearheading the work. Members of the committee are Lockheed, Boeing, and McDonnell-Douglas, with Airbus recently joining. The disabled are

well represented in the program management; four members of the governing Technical Committee are disabled, including the Honorary Chairman and the International Chairman. Disabled participants have been present at all meetings and involved in all program activities. The Paralyzed Veterans of America (PVA) is assisting the program by providing a systematized and comprehensive involvement for the disabled community.

While the focus of the program's first phase is on wide-body airplanes, the second phase will seek to cover all other planes. Equipment under development will be interchangeable and a retrofit kit is envisioned which will enable the airlines to make any plane flying accessible. Thus, narrow-body planes such as the 727 and DC-9, which present problems with entering and exiting service and lavatories, will also be improved.

The first phase also aims to provide more accessibility for the largest number of disabled and elderly who travel by air. A major focus will be the paraplegic, and service to quadriplegics. As research overcomes the problems of engineering and space, the percentage of those served will rise accordingly. The overall program goal is 100 percent.

While in-flight accessibility is the primary concern, ground problems have not been overlooked. Aircraft executives working on the program are cabin engineers without jurisdiction on ground services, but improved wheelchairs for movement from the gate to the airplane, including going up steps, are already being tested, and airport problems are expected to receive full consideration.

Anyone with a special problem while flying, or who may have a unique suggestion for improving the engineering and configuration of the cabins of airplanes, should write to:

Mr. Peter Kavaloski
Chairman, TARC Committee 218-2
Senior Design Specialist
L-1011 Interiors
The Lockheed-California Company
P.O. Box 551
Burbank, California 91520

Remember, please do not write to Mr. Kavaloski about problems incurred with airline staff, and such. He is concerned only with engineering.

For more information on the program, write to:

Ellis Reida
Access to the Skies
Rehabilitation International U.S.A.
20 West 40th Street
New York, New York 10018.

"COMPUTERS-TO-AID-THE-HANDICAPPED" CONTEST

Johns Hopkins University announced the first nationwide search for ideas and inventions to aid the handicapped through computer technology, on November 25, 1980, at the National Press Club in Washington, D.C. Highlighting the search is a contest, to run until June 1981, for devices, systems, or computer programs to aid the disabled in the following categories:

1. blind, deaf, and mentally retarded,
2. individuals with learning disabilities, or neurological or neuromuscular conditions.
3. orthopedically handicapped.

The contest is open to computer professionals, amateurs, and students throughout the United States. Grants for the venture were provided by the National Science Foundation and Tandy Corporation's Radio Shack Division, a retailer of home computers.

Mr. Paul L. Hazan of the University's Applied Physics Laboratory, director of the search project, said that 10 regional contests would each select 10 candidates for the national competition. A grand prize of \$10,000 and 100 other national and regional awards, including personal computer systems donated by such firms as Apple, Radio Shack, and Texas Instruments, will be made for winning submissions. Awards are scheduled for each disability category.

The major objectives of the contest are to focus the power of computing technology on the urgent needs of millions of handicapped citizens, and to harness individual innovation and creativity on a national basis. Special meetings on computing for the handicapped were to be held at rehabilitation centers and technical society conferences across the country early in 1981.

The January 1981 issue of IEEE Transactions on Computers, published by the IEEE Computer Society, will feature papers on computers and the handicapped. Radio and television features are planned. The contest will culminate in an exhibit, banquet, and a 2-day symposium bringing together the prize-winning inventors, potential disabled users, manufacturers, academic experts, and government officials. The goal is to stimulate practical applications of these ideas.

A book of proceedings will make available abstracts by the 100 winners. Further information on the contest may be obtained from:

Mr. Paul L. Hazan
Personal Computing for the Handicapped
Johns Hopkins University
P.O. Box 670
Laurel, Maryland 20810
(301) 953-7100, Ext. 449

PROJECT OPEN HOUSE

In cooperation with the City Department of Housing Preservation and Development and the Mayor's Office for the Handicapped, United Cerebral Palsy of New

York City, Inc., has established a federally funded pilot program called Project Open House. This is a free service for physically disabled individuals to make approximately 150 households in New York City more accessible to wheelchair-bound persons with various disabilities.

The dwellings to be renovated can be either leased or city units. Some privately owned homes can be considered. Possible alterations could include such items as widening of doorways, removal of door saddles, installation of grab bars in bathrooms, building small ramps at entrances, as well as installing emergency call systems. As the number of homes is limited, need and financial factors will be considered. Priority will be given to persons who otherwise might need to move to institutions.

For further information call (212) 859-8850 or write to:

Project Open House
United Cerebral Palsy
622 Foster Avenue
Brooklyn, New York 11230

COL. MAURICE J. FLETCHER 1906–1980



On May 13, 1980 the prosthetic profession lost a great friend and contributor when Maurice J. Fletcher died after a long illness. Those of us who had the privilege to work with "Fletch" will always remember that it is possible to be creative, to be sensitive and responsive to the needs of others, and still to possess an extraordinary sense of humor.

Like so many of his generation in the Artificial Limb

Research Program, "Fletch" did not plan to become involved in prosthetics, and it was to some degree that chance led to his participation in the field. His original education was in architectural engineering, at University of Iowa, where he also served in the ROTC and received an Army Reserve commission. After stints in barnstorming, architectural engineering, and patent law, he commanded a CCC camp during the Depression. He was offered and accepted a commission in the Army shortly before the outbreak of World War II. He served in several different branches. Because of his technical knowledge and interest in mechanisms, he became a highly valued expert in the Ordnance Corps during World War II.

When the Surgeon General of the Army initiated a research and development program in artificial limbs in 1945, Major Maurice J. Fletcher, U.S.A., was one of the engineers recommended for transfer to the Army Medical Corps for "temporary duty"—a duty that lasted until 1961 when he retired to Eagle's Nest Lake, Number 2, near Ely in the North Woods of Minnesota. During his long military career he received various decorations, including the Legion of Merit.

He was assigned to the newly established Army Prosthetics Research Laboratory which was attached to the Walter Reed Army Medical Center. The primary mission of APRL was the development of improved artificial hands, hooks, and other upper-limb components. "Fletch" often said, laughingly, that he was selected for the post only because somewhere in his Ordnance Corps records he was designated a "small arms" expert!

At any rate, he was soon made the Commanding Officer of APRL. He assembled an extremely competent staff who, under his leadership, developed the APRL voluntary-closing hands and hooks and the APRL cosmetic gloves, all quite revolutionary in their time. Many other clever devices are the result of Fletch and his staff at APRL. Few people realize that the "F" in the F-M wrist unit stands for Fletcher. (The "M" stands for Motis, the co-inventor.)

Not only did Colonel Fletcher provide ideas, inspiration, and leadership to his staff, but he provided those same qualities in the nationwide Artificial Limb Research Program that was composed of research and development laboratories and education programs supported primarily by the Veterans Administration, the Department of Health, Education, and Welfare, and the Department of Defense and coordinated by the Committee on Prosthetics Research and Development of the National Academy of Sciences. He was also a very active member of the Committee on Prosthetics and Orthotics of the International Society for the Rehabilitation of the Disabled, and a lecturer at international prosthetics courses. Thus, he had a profound influence in improving the practice of prosthetics throughout the world.

Always willing to go that extra mile, Colonel Fletcher

was a committee member that could always be counted upon to provide ideas, solutions, and the kind of wit that adds up to the finest kind of leadership.

Maurice J. Fletcher was born in Avoca, Iowa, September 21, 1906. He is survived by his wife, Norma, his daughter, Patricia Wheeler, and two grandchildren.

A. BENNETT WILSON JR.

Northrop on X-ray motion pictures of body motions. In 1951-52 he was a consultant to the National Academy of Sciences and to the prosthetics project at University of California at Los Angeles. In later years, he renewed the latter role and also served as consulting engineer on development of orthotics for polio patients at Rancho Los Amigos, Downey, California. Still later, after a number of years as an engineer in the Los Angeles area, as proprietor of his own consulting firm, Gilmatic, he designed externally powered components for arti-

GILBERT M. MOTIS, 1911-1980

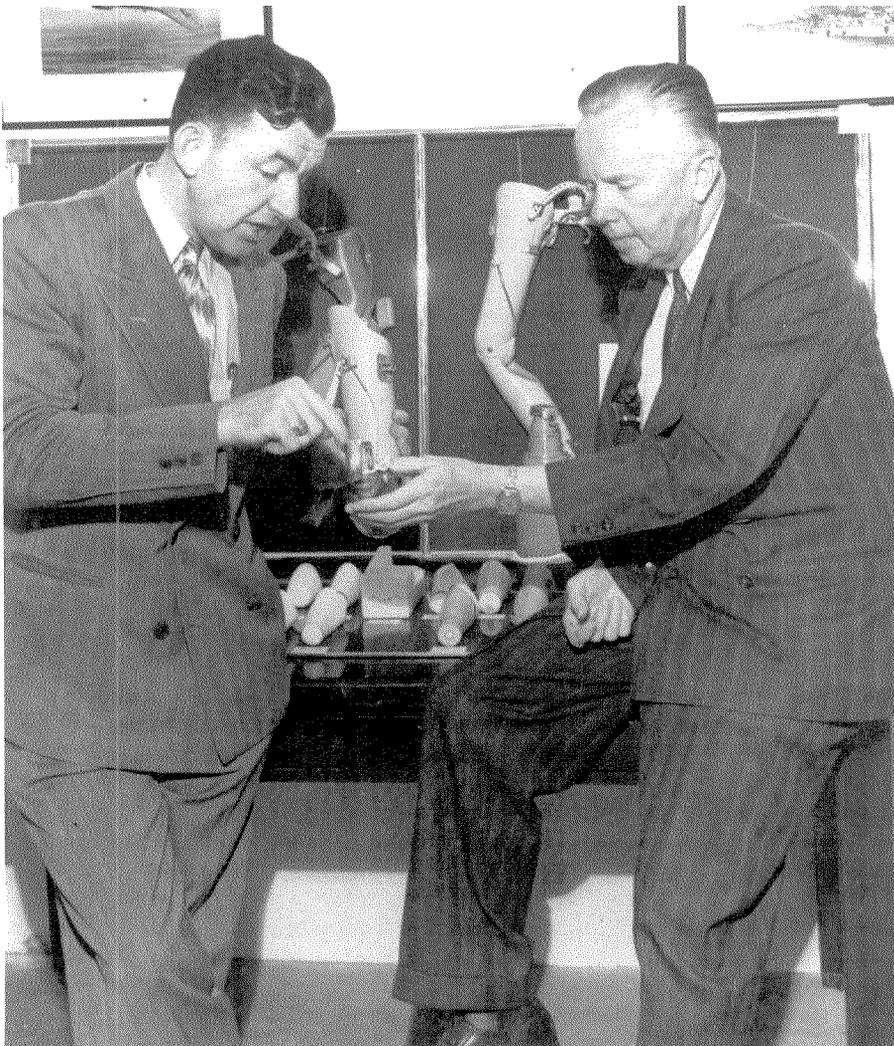


FIGURE 1.

The late Gil Motis, left, in a photograph taken around 1946, points out details of a prosthetic device to John K. ("Jack") Northrop. At the time, Mr. Motis was directing a major prosthetics project at Northrop Aircraft Co.

(John Knudson Northrop, founder of the aeronautical company that still bears his name, died at Glendale, California, on February 18, 1981. He was 85.)

Gilbert M. Motis, 68, a major contributor to the upper-limb program, died of cancer on February 19, 1980 in Inglewood, California. He had had several periods of activity in the Prosthetics Research Program, first as director of the major prosthetics project at Northrop Aircraft (Fig. 1) from 1946 to 1951, and concurrently as a consultant to the School of Medicine at University of Southern California, which was cooperating with

cial arms. He was a registered professional engineer in California.

Mr. Motis was born in Tobias, Nebraska, on September 24, 1911. He received his education in mechanical engineering at General Motors Technical Institute. During his early career as a development engineer he worked for United Airlines, Bendix Aviation, Consolidated Aircraft, Emerson Electric, and International

Detrola Corporation before going to Northrop Aircraft.

In October 1946, direction of the Northrop prosthetics project was taken over by Mr. Motis who remained its head until the termination December 31, 1950. He then continued to complete the final report.

Gil, as he was affectionately known by numerous colleagues, was a prolific inventor of devices for artificial arms. Some of these are still in widespread use in this country and abroad. The Northrop Model C Elbow Lock was the prototype of the Hosmer E-400 Elbow Lock, controlled by slight shoulder motions. The Northrop-Sierra Two Load Hook, of which Motis was a co-designer, likewise has continued to be widely used. It has the special advantages of permitting voluntary change in the gripping force to avoid crushing fragile objects and to reduce the harness-force usually required for opening, while permitting double the usual gripping force when desired. The FM wrist disconnect for allowing simple interchange of artificial hands and hooks is named for Colonel Maurice J. Fletcher of the Army Prosthetics Research Laboratory (whose memorial notice also is carried in this issue of the Bulletin) and Motis. Gil was also developer of a number of other wrist disconnects and fittings.

John K. "Jack" Northrop, then president of Northrop Aircraft, played a major role in the early efforts to improve artificial arms. He had initially become involved because of the efforts of Colonel Loutzenheiser in obtaining, from Northrop, industrial assembly tasks for amputees receiving rehabilitation at a nearby army hospital. The actual problems of these patients attracted the attention of Mr. Northrop.

Initially Mr. Northrop and another of his designers revived the Bowden cable system for application to artificial arms. This combination of flexible wire inside a flexible housing was originally developed in 1885 in England for control of bicycle handbrakes. It permitted transmission of forces and excursions through a changing angular relationship (as at the elbow) or an axial rotation (as at the wrist or at an elbow turntable). The Bowden cable is probably illustrated at page 359, and briefly mentioned though not illustrated at page 565, in Schlesinger's classic chapter on the mechanical construction of artificial limbs in the monumental German book "Erstglieder und Arbeitshilfen," published in 1919 . . . to report the German World War I research on artificial limbs. It is not cited in the extensive index. The Bowden cable has also been mentioned and illustrated, page 258, in Florent Martin's book "Artificial Limbs," based upon his experience in Belgium in World War I, and published through the International Labour Office in 1925. However, as far as we know, it was not widely used anywhere in the world for control of artificial arms. In the usual American practice in the 1945 era, artificial arms were typically controlled with cat-gut thongs running over pulleys. A few very elaborate chain and pulley designs had been proposed, primarily in Germany for use with cineplastic tunnels.

Unfortunately, very few unilateral amputees wore artificial arms of any kind, and bilateral amputees, especially, were severely handicapped by the relatively clumsy prostheses, poor harness and controls, and very low mechanical efficiency of the simple but crude cable systems. Perhaps especially serious was the lack of interest in artificial arms among most physicians, therapists, and prosthetists.

The Northrop project as a whole launched not only the Bowden cable and numerous attachments or special fittings but also the low-pressure plastic laminating of artificial arms in place of carved wood, molded leather with steel side bars, or molded fiber. The Northrop group, in cooperation with UCLA, also developed much better plans for harnessing shoulder motion to increase force, range of motion, and dexterity, and to improve comfort and permit independent control of the left and the right arms by bilateral amputees. The various project engineers, including Motis, also invented a wide variety of mechanisms.

Gil received a number of patents on Bowden cable fittings, elbow locks, wrist mechanisms, hooks, and force or excursion multipliers.

One of Gil Motis' major contributions was the preparation of the Final Report of the Northrop project, published in 1951 and widely distributed by the National Research Council and the Veterans Administration. In addition the trade association of the prosthetics industry, now the American Orthotic and Prosthetic Association, purchased copies from the printer for sale at cost, making additional hundreds of copies available to anyone interested. This book remains a gold mine of ingenious mechanisms for solving a variety of prosthetics problems. Gil did an excellent job of preparing the report with numerous illustrations. Perhaps most important are his rather frank statements evaluating the relative significance of the numerous ideas and devices. He described those numerous devices which worked effectively, and in many cases these have reached widespread commercial usefulness. Perhaps more importantly, he also described (with a candor rare in formal reports) those which were unsuccessful and the reasons, he pointed out those marginal devices which would serve in special circumstances or for problem cases—or if new technology should become available. (Periodic review of his report in the light of changing technology might well lead to the revival of some devices in that third category.)

The devices developed by the original Northrop project were almost entirely body-powered artificial limbs, although Gil reported an idea for generating a force by electrical heating of a volatile fluid to cause evaporation and expansion. In his later Gilmatic efforts, he designed electrically controlled elbow locks, based upon the Hosmer E-400 but with solenoid rather than harness actuation. Electrical elbows driven by small and inexpensive electric motors, and wrist rotators, were other examples. He also suggested a very

simple form of mechanical position-feedback; it involved a plastic tube in the inner wall of the socket containing a wire with a lump of solder or the equivalent which would move up or down the stump as the elbow was flexed or extended. Reports of that period were contained in early issues of the Bulletin of Prosthetics Research and in minutes of National Research Council Panels. Two patents were obtained, limited amputee tests were made, but for various reasons none of these latter Gilmatic devices reached clinical usefulness on any substantial scale.

Gil is survived by his widow, Mrs. Opal Motis, an adopted daughter, Lyne, who married Barry Routh shortly before Gil's death, and two brothers, Frank of Euclid Valley and Alfred of Burbank, California. He also left many friends from the Prosthetics Research Program over many years and from his role as a consulting engineer to industry and the Orthopedics and Pediatrics Departments of the School of Medicine, University of California at Los Angeles, where he was active in educational and research symposiums and in the development of fracture equipment for adult orthopedic patients and prosthetic devices for child amputees. Thousands of arm amputees continue to benefit from his efforts.

EUGENE F. MURPHY

SIR LUDWIG GUTTMAN, 1900-1980

The eminent pioneer paraplegist, Sir Ludwig Guttmann, died March 18, 1980, at the age of 80 in Aylesbury, England. Ludwig Guttmann was a brilliant neurosurgeon who emigrated from Germany to England in 1939. He was assigned to the Department of Neurosurgery at Oxford University. On February 1, 1944, he opened a spinal injury treatment unit at Stoke Mandeville Hospital in Aylesbury in preparation for the casualties expected from the upcoming allied invasion of Europe. His research and patient care principles developed at Stoke Mandeville Hospital opened a new era in rehabilitation of the paraplegic and tetraplegic patient. He demonstrated that in spite of the paralysis, the spinal injured person could attain a condition of physical health, psychological dignity, and vocational stability to not only leave the hospital but live a relatively normal lifestyle on wheels.

He realized that sports and recreation were as much a part of re-settlement of the disabled person as medicine and vocation. In 1952, he organized the first annual Sports Festival for the Paralyzed which was to become the International Para-Olympics.

In 1961, he founded The International Medical Society of Paraplegia and was the first editor of *The International Journal of Paraplegia*. His international accomplishments and honors are numerous. In 1966, he was knighted by Her Majesty the Queen for his service to England and the disabled people of the world. Of more importance than his honors and professional ac-

complishments were his compassion for his patients and inspiration to his students. Many curious physicians and surgeons visited Stoke Mandeville to see his comprehensive programs to re-settle the post-war disabled veterans and civilians. Many visitors left Stoke Mandeville inspired as disciples to spread the gospel of Sir Ludwig's principles of treatment throughout the world. Most of the spinal injury centers in the world have been developed since 1960 under the principles and/or guidance of Sir Ludwig or his pupils.

While he was very strict with his staff, demanding attention to detail and quick to perceive a faulty examination or procedure, he was always supportive of his staff and compassionate of the patient. The door of his office was always open to receive any member of his staff without a previous appointment for help or guidance. His teaching demanded very careful attention to improving each aspect of the disabled person's life, be it medical, social, psychological, vocational or recreational. Throughout his early career, many detractors would say, "Is it really worthwhile?" They are answered by the thousands of healthy paraplegics and tetraplegics whose very life and existence is based on the inspiration of Sir Ludwig. He wrote over 150 scientific articles on paraplegia while at Stoke Mandeville Hospital. The main principle of these teachings can be summed up in the title of his last article, published at age 78 in the journal *Paraplegia*, entitled, "The Total Responsibility of the Surgeon in the Management of Traumatic Spinal Paraplegics and Tetraplegics." Spinal cord injured people as well as those who have committed our professional careers to the treatment of spinal cord injured people have indeed suffered a loss of a good friend, teacher, leader and "Papa" with the death of Sir Ludwig.

E. SHANNON STAUFFER, M.D.

Professor and Chairman
Division of Orthopaedics and Rehabilitation
SIU School of Medicine

AUG. 30—SEPT. 3 FOR THE 1981 ANNUAL CONFERENCE ON REHABILITATION ENGINEERING

Marking "The International Year of Disabled Persons," the 1981 Annual Conference on Rehabilitation Engineering is scheduled to be held August 30-September 3 at the Sheraton Washington Hotel, Washington, D.C., sponsored by the Rehabilitation Engineering Society of North America (RESNA).

Scientific papers were due no later than April 1, 1981. The Conference theme is "Technology That Enables."

For further information on the conference program, exhibit space, author's kits, the student design competition, or other details, contact:

Convention Management Consultants (CMC)
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