

the NIH Record

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U. S. DEPARTMENT OF

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NATIONAL INSTITUTES OF HEALTH

Annual Lectureship Award Established Honoring Dr. Mider

Dr. Robert Q. Marston, NIH Director, on the recommendation of the Scientific Directors of the National Institutes of Health, has announced the establishment of an annual G. Burroughs Mider Lectureship Award, in honor of the first NIH Director of Laboratories and Clinics.

Dr. Mider completed 8 years as Director of Laboratories and Clinics last spring, and moved to the National Library of Medicine as Special Assistant to the Director, to undertake the development of new programs of liaison between the Library and the biomedical scientific community.

Is Part of NIH Series

The newly named Lectureship will be part of the prestigious NIH Lecture Series. Now in its 16th year, the Series was established to facilitate interchange of information and to give appropriate recognition for outstanding scientific accomplishment.

Lecturers for the Series, originally selected only from distinguished scientists outside the NIH, are sponsored by the Institutes and the Director, NIH.

(Continued on Page 6)

Exhibit Describes Medical Uses of Radioisotopes

An exhibit describing the expanding medical uses of radioisotopes will be shown in the lobby of the National Library of Medicine through March 14.

A series of pictorial panels on nuclear medicine, entitled "Radioisotopes in Medicine," will also be displayed. The panels depict the application of radioactivity in diagnosis and treatment.

Included are explanations of the uses of man-made radioactive isotopes such as cesium and cobalt in the treatment of tumors; how radioactive strontium can be used to provide information on bone disorders, and the effect of yttrium on the pituitary gland.

On view will be color photos of persons, materials, activities, and equipment in the research and development laboratories of the U.S. Atomic Energy Commission.

These pictures show some of the biological experiments being performed and technical equipment used in nuclear science.

Educational booklets on various aspects of nuclear science will also be displayed.

The exhibit is open to the public during the Library's regular hours: 8:30 a.m. to 9 p.m., Monday through Friday, and 8:30 a.m. to 5 p.m., Saturday.

EXPANDING MISSION NIH Reorganization Strengthens Health Manpower, Communications Functions

A new organizational structure for the National Institutes of Health was approved by DHEW Secretary Wilbur J. Cohen, and published last Jan. 4—in the Federal Register.

The structure reflects the new mission of the NIH which, in addition to being the prime Federal biomedical research agency, now includes responsibility for developing health manpower resources and utilizing modern methods to communicate biomedical information speedily and widely to the medical and health professions.

Cohen Lauds Reorganization

It is designed to achieve the broad objectives of the reorganization plan approved April 1, 1968 (see *NIH Record*, April 2, 1968), under which NIH was given status as an operating agency within the Department, and expanded to include the Bureau of Health Manpower and the National Library of Medicine.

DHEW Secretary Wilbur J. Cohen said the new organization now provides a balanced and effective approach to the support of both biomedical science and health professions education.

"Science and education programs are now joined under this expanded mandate for NIH," Mr. Cohen said, "yet the new organization insures continued major effort in each area."

"Another attractive feature of the new organization is the emphasis it places on biomedical communication."

Establishes NEI

The new plan also establishes the previously-authorized National Eye Institute, bringing to nine the number of Institutes now included in the NIH.

A major feature of the plan expands and renames the Bureau of Health Manpower as the Bureau of Health Professions Education and Manpower Training. Dr. Leonard Fenninger will direct the expanded Bureau.

The new Bureau will be composed of seven Divisions divided into two categories, each headed by a Deputy Director (to be

(See REORGANIZATION, Page 5)

NCI Announces Creation Of New Branch, Lab In Chemotherapy Area

The National Cancer Institute has announced the creation of a Human Tumor Cell Biology Branch, and a Laboratory of Molecular Pharmacology, and a number of



As chief of NCI's new Human Tumor Cell Biology Branch, Dr. Seymour Perry will direct studies into physiologic, cytogenetic and biochemical control mechanisms at the molecular level.

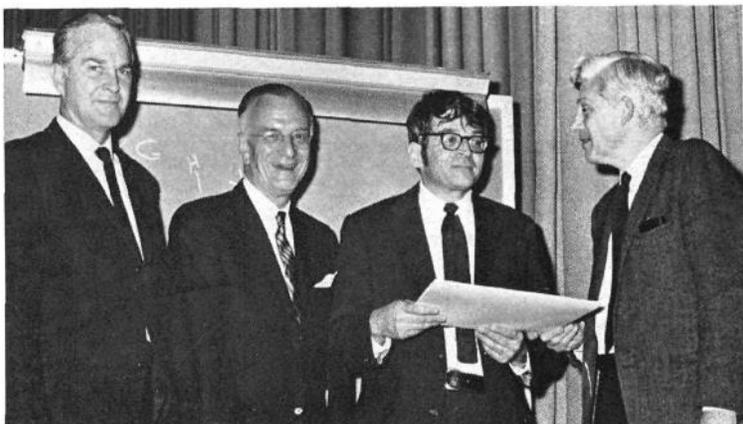
staff changes and appointments in the Chemotherapy Area.

Research in the newly established Human Tumor Cell Biology Branch is being directed by Dr. Seymour Perry, Associate Scientific Director for Clinical Trials, NCI, as Branch chief.

Dr. C. Gordon Zubrod, Scientific Director for Chemotherapy, explained that Dr. Perry and his colleagues are investigating physiologic, cytogenetic and biochemical control mechanisms at the molecular level of human cells.

The dynamics of cell growth and characteristics of reproductive cy-

(See NEW BRANCH, Page 7)



Dr. Gordon M. Tomkins, chief of the NIAMD Laboratory of Molecular Biology (second from right), holds the special certificate given him after presenting the first G. Burroughs Mider Lecture at the Clinical Center last December. With him are (from left): Dr. Robert Q. Marston, NIH Director; Dr. Mider, in whose honor the lecture was named; Dr. Tomkins, and Dr. J. E. Rall, Director of Intramural Research, NIAMD.

the NIH Record

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NEWS from PERSONNEL

INAUGURATION DAY HOLIDAY

Inauguration Day, Monday, Jan. 20, is a legal holiday in the Washington, D.C., Metropolitan Area. Leave Act provisions for time off and holiday pay will be followed.

1969 SUMMER EMPLOYMENT

Most 1969 summer jobs in grades GS 1 through 4 will again be filled from the Summer Employment Examination administered by the Civil Service Commission.

Those who wish to take the written test should not delay in making application. The last examination date will be on March 8, the deadline for filing is Jan. 30.

Applicants eligible for employment last summer may be considered for jobs this coming summer without retaking the test. However, they will have to reapply and update their qualifications and availability.

CSC Is Contact

Personnel who worked here last summer, and other eligible applicants who have not been contacted by the Civil Service Commission, should get in touch with the Summer Employment Office, Civil Service Commission, 1900 E Street, N.W., Washington, D.C. 20415.

Engineering and physical science students who have completed 2 years of college (60 semester hours or equivalent) by the summer employment period, and have a grade point average of 3.5 or above, are not required to take the written test.

Applicants should submit forms SF 171 and CSC 226 to the Inter-

Registration for Grad. Program Begins Jan. 23

Registration for the spring 1969 semester of the NIH Graduate Program will be held Jan. 23 through Jan. 30, from 10 a.m. to 4 p.m. daily including Saturday, Jan. 25, Bldg. 31, Rm. 3-B-05. Course textbooks are also available there.

New courses offered include Immunohematology, Blood Transfusion, Principles of Management, Theory of Machines, Essentials of Toxicology, Current Problems in Protein Biochemistry, Advanced Topics in Animal Virology, Parasitology, Regression and Correlation Methods, Gene Structure and Function, and Advanced Topics in Endocrinology.

For a catalog, or additional information, please call Ext. 66371.

agency Board of Civil Service Examiners in the area in which he desires to work.

CSC Announcement No. 414 contains information on Federal summer jobs, and application procedures. This announcement is available at high school counseling offices, college placement offices, CSC offices, and many post offices.

The Personnel Staffing Section, PMB, Room B2-B 13, Bldg. 31, also has a limited supply.

BIostatISTICS SEMINARS

A series of 12 NIH biostatistics training seminars, started in November, will extend through April. The 2-hour sessions, conducted by senior NIH statisticians, are mainly for junior statisticians and other junior personnel involved in biostatistical work.

The meetings are in the form of case problem seminars. Under this method the discussion leader pre-

NINDS Caretaker Wins 2 Awards for Improving Monkey Feed Stations

Suggestions which have improved the animal feeding stations and drinking fountains at the National Institute of Neurological Diseases and Stroke-supported rhe-



Fernando Leon, NINDS personnel officer (l), and Israel Cordero at the improved monkey drinking fountain in the jungle surroundings of La Parguera.

us monkey colonies on La Parguera, an island off the coast of Puerto Rico, have earned a cash award for Israel Cordero, an animal caretaker there.

He was awarded \$55 each for two suggestions which modified and improved the monkeys' eating and drinking stations.

The free-ranging monkeys eat at modified hog feeders which meter food pellets to a trough or hopper where they are continuously available.

Suggestions Described

Mr. Cordero suggested installing a screen of wire mesh in the meter opening. This permits only individual size pellets instead of large chunks, to pass into the hopper. Also, because of this suggestion, the meter opening requires less maintenance.

His other suggestion, to use 55-gallon drums with semi-circular openings to shield the water basins, helped to keep the water cleaner, and reduced maintenance problems.

NINDS supports four island colonies in Puerto Rico, with free-ranging rhesus monkeys, as part of its Laboratory of Perinatal Physiology, Intramural Research.

Scientists there study and observe the monkeys in an environment closely approximating their natural homes. By learning what is normal behavior for the animals, the researchers hope to better identify abnormal behavior in laboratory animals who live in an essentially unnatural environment.

sents a problem from his own experience, and describes his solution if formulated.

He then invites participants to discuss the problem and offer alternative solutions.

The seminars involve such biostatistical techniques as research

NIH Television, Radio Program Schedule

Radio

DISCUSSION: NIH

WGMS, AM-570—FM Stereo
103.5—Friday Evenings—
About 9:15 p.m.

Jan. 10

Dr. Karl Frank,
chief of the Laboratory of
Neural Control, NINDS
Subject: Basic Neurological
Research

Jan. 17

Dr. Charles U. Lowe,
associate director for
Intramural Research
Programs, NICHD
Subject: To be announced

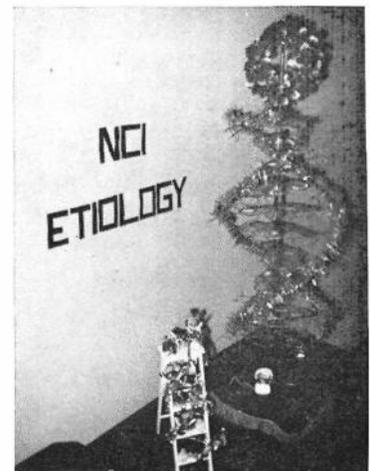
Both interviews take place during intermission, Library of Congress Chamber Music Series.

NIH Television Programs for Jan. 11 and 18 preempted by football games.

Dr. Kreshover Named a Regent, American College of Dentists

Dr. Seymour J. Kreshover, Director, National Institute of Dental Research, was installed for a 4-year term as a Regent of the American College of Dentists at a recent annual session.

The organization was established in 1920.



Staffers at NCI Etiology combined research with Christmas in designing this holiday season decoration—a DNA molecular structure Christmas tree.

design, data analysis, and the communication process between consulting statistician and investigator.

The Training and Education Section, PMB, is providing technical assistance and administrative support for the seminars.

NIGMS Report Reviews Cell Behavior, Origin

A report, *Cellular Aspects of Immune Reactions*, was recently issued by the National Institute of General Medical Sciences.

The pamphlet, prepared by the NIGMS Anatomical Sciences Training Committee, presents knowledge on the human immunological systems and the role of body cells in recognizing, isolating, and eliminating foreign materials and pathogenic agents.

The report reviews the origin and behavior of all cells in the immunological complex, including the myeloid, lymphoid and macrophage systems of the body.

Focuses on Rejection

It also focuses upon various immunological responses, such as the rejection of transplanted organs and tissues.

Particular attention is given to the activity of small lymphocytes most often implicated in the rejection of tissue and organ grafts.

Lymphocytes, however, are but one of several types of blood cells which appear to react aggressively with foreign materials introduced into the body.

Others are macrophages, neutrophils, eosinophils, mast cells and possibly basophils, so that many different intracellular and intercellular reactions are now known to occur in the immune response.

The report describes the progress that has been made to elucidate these complex, interacting factors.

Single copies of the report may be obtained on request to the Information Office, NIGMS, Bethesda, Md. 20014.

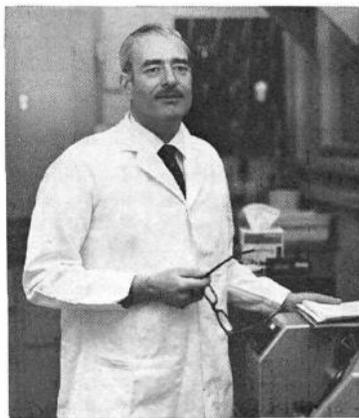
Dr. Bertram Sacktor's Enzyme Discovery Possible Factor in Glucose Resorption

A Gerontology Research Center scientist, Dr. Bertram Sacktor, National Institute of Child Health and Human Development, has discovered the enzyme Trehalase in mammalian tissues.

Specifically, Dr. Sacktor found the enzyme in the kidney and small intestine.

Trehalase may act in concert with other enzymes also found in these locations, to convert glucose to trehalose and thence to glucose again.

This suggests that trehalase



Dr. Sacktor carries on his studies of glucose transport mechanisms in the Baltimore laboratories of NICHD's Gerontology Research Center.

functions in an energy-dependent active transport of glucose from the glomerular filtrate and across the intestinal mucosa.

Trehalase is known to split hydrolytically the sugar trehalose into two glucose moieties in some plants and invertebrates.

Commonly found in insects, it is especially active in insect gut and flight muscle. Trehalose is also the major blood sugar of insects.

These and other facts led the NICHD scientist to suggest previously that, in insects, trehalose is a vehicle of carbohydrate transport, and that the enzyme trehalase functions in the mechanism of sugar transport.

Trehalase Activity Noted

Other research noted trehalase activity in mammalian (rat) intestine, presumably present as a digestive disaccharidase.

The finding of the intestinal trehalase assumed added significance in view of Dr. Sacktor's suggested role for the enzyme. This led him to search for the enzyme in other mammalian tissues to see if the enzyme might be involved in the transport of glucose in higher animals.

Trehalase activity was discovered only in mammalian kidney and small intestine, the two tissues able to accumulate glucose against a concentration gradient.

Trehalase activity was found in several species, including rabbit, mouse, monkey, and man.

In these species, the enzyme's activity was sufficiently high to account for the total glucose resorbed by the kidney. The trehalase in kidney is specific for trehalose, other sugars being inactive as substrates.

Trehalase activity was localized in the kidney cortex, and completely absent from the medulla and papilla. In a separate histochemical study, it was revealed that trehalase activity is localized specifically in kidney cortical tubules, the site of glucose resorption.

The presence of trehalase in the renal cortex prompted a search for the other enzymes known to synthesize trehalose from glucose in yeast and insects.

The following enzymes leading to trehalose biosynthesis in rabbit kidney were found: hexokinase, phosphoglucomutase, UDPG pyrophosphorylase, trehalose-6-P synthetase, and trehalose-6-P phosphatase, in addition to trehalase.

The discovery of trehalase together with other enzymes that effect the biosynthesis of trehalose from glucose suggests the possibility that the disaccharide functions in a mechanism of resorption of glucose in the kidney.

Transport Mechanisms Supported

This postulated energy-requiring transport mechanism is supported by: (1) the specific localization of trehalase in the renal tubular membrane in the apparent absence of blood trehalose; (2) the intracellular function of trehalase; (3) the activities of the participating enzymes which are sufficient to account essentially for the rate of resorption of glucose in the intact animal; and (4) the inhibition of a vital step in the reaction sequence, UPDG formation, by phlorhisin, a classical inhibitor of sugar transport.

The proposed mechanism of glucose resorption in the kidney may also be applicable to the process of active transport of glucose in the intestinal mucosa.

The NICHD researcher has also found that trehalase, and the entire sequence of enzymes leading to synthesis of trehalose, are in the intestinal mucosa.

Drs. Aurbach and Potts Receive French Award For Hormone Research

Two NIH scientists were the first recipients of the Prix Andre-Lichtwitz, a new award created by the French National Institute of Health and Medical Research. They were given the prize for their research in phosphorus-calcium metabolism.

The researchers are Dr. Gerald D. Aurbach, chief of the Mineral Metabolism Section of the Metabolic Diseases Branch, National Institute of Arthritis and Metabolic Diseases, and Dr. John T. Potts, former chief of the Section on Polypeptide Hormones of the Laboratory of Molecular Diseases, National Heart Institute.

Prize Honors Dr. Lichtwitz

They shared the \$1,000 prize established in honor of Dr. Andre Lichtwitz, a French scientist who died 3 years ago. Dr. Lichtwitz was the personal physician of President Charles de Gaulle.

The award is given to a scientist or team of investigators for outstanding studies on calcium and phosphorus metabolism in clinical or experimental biology, or in basic science.

Drs. Aurbach and Potts began their collaborative research on the chemistry of parathyroid hormone in 1962. Their findings led to the development of a sensitive radio-



Dr. Aurbach



Dr. Potts

immunoassay which has been applied to determine factors that control secretion of the hormone.

In 1959 Dr. Aurbach reported on the first practicable method for extracting and purifying parathyroid hormone. It was the first successful isolation of the hormone in purified form.

Dr. Potts contributed to methods leading to the proof of the structure of an important region of the ribonuclease molecule. He is now an assistant professor of Medicine at Harvard University, in charge of the Endocrine Unit at Massachusetts General Hospital.

Ava S. Dilworth Heads Intramural Research Branch

Ava S. Dilworth, R.N., of the Division of Nursing, Bureau of Health Professions Education and Manpower Training, has been appointed chief of the Intramural Research Branch. Mrs. Dilworth succeeds Ellwynne M. Vreeland,

R.N., who recently retired.

In her new assignment, Mrs. Dilworth will undertake intramural research to improve the quality of nursing service.

Mrs. Dilworth has been with the Division of Nursing since 1955.

Lively Musical Film Shows Safe, Sane Diet Program

Employee Health Service will present a Broadway type musical film designed to encourage overweight viewers to undertake safe and effective programs of weight control.

The film is aimed at those who want to "look better, feel better, have their clothes look snappier, have more vigor, and live longer."

Original songs, such as "Starting My Diet Tomorrow," "Love and Goulash," and "Bruin Is Doin' Just Fine," will be featured in the 21-minute color movie.

The film will be shown at the following locations: CC auditorium, on Tuesday, Jan. 14 at 11:30 a.m. and 12:30 p.m.; Barlow Bldg., Jan. 15 at 12 noon and 1 p.m.; Westwood Bldg., Thursday, Jan. 16 at 1:30 and 2:15 p.m., and the Tower Bldg., Friday, Jan. 17 at 12 noon, 12:30, 1, 1:30 and 2 p.m.

Joint NIAMD-NCCDC Symposium Discusses Uremic Diet Therapy

A symposium "Diet Therapy in Uremia" sponsored jointly by the Artificial Kidney-Chronic Uremia Program of the National Institute of Arthritis and Metabolic Diseases, and the Kidney Disease Control Program, National Center for Chronic Disease Control was held recently at the annual meeting of the American Dietetic Association in San Francisco.

Dr. Benjamin T. Burton, who heads NIAMD's Artificial Kidney Program, talked on "Principles of Dietary Therapy in Chronic Uremia."

Dr. Burton is also NIAMD associate director for Program Analysis and Scientific Communication.

Dr. Davis S. Hathaway, NCCDC, discussed "Pathophysiology and Metabolic Derangements of End-Stage Renal Disease."

Other topics surveyed were the evaluations of special diets for chronic uremia, and the practical aspects of diet therapy in chronic renal disease from the standpoint of the dietitian.



The 1968 Nobel Prize recipients, five American scientists and a Japanese author—men judged to have "most benefited mankind" in the past year—appear together following the awards presentation Dec. 10. From left are: Dr. H. Gobind Khorana, University of Wisconsin; Dr. Robert W. Holley, Cornell University; Dr. Luis W. Alvarez, University of California; Dr. Marshall W. Nirenberg, National Heart Institute; Dr. Lars Onsager, Yale University, and Japanese author Yasunari Kawabata. Drs. Nirenberg, Khorana, and Holley were cited in the field of medicine for having "cracked" the genetic code of heredity. Dr. Alvarez was cited for his contribution to elementary particle physics; Dr. Onsager, for his discovery of a thermodynamic law which bears his name. Mr. Kawabata was cited in the field of literature.—UPI Photo.

Dr. James Scott Named Chief, NIAID Branch, Extramural Programs

The appointment of Dr. James Allen Scott as chief, Parasitology and Medical Entomology Branch, Extramural Programs, National Institute of Allergy and Infectious Diseases, has been announced by Dr. Dorland J. Davis, NIAID Director.

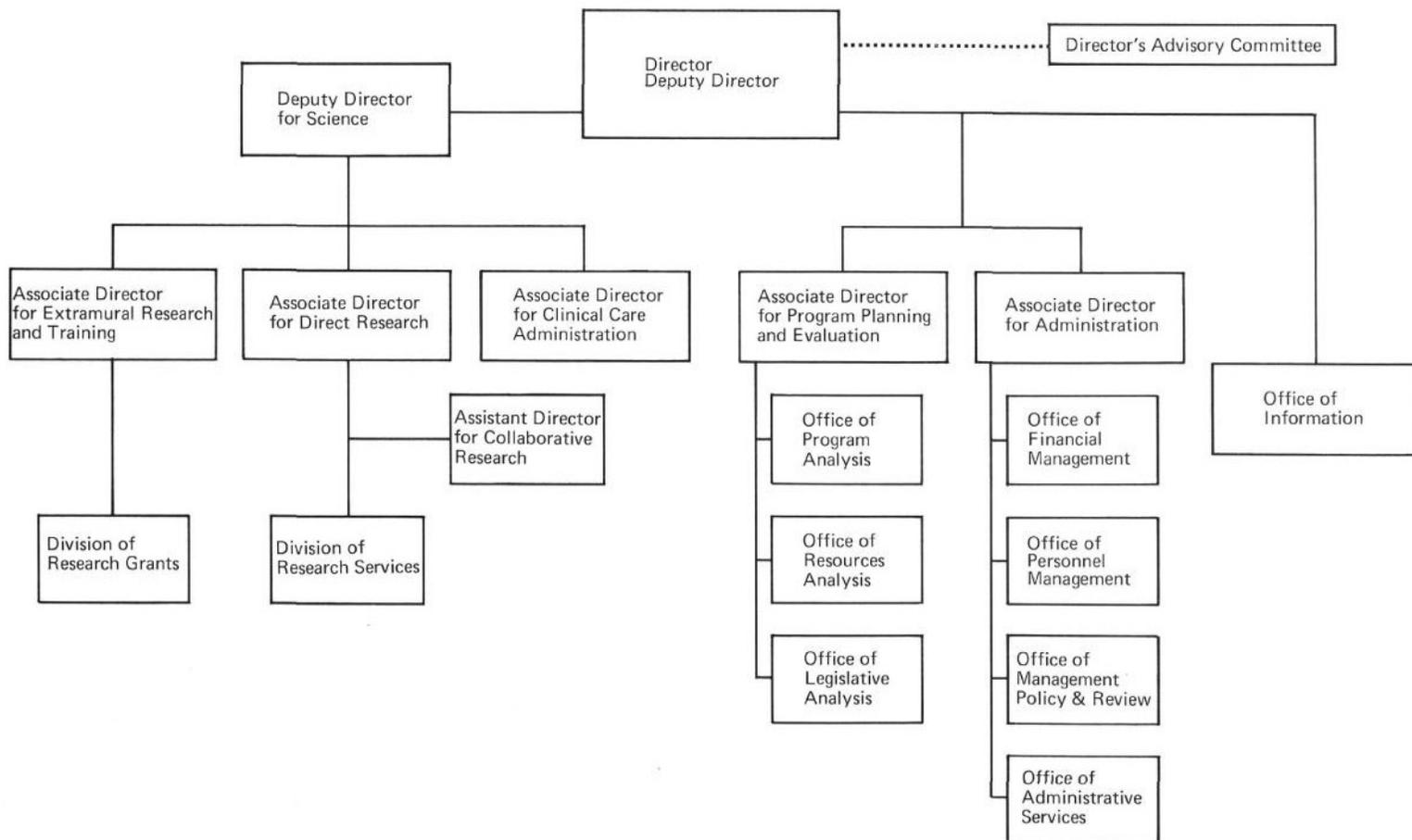
In his new position Dr. Scott will be responsible for the direction and development of the Branch's programs.

Dr. Scott succeeds Dr. Colvin L. Gibson who recently transferred to the Office of the Director, NIH.

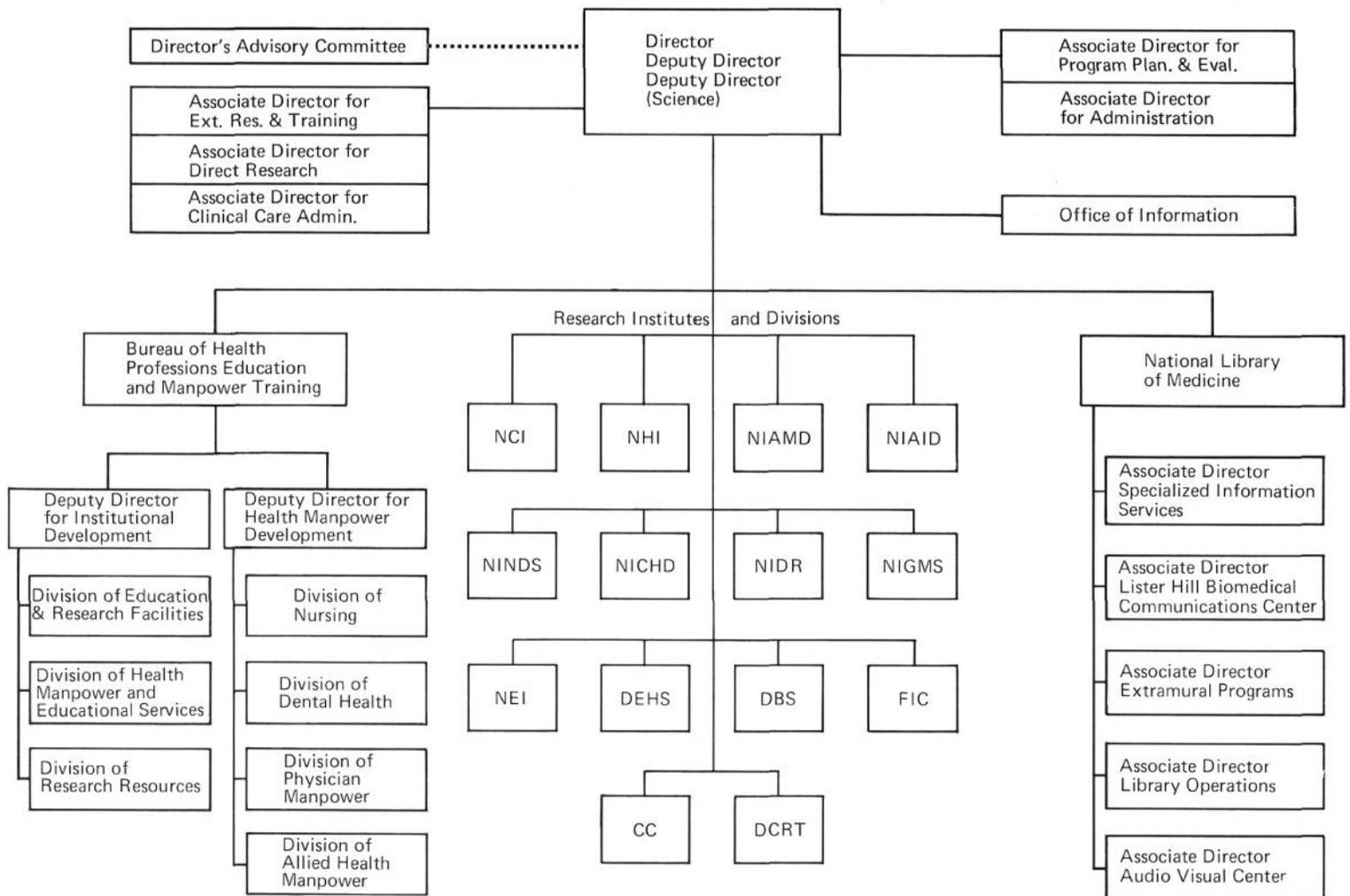
Dr. Scott has been assistant chief of the Branch since its establishment in 1965, and has served as a scientist-administrator in the extramural programs since 1962.

He received his B.A. and M.A. degrees from Wesleyan University, and his Sc.D. degree from the Johns Hopkins University School of Hygiene and Public Health. Before coming to NIH in 1962, he was professor of epidemiology and tropical medicine at the University of Texas School of Medicine.

ORGANIZATION OF THE OFFICE OF THE DIRECTOR, NIH



ORGANIZATION OF NIH



REORGANIZATION

(Continued from Page 1)

named), as follows:

Institutional Development—Division of Educational and Research Facilities, Division of Health Manpower Educational Services, and Division of Research Resources; and

Health Manpower Development—Division of Nursing, Division of Dental Health, Division of Physician Manpower, and Division of Allied Health Manpower.

Within the new Bureau will be consolidated all construction grant functions of NIH (the Division of Educational and Research Facilities), including the present health research facilities functions of DRFR and the construction grant functions of NLM.

Additionally, the remainder of DRFR will be transferred to the Bureau in a newly-designed Division of Research Resources which, along with the other two Divisions under the Deputy Director for Institutional Development, unites all units concerned with general sup-

port to institutions, including such programs as general research support grants, basic and special improvement grants, and student scholarships and loans.

The biomedical communications functions of the National Library of Medicine will continue to be directed by Dr. Martin M. Cummings, NLM Director. Organizationally he will be assisted in carrying out these functions by specialized offices, each headed by an Associate Director.

These include Specialized Information Services, the Lister Hill Biomedical Communications Center, Extramural Programs, Library Operations, and the National Audiovisual Center.

Although its construction grant functions are transferred to the Bureau of Health Professions Education and Manpower Training, the Library will continue to be responsible for advising the new Bureau on needs for medical library facilities.

The new organizational plan also reorganizes the Office of the Director, NIH, by:

- Creating the new position of

Deputy Director for Science who will be the focal point in the Office of the Director for dealing with day-to-day policy problems of the research Institutes and Divisions and for representing them in the overall policy councils of NIH. Dr. Robert W. Berliner, now Director of Laboratories and Clinics, will assume this position.

- Redesignating the Associate Director for Extramural Programs—Dr. R. W. Lamont-Havers—as Associate Director for Extramural Research and Training.

- Creating a new Associate Director for Direct Research (to be named), to whom the newly-established Assistant Director for Collaborative Research (to be named) will report.

- Redesignating the Director of Program Planning and Evaluation—Dr. Thomas J. Kennedy, Jr.—as Associate Director for Program Planning and Evaluation, and establishing the following principal units under him: Office of Program Analysis; Office of Resources Analysis, and Office of Legislative Analysis.

- Redesignating the Executive

Officer—Richard L. Seggel—as Associate Director for Administration, and establishing these principal units under him: Office of Financial Management; Office of Personnel Management; Office of Management Policy and Review, and Office of Administrative Services.

Other specific changes would:

Place the Division of Research Grants under the Associate Director for Extramural Research and Training; transfer the grants management functions of DRG to the Associate Director for Administration and combine them in the newly-formed Office of Financial Management, and place the Division of Research Services under the Associate Director for Direct Research.

NIH research Divisions will include the Division of Biologics Standards, the Division of Environmental Health Sciences, the Fogarty International Center, the Division of Computer Research and Technology, and the Clinical Center.

(See OD CHART, Page 4)

Dr. Gunnar Ryge Named DDH Scientific Director Of Dental Health Center



Dr. Ryge has lectured at dental schools and societies throughout the United States.

Dr. Gunnar Ryge has been appointed Scientific Director of the Dental Health Center at San Francisco. The appointment was announced by Dr. Viron L. Diefenbach, Director, Division of Dental Health, Bureau of Health Professions Education and Manpower Training.

Since 1964, Dr. Ryge has served as chief of the Materials and Technology Branch of the Dental Health Center which is the Division's field center for applied research and training.

Background Cited

Previously, he was professor and chairman of the Department of Dental Materials at Marquette University.

Dr. Ryge was born in Copenhagen, Denmark, and received his dental degree from the Royal Danish Dental School. He became an instructor there, left to enter private practice, and returned to the dental school to become an associate professor.

He came to the United States in 1949 as a guest worker in the Dental Materials Section of the National Bureau of Standards. He joined Marquette University in 1950.

Dr. Ryge has lectured at dental schools and societies throughout the United States.

Presently he is a lecturer in dentistry, University of California, San Francisco Medical Center. He is also clinical professor, Dental Materials, at the School of Dentistry, University of the Pacific.

In 1967 construction for teaching purposes at medical schools was, for the first time, greater than construction for research.

LECTURESHIP AWARD HONORS DR. MIDER

(Continued from Page 1)

Over the years, it became a tradition to periodically invite as lecturers members of the NIH intramural staff who, in the words of Dr. Marston, would "remind us of the stature of our own staff and the quality of their research."

The establishment of the G. Burroughs Mider Lectureship Award formalizes this tradition. Each NIH scientist invited to present the lecture will receive a special certificate in "recognition and appreciation of outstanding contributions to biomedical research."

Centered at the top of the certificate is a gold imprint of a bust of Dr. Mider surrounded by the words "The National Institutes of Health." Beneath the likeness are the words "The G. Burroughs Mider Lectureship Award."

Tomkins Gives First Lecture

The first NIH scientist so honored was Dr. Gordon M. Tomkins, chief of NIAMD Laboratory of Molecular Biology, who last month (Dec. 11) discussed "Control of Gene Activity in Higher Organisms."

A brilliant young researcher, Dr. Tomkins has won renown for his work on cholesterol synthesis, the metabolism of steroid hormones, and the mechanism whereby hormones affect enzymes.

His investigations of the relationship between the structure and function of the enzyme glutamate dehydrogenase, for example, found that changes in the enzyme's structure could be induced through the interaction with various biologically active molecules, such as steroid hormones or nucleotides. This alteration changes the enzyme's ability to act as a catalyst in a metabolic reaction.

Provides Initial Proof

This finding was the first experimental proof that a hormone is able to directly affect the physical structure of an enzyme. Prior to this, it had been thought that hormones exerted their influence by participating in the metabolic reactions through oxidation or reduction.

For the past several years, Dr. Tomkins has been studying the effects of steroid hormones on mammalian cells in tissue culture, the basis of his discussion on "Control of Gene Activity in Higher Organisms," work that looks toward a newer theory of the mechanism of genetic control of protein synthesis.

In his lecture, Dr. Tomkins outlined his and his associates' work on genetic control mechanisms.

A single mammalian cell has about 5,000,000 genes, and each cell of an organism contains the same

complement of genetic information. However, there are thousands of different cell types which comprise an individual, such as kidney, liver, brain, and blood cells.

The mechanism which allows these types of cells to differ from one another is the mechanism which prevents the expression of most, but allows the function of certain specific genes.

This process, called differentiation, is a basic mystery in the biology of complex organisms.

To explain cellular differentiation, biologists have heretofore analogized from mechanisms which function in bacteria and bacterial viruses where the function is controlled by the attachment of specific protein molecules (repressors) to specific sites on the chromosome. These repressors regulate the formation of the immediate gene product, messenger RNA.

Dr. Tomkins has shown that in mammalian cells alternative genetic control mechanisms exist which modulate the synthesis of proteins (the ultimate gene products) by controlling the rate at which the genetic information encoded in the messenger RNA is translated into a protein.

2nd Type of Control Shown

Evidence for this second type of genetic control came from his studies on the synthesis of a specific enzyme, tyrosine aminotransferase, in mammalian cells grown in tissue culture.

The formation of this protein is stimulated by adrenal steroids and from his experiments on this system, he has concluded that messenger RNA function is under hormonal control.

Other studies in the same system have indicated that there is also bacteria-like direct control of gene function, this latter mechanism, however, does not appear to be under hormonal influence.

At present, Dr. Tomkins and his group are trying to evaluate the role of messenger control in regulating the function of mammalian organisms and trying to understand the precise molecular mechanisms involved in this type of regulation.

Dr. Tomkins came to NIH in 1955 as a member of the staff of the NIAMD. He received his A.B. degree (cum laude) in 1945 from the University of California at Los Angeles, his M.D. (cum laude) from Harvard in 1949, and his Ph.D. in 1953 from the University of California at Berkeley.

His devotion to science is matched by a life-long association with music, specifically jazz. An accomplished musician, Dr. Tomkins plays a number of instruments, including the clarinet and saxophone,

Joint Meeting Explores Calcium Metabolism and Chronic Kidney Failure

An exploration of the abnormal calcium metabolism which accompanies chronic kidney failure was the theme of a 2-day conference organized recently in Santa Barbara, Cal., by the National Institute of Arthritis and Metabolic Diseases' Artificial Kidney Program.

This field has become increasingly important since the advent of artificial kidneys and kidney transplantation.

Scientists from foreign countries and the United States who attended the conference sought to elucidate such phenomena as widespread calcification of soft tissues, dimineralization of the skeleton, and secondary hyperparathyroidism.

These complications are seen with increasing frequency in patients with chronic kidney failure who are being maintained with the aid of artificial kidneys, or even with kidney transplantation.

Papers were presented on problems related to renal osteodystrophy and disturbed divalent metabolism, and to their possible etiologies and interactions in chronic renal disease.

Emphasis was placed on the obscure and controversial facets of this particular field.

The conference, headed by Dr. Charles Kleeman, Director of the Divisions of Medicine, Cedars-Sinai Medical Center in Los Angeles, was cosponsored by the National Center for Chronic Disease Control.

NIAMD's Artificial Kidney-Chronic Uremia Program will publish the proceedings.



Dr. Jack Masur, CC Director (left), presents the PHS Distinguished Service Medal and certificate to Dr. George Brecher for his work while serving as chief of the Hematology Service, Clinical Pathology Department, 1953-1966. Dr. Brecher is now professor and chairman of the Division of Clinical Pathology and Laboratory Medicine, School of Medicine, University of California, San Francisco.

and, since his student years, has formed a number of jazz combos. He and his present combo have performed at jazz concerts at NIH, as well as at other functions here and in this area.



At the recent meeting of the American Society of Anesthesiologists, Dr. Frederick L. Stone, Director, National Institute of General Medical Sciences (left), receives from the Society's president, Dr. E. M. Papper, a certificate of appreciation for his efforts in developing research and training in anesthesiology and for helping "alleviate physician manpower problems in anesthesiology." Dr. Stone was a featured speaker at the meeting.

NIAID Publishes Catalog On Research Reagents

The National Institute of Allergy and Infectious Diseases announces the publication of a comprehensive catalog of research reagents.

The catalogs are available for distribution to investigators as reference standards.

This program, administered by the Institute's Research Reference Reagents Branch, is supported by contracts with industry, universities, and nonprofit research organizations.

The Catalog of Research Reagents 1968 supersedes a series of previously released indices.

Since the inception of this program in 1961, an increasing number of the purified seed viruses and antisera have been provided, and have contributed to comparative viral studies in the United States and the rest of the world.

Aids Virus Identification

These reagents serve to decrease misleading laboratory results, help avoid duplication of scientific effort, and provide a reliable means of virus identification.

Materials include seed and serum for approximately 62 enteroviruses, 25 myxoviruses, and 31 adenoviruses, as well as a number of rhinoviruses and arboviruses.

Copies of the publication, information on additional unlisted materials such as mycoplasmal reagents have recently become available.

Requisition forms may be had from the chief, Research Reference Reagents Branch, Collaborative Research Program, NIAID.

NIAID, Italian Scientists Work on Study To Isolate Antigens From Human Tissue

A collaborative study to determine if a water-soluble transplantation antigen could be isolated from human tissue, was recently undertaken by scientists from Italy and the National Institute of Allergy and Infectious Diseases.

Similar water-soluble transplantation antigens were successfully isolated from guinea pig tissue. This study showed that transplantation antigens induced accelerated rejection of donor skin grafts and elicited a delayed-hypersensitivity reaction in sensitized hosts.

For a similar study on human tissue, using the same solubilization and isolation techniques, five spleens were obtained from patients in Italy who were undergoing therapeutic splenectomies.

After fragmenting the spleen, a single cell suspension was subjected to low frequency ultrasound to liberate surface antigen.

To concentrate the antigen fraction it was subjected to Sephadex G-200 and electrophoretic separation on polyacrylamide gel.

Immunogenic activity was determined by giving intradermal antigen inoculations to patients who had been preimmunized, as well as normal controls.

Only preimmunized individuals showed distinct cutaneous hypersensitivity.

In vitro tests of the antigen fraction demonstrated that it inhibited the cytotoxic reaction of tissue typing antisera.

Further studies will be undertaken to determine the chemical and genetic basis of this immunogenically active antigen, and to investigate the possibility of inducing tolerance to it in a potential transplant patient.

Dr. Pitcairn Named Chief Physician Education Br.

Dr. Donald M. Pitcairn, formerly Professor of Medicine at the University of Oregon Medical School, has been appointed chief of the Physician Education Branch in the Division of Physician Manpower. Dr. Frank W. McKee, Division Director, announced the appointment.

Dr. Pitcairn attended Harvard College, and received his M.D. degree from the University of Oregon Medical School.

He completed his internship at the University of Oregon Medical School Hospitals and Clinics, and his military service at VA Hospitals.

From 1949 to 1952 Dr. Pitcairn was instructor in Physiology at the University of Oregon Medical School, he also spent 2 years as an assistant in Medicine at Peter Bent Brigham Hospital in Boston.

He returned to academic medicine at the University of Oregon in the Department of Medicine.

Dr. Fenninger Announces Two Health Professions Student Aid Programs

Dr. Leonard D. Fenninger, Director of the Bureau of Health Professions Education and Manpower Training, has announced two new programs of financial aid to veterinary and nursing students.

Under the authorizing legislation—the Health Manpower Act of 1968—schools of veterinary medicine are now eligible to participate in the Health Professions Scholarship Program.

This eligibility will benefit students of exceptional financial need who are either enrolled as full-time students or accepted for enrollment and who require scholarship assistance to enable them to become veterinarians.

Scholarships up to \$2,500 a year may be awarded. Schools participating in the Health Professions Scholarship Program are responsible for determining the amount of an award.

Scholarship Grants Authorized

The act also authorizes the DHEW Secretary to make scholarship grants to students of exceptional financial need who are either enrolled as full-time students or accepted for enrollment in some 1,000 schools of nursing.

Scholarships up to \$1,500 a year may be awarded. Schools participating in the Nursing Scholarship Program are responsible for determining the amount of an award.

The Nursing Scholarship Program replaces the Nursing Educational Opportunity Grants Program which will terminate at the close of the 1968-69 academic year.

Applications have been sent to veterinary medicine and nursing schools for use in making application for funds for the 1969-70 academic year.

The two programs will be administered by the Student Loan and Scholarship Branch of the Division of Health Manpower Educational Services.

Dr. Pitcairn served as director of the Pulmonary Function Laboratory, head of the Division of Chest Diseases, and assisted in the early development of the open heart surgical program.

His principal research interests have been the study of respiratory center sensitivity during pregnancy, and oxyhemoglobin dissociation characteristics of young and old human red blood cells.

Blood Bank at CC Reports 200 Units Given in Nov.

The Clinical Center Blood Bank reports that 200 units of blood were received from NIH donors in November, and CC patients received 2,540 units of blood.

Twelve donors achieved a special status. Patricia Ann Roczey and Jesse T. Sutton, OD, and William C. White, DCRT, reached the 2-gallon mark.

Joining the Gallon Donor Club were: Bruce F. Carson and Oscar L. Grabiner, OD; Dr. Bobby G. Young, DBS; Martin C. Blum and William H. Mautz, III, DRS; Sylvia H. Goldsmith, NIAID; Dr. Elton R. Homan, NCI; Dr. Anthony A. Rizzo, NIDR, and Silas J. Jackson, NLM.

More blood is needed. Make an appointment to donate now. Call the Blood Bank, Ext. 64506.

NEW BRANCH

(Continued from Page 1)

clinging, called cell kinetics, are being studied in such types of cancer as the leukemias, lymphomas, and solid tumors of the breast and lung, and in normal cells.

The Laboratory of Molecular



Dr. DeVita



Dr. Kohn

Pharmacology, under the direction of Dr. Kurt Kohn, has been established because of the increasing importance and specialization of drug research based on a molecular approach.

The aim of the new laboratory is to investigate the actions of potentially useful anti-cancer drugs on cells and cell components, particularly the actions of these drugs at a molecular level.

DeVita to Head Service

Dr. Vincent T. DeVita, Jr., senior investigator, will become head of the Solid Tumor Service of the Medicine Branch. He will continue his pioneering work in the chemotherapy of Hodgkin's disease.

Dr. Paul P. Carbone, chief of the Medicine Branch, has indicated that the function of the Solid Tumor Service is the evaluation of new agents as well as improvement in the use of drugs, taken singly or in combination.

Dr. Hans U. Zellweger, NINDS Guest Worker, Awarded MDAA Grant

The Muscular Dystrophy Associations of America, Inc. has awarded a stipend of \$2,335 to Dr. Hans U. Zellweger, a guest worker at the National Institute of Neurological Diseases and Stroke, to help finance him while at NIH.

Dr. Zellweger, professor of Pediatrics at the State University of Iowa, is with the Institute's Medical Neurology Branch where he is studying histochemistry techniques and the interpretation of histochemical preparations.

During the 3 to 4 months he will be spending in the NINDS



Dr. Hans U. Zellweger, NINDS guest worker (left), receives stipend from James H. Rademacher, president of the National Association of Letter Carriers and member of the Board of Directors, Muscular Dystrophy Association of America, Inc.—Photo by Reni Newsphotos, Inc.

laboratories, Dr. Zellweger will study new cell chemistry techniques to enable him to accurately diagnose and distinguish between specific muscle disorders, such as the inherited Duchenne type and other types of muscular dystrophy.

"With the aid of these specific diagnostic techniques," Dr. Zellweger said, "we can better advise parents about the possible course of their child's illness, and we can devise the most suitable therapy program for the child."

The grant from the voluntary organization supplements Dr. Zellweger's salary from the State University of Iowa. His research interests throughout his career have been in the areas of pediatric neurology, cell genetics, and genetic diseases. He has published over 250 papers and four monographs.

Dr. Zellweger is from Zurich, Switzerland. He received his medical education in Switzerland, Germany, and Italy. In his international career, he has been a co-worker with the late Albert Schweitzer in Lambarene, French Equatorial Africa; professor of Pediatrics and chairman of the

Investigators Pinpoint Drugs in Body Cells By Electron Microscope, Autoradiography

A method for localizing drugs in body cells has been demonstrated by grantees of NIH. Using an electron microscope and a technique known as autoradiography, the investigators were able to pinpoint where commonly used drugs end up in the body.

Such information is an important key to understanding precisely how drugs work to combat disease and restore normal function.

Scientists at the Washington University School of Medicine, St. Louis, Mo., prepared tissue sections from the brain, kidney, liver, muscle, and salivary gland of mice for electron microscopic examination.

The sections were then treated with drugs made radioactive by tritiated atropine alkaloid.

Four drugs were studied: chlormerodrin, a diuretic used in heart, liver, and kidney ailments characterized by accumulation of excess fluid; diphenylhydantoin, an anti-convulsant used to treat epilepsy, and two barbituates used as sedatives.

The radioactive tissue sections were coated with a thin layer of jell containing silver halide crystals.

Crystal Reactions Revealed

During developing, the crystals which were struck by radioactive particles remained, the others were dissolved. Viewed under an electron microscope, the silver crystals appeared as black specks and indicated the exact location of the radioactive drugs.

The investigators found the diuretic drug located within the tubular cells of the kidney, demonstrating the possible value of the technique in clarifying the drug's action.

The concentration of the anticonvulsive drug within the brain's neuropil, a highly developed felt-work of delicate nerve fibers, in contrast to its diffuse distribution within the cerebellum where muscle coordination and body equilibrium is centered, is considered an especially interesting finding.

Although the barbituates were localized, further investigation is needed with these drugs to draw any implications.

These results were reported by K. R. Smith Jr. and K. Arnold, Grantees of the National Institute of Neurological Diseases and Stroke and the National Institute of General Medical Sciences.

Pediatric Department at the American University of Beirut, Lebanon; and a Fellow of the Rockefeller Foundation.

He was general secretary of the Fifth International Congress of Pediatrics, Zurich, 1950. He has also been active in research of polio and various fields of pediatric neurology.

NIH Publications Discuss Graduate School Trends, Research by Foundations

Two publications in the NIH series, *Resources for Medical Research*, have recently been issued. The reports deal with aspects of biomedical research and education in scientific fields.

Report No. 14, *Trends in Graduate Enrollment and Ph.D. Output in Scientific Fields, 1960-61 through 1965-66*, reveals the extensive growth of graduate school population and the expansion of doctoral programs.

Medical Sciences Favored

The report states that over 50 percent of NIH predoctoral fellowship support for selected science fields was awarded to graduate students in the basic medical sciences.

In order to meet future manpower requirements, the publication suggests a continuing expansion, not only in traditional fields, but also in newly emerging fields, such as biomedical engineering and molecular biology.

Copies of the report are available from the Resources Analysis Branch, Bldg. 31, Rm. 1B-44, NIH, Bethesda, Md. 20014.

Report No. 15 is titled *The Medical Research and Education Activities of Foundations and Non-profit Research Institutes*. This publication analyzes the medical research of foundations supporting biomedical science and recipient nonprofit research institutes.

Highlights Listed

Some facts highlighted in this report indicate that:

- Foundations provide about \$50 million a year for research in medicine and health, this is more than half of all foundation support for research.
- Foundation medical research funds equal those made by the American public through voluntary health agencies.
- Nonprofit research institutes are spending about \$115 million annually on health research, approximately three-fifths of these funds are from Federal agencies.

Copies of the report are available at 40 cents per copy from the Superintendent of Documents, Government Printing Office, Washington, D.C. 20402. Writers and editors may obtain single copies by writing to the Resources Analysis Branch.

International Conference On Rubella Immunization To Meet Here in Feb.

Scientists from all over the world will attend an International Conference on Rubella Immunization at the Clinical Center auditorium Feb. 18 to 20, 1969.

The National Institute of Allergy and Infectious Diseases, and the Division of Biologics Standards are sponsoring the meeting.

Dr. Saul Krugman, professor and chairman of the Department of Pediatrics at New York University School of Medicine, will be conference chairman. Dr. Krugman, a member of NIAID's Advisory Committee for Vaccine Development, has long conducted research on rubella, and with his colleagues, has conducted trials of experimental vaccines to control childhood diseases.

The conference will deal with all aspects of rubella: the disease, the virus which causes it, epidemiology, studies with experimental vaccines and human gamma globulin, and the production of vaccines and biologics control.

Members of the program committee for the conference, in addition to Dr. Krugman, will be Dr. Edwin H. Lennette, California State Department of Public Health; Dr. Frederick Robbins, Case Western Reserve University; Dr. W. Charles Cockburn, World Health Organization; Dr. Thomas Weller, Harvard University; Dr. Bruce Dull, National Communicable Disease Center, Atlanta, Ga.; Drs. Harry M. Meyer, Jr., and Paul D. Parkman, DBS, and Drs. Daniel Mullally and Earl Beck of NIAID.



Dr. Lloyd Neurauder, chairman of the American Association of Laboratory Animal Science Research Awards Committee, and associate director of the Comparative Medicine Institute, University of Georgia, congratulates the recipients of the 1968 AALAS Research Award. They are (l to r): Dr. Roland D. Hunt, and Dr. Felix G. Garcia of the New England Primate Research Center. Their paper was selected as the outstanding article published in the AALAS journal. Research for the article was supported by NIH. The third co-author, Dr. D. M. Hegsted, is not pictured.