

the



Record

U. S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

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NATIONAL INSTITUTES OF HEALTH

Dr. Kenneth Cole Has Silver and Gold Medal Named in His Honor

Dr. Kenneth S. Cole, internationally known NINDS scientist who is widely considered to be the "father of membrane biophysics," has had a silver and gold medal named in his honor.

The medal will be given annually by the Membrane Section of the Biophysical Society. It will go to scientists making an outstanding contribution to the study of cell membranes.

Gets Honorary Medal

Dr. Cole was presented with an honorary medal at the Biophysics Society meeting held in Columbus, Ohio, by Dr. Walter Woodbury, a University of Washington (Seattle) biophysicist who organized the Society's Section on Membranes 4 years ago.

The first recipient of the Cole award, Dr. David E. Goldman, professor of biophysics at the Medical College of Pennsylvania, received the medal at the same ceremony.

Dr. Goldman is credited with devising an equation which is vital to membrane research.

Honored 3 Times

The Cole award is one of three major honors bestowed on Dr. Cole within a year. In November 1972, he was formally admitted as a Foreign Member of the Royal Society of London at its 312th anniversary meeting. Only a few Americans have received this honor.

In January of this year, a book was dedicated to him entitled

(See COLE MEDAL, Page 11)



In the Oval Office of the White House, President Nixon meets with HEW Secretary Caspar W. Weinberger, the newly-appointed NIH Director Dr. Robert S. Stone, HEW Assistant Secretary for Health Dr. Charles C. Edwards, and Associate Director to the Domestic Council James H. Cavanaugh following Dr. Stone's swearing-in ceremony.

Dr. Berliner Is Named Yale Medical School Dean; Honored by Alma Mater and College of Wisconsin

Dr. Robert W. Berliner, NIH Deputy Director for Science, recently received honorary doctor of science degrees during commencement exercises at Yale University and the Medical College of Wisconsin.



Dr. Berliner

At Yale University, his alma mater, on June 4, Dr. Berliner was praised for developing his own technology "for observing the transport of chemical substances across the membranes of living cells."

The citation also notes his creation of "elegant models, of great precision, which permit us to understand the mechanisms in kidney disease."

For this outstanding contribution and in appreciation of his role as "the Nation's leading statesman in biomedical science," Yale conferred the honorary degree upon Dr. Berliner.

Earlier, on May 27, the Medical College of Wisconsin presented the honorary doctor of science degree to Dr. Berliner "for his contributions to renal physiology, his role as teacher and research scientist, and his expert guidance as a research administrator."

Dr. Robert W. Berliner, Deputy Director for Science since 1969, announced June 13 he will accept the position of Dean of the Yale University Medical School effective in September.

Dr. Berliner said, "Despite strong ties of institutional loyalty and bonds of personal friendships developed over the 23 years that I have been at NIH, I have come to the difficult conclusion that I should accept the position of Dean of the Yale Medical School."

He added, "I can hardly express my affection for this institution, my pride in its stature and accomplishments, and my hopes for its continuing vigor and health."

He noted that Yale University, from which he received his undergraduate degree in 1936, "shares with NIH an important claim upon my loyalties and affections."

In announcing his decision, Dr. Berliner expressed his "wholehearted support" for Dr. Robert S. Stone, who was sworn in as Director of NIH May 29. "I have confidence in his ability to provide NIH with the leadership and strengths that it requires to emerge from a period of stress with renewed emphasis on quality and undiminished excellence."

Dr. Berliner came to NIH in 1950 as chief of the Laboratory of

(See DR. BERLINER, Page 9)

NIDR Observes Silver Anniversary; President Sends Congratulations

In observance of the Silver Anniversary of the National Institute of Dental Research, President Nixon sent congratulations to Dr. Seymour J. Kreshover, NIDR Director.

A scientific conference in honor of the anniversary will be held on Thursday and Friday, June 28-29, at the Washington Hilton Hotel.

The text of the letter follows:

As the National Institute of Dental Research observes its twenty-fifth anniversary, I want to congratulate the many devoted men and women who are helping to ensure better oral health for our citizens.

It is a source of deep pride for our nation that twenty-five years ago we established what continues to be the leading institution in the world devoted to studies of oral health.

It attests to America's great concern—even a generation ago—with the life-threatening diseases. We sought then and continue to expect now—relief from the variety of oral problems that prevent so many from leading healthy lives.

The social and economic impact of these problems demands the best efforts of our scientists. And its successful past history attests to the all-important future role of the National Institute of Dental Research in this effort.

On behalf of all Americans, I thank and commend you, and with them I join you in looking forward to your second quarter-century of dedicated and remarkable achievement.

(Signed) Richard Nixon

See Anniversary Feature, pp. 5-8.

DRG Leads Bond Campaign

Leading in the Savings Bond Drive as of June 1 are:

	Employees Bond	% of	Participation
	Buyers		
DRG	400	227	56.8
DRR	77	42	54.5
NLM	464	243	52.4
OD	1,875	901	48.1
FTC	55	26	47.3
BHME	796	375	47.1
DRS	530	249	47.0
NIGMS	166	75	45.2

the  **Record**

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Helen Lucye Is Retiring; With DDH for 21 Years



Mrs. Lucye participated in dental research studies in the use of topical fluorides in several states.

Helen Sheary Lucye, a public health advisor in the Preventive Practices Branch, Division of Dental Health, BHME, is retiring after a 21-year career with the division.

Much of Mrs. Lucye's work with the PHS was conducted in the field. Starting in 1959, she played a prominent part in the division's project on the chronically ill and the aged in Kansas City, Mo.

In her spare time, Mrs. Lucye devised ways to make toothbrushes easier to handle by patients with poor hand closure. She also trained dental hygiene students in clinical and home care procedures for the chronically ill and home-

Dr. Weisskopf to Give Holiday Safety Message On Thursday, June 28

Every year during peak holiday travel, our Nation's highways become an automobile battleground where many people lose their lives and many more are injured.

Sponsored by the Employee Health Service, a safety message—Horse-Sense vs Horse-Power—will be delivered by Dr. Josef J. Weisskopf to combat the unnecessary slaughter. He will speak on Thursday, June 28, at noon, in the Jack Masur Auditorium.

No Stranger to NIH

No stranger to NIH, Dr. Weisskopf spent 8 years as chief of HEW's Federal Employee Health Service, and served with the National Library of Medicine the last 5 years prior to his retirement.

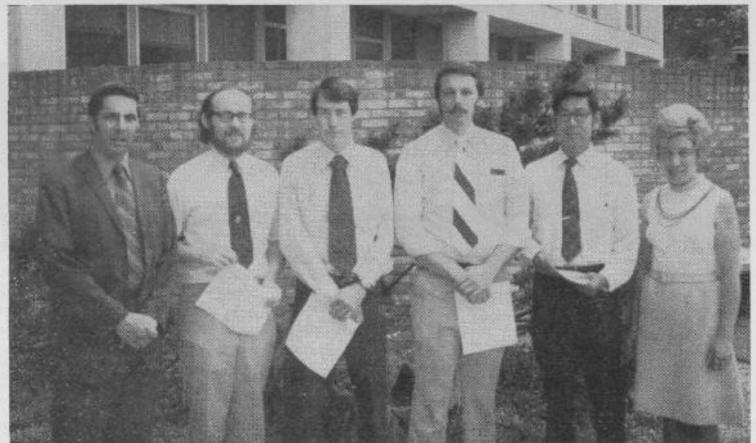
Since his retirement, he has given much time and effort to promoting safety on the highway.

bound patient.

Prior to Federal employment, Mrs. Lucye was a dental hygienist in private practice and a dental health educator in the public schools of her home town, Shamokin, Pa.

For 2 years, 1957-59, she was an associate professor at the School of Dental Hygiene, Broome Technical Community College, Binghamton, N.Y.

Mrs. Lucye received a certificate from the School of Oral Hygiene, Temple University, and earned a B.S. from Bloomsburg (Pa.) State College.



Winners of the first R & W Camera Club—"NIH Record" Photography Contest were presented with gift certificates by L. D. Weiford, Jr., R & W manager (left), and Joanie Genau, R & W treasurer (right). The Recreation and Welfare Association donated the prizes which were won by (l to r): Drs. Gary Peck, Richard Buswell, Ted Colburn, and Raymond Chen. Aurora Reich was unable to attend the ceremony.

Update Form Designating Order of Beneficiaries

"Must I designate a beneficiary to make sure my survivors will receive any benefits to which they are entitled should I die while Federally employed?"

The answer to this question is generally "No," says the Employee Relations and Recognition Branch, OPM.

Usually, the payable order for the regular and optional Federal Employees Group Life Insurance, Civil Service Commission retirement, and unpaid compensation—which includes unused annual leave, salary, unnegotiated checks, travel, awards—is:

Pay Order Explained

- 1) Widow or widower.
- 2) If neither of the above, to the child or children, in equal shares, with the share of any deceased child distributed among the descendants of that child.
- 3) If none of the above, to the parents in equal shares or the entire amount to the surviving parent.
- 4) If none of the above, to the executor or administrator of the estate.
- 5) If none of the above, to the next of kin as determined under the laws of the state in which the employee was domiciled.

Forms in Personnel Offices

A beneficiary on retirement fund is for lump-sum benefit purposes only.

Employees who wish to depart from the order of precedence or to change a previous designation should secure a "Designation of Beneficiary" form from their B/I/D personnel office.

Learning without thinking is useless. Thinking without learning is dangerous.—Confucius.

Information Staffers Win 3 'Blue Pencil' Awards; 'Record' Gets 1st Place

The Federal Editors Association presented "Blue Pencil" awards in three categories to NIH information staff members at its tenth annual awards banquet on June 5.

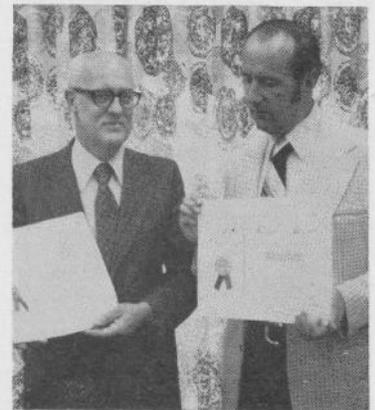
The NIH Record was awarded first place in its "Newsletter or house organ" category.

Booklet Cited

James Augustine, who was editor of the Technical Publication issued by the Division of Research Resources, entitled *Primate Research Centers: A Major Scientific Resource*, won Honorable Mention.

Charles C. Shinn also received Honorable Mention as producer of a Slide Presentation, "The DRS Story."

A record-breaking number of entries—representing various forms of Federal government communications media throughout the country—were submitted this year.



Charles Shinn (l), visual communications project officer, DRS, and James Augustine, information officer, DRR, hold Blue Pencil Awards presented for their "outstanding" contest entries.

James G. Hill, Man of Many 'Firsts,' Named Mid-Career Fellow at Princeton

The first employee of the National Eye Institute will soon be the first NIH participant in an educational program for mid-career public officials at Princeton University.

James G. Hill, executive officer of NEI, has been selected as a Mid-Career Fellow in the Woodrow Wilson School of Public and International Affairs at Princeton for the coming academic year.

The non-degree program at the University is aimed at improving public service through educational development and advancing the professions of public officials at mid-career levels.

Each prospective Fellow first makes formal application to Princeton, discussing his career, accomplishments, future plans, and how the fellowship could contribute to those plans.

The applicant's agency and department must endorse the application, but final selection is made by Princeton.

For the 1973-74 academic year, 14 Fellows—all in Federal service—have been admitted. In addition to Mr. Hill, two other HEW employees were selected.

The year in residence includes course work, writing, and research as well as seminars and workshops.

Designs Own Program

"With the aid of a senior faculty advisor, each Fellow designs an individualized program that can range from total course work to writing a book," Mr. Hill explained.

As for his own plans, he said, "Primarily I want to write about what I've been doing for the past 10 years. In that writing I expect to emphasize behavior of people in an organized setting and how their behavior relates to the development of an organization, such as NEI."

Mr. Hill's special vantage for studying the development of NEI is that he has been at the Institute since its inception.

He said he wants to contrast his own observations with the latest theories on people's behavior in groups. In this connection, he plans to take social psychology courses.

Some Theories Work

"I want to see why some theories work and others fail," Mr. Hill explained. "For instance, is it more important to hire key personnel who can get along with one another or who are technically competent?"

"In a scientific setting such as NIH, where emphasis is placed on scientific ability and accomplishments, the greatest organizational problems usually arise in the area of how people interact with others."



Mr. Hill hopes, after two semesters at Princeton, to return to work at HEW in the health field.

He also hopes to attend a seminar on Delivery and Financing of Health Care and take courses in economics.

Mr. Hill's plans for the future are not definite, but he emphasized, "I would like to assume a position of greater responsibility, one that will make use of my experience plus additional knowledge gained at Princeton."

Mr. Hill said he would like to return to the health field within HEW. He has a strong interest in national health insurance and might like to become involved in that area.

Asked how he felt about leaving NIH and returning to academic life, Mr. Hill explained, "It is easier for me to leave because NIH is far more like a university



An exhibit on Medicine of the Civil War is being shown in the main lobby of the National Library of Medicine through Sept. 28. The exhibit includes numerous photographs and drawings providing documentary evidence of the extreme problems faced by medical personnel during the Civil War. Also on display are surgeons' reports, bones fractured by musket fire, field surgical kits, and trephining instruments.

Premiums for Optional FEGLI Life Insurance Reduced for All Ages

Premium rates for employees covered by \$10,000 optional life insurance under the Federal Employees' Group Life Insurance Program have been reduced.

This reduction, announced by the Civil Service Commission, will be reflected in July 31 pay checks.

The old and new premium rates for optional life insurance, based on the employee's age group, are:

Age Group	Biweekly premium cost	
	Present	New
Under age 35	\$1.30	\$.80
35 to 39	1.70	1.20
40 to 44	2.40	1.90
45 to 49	3.60	2.90
50 to 54	5.50	4.50
55 to 59	17.00	10.50
60 and over	19.00	14.00

An employee who declined regular and/or optional life insurance may cancel his waiver and become insured at any time if the waiver has been in force for at least one year, if the employee is under age 50, and if he furnishes satisfactory evidence of good health.

B/I/D personnel offices will answer questions on regular and optional life insurance.

than other parts of HEW. But it may be harder to return."

Before coming to NEI, Mr. Hill worked at the National Library of Medicine as budget officer, financial management officer, and assistant executive officer. He also served as a grants and management specialist in the National Cancer Institute after completing the NIH Management Intern Program in 1964.

Previously, he served as a lieutenant in the U.S. Navy.

Mr. Hill graduated from Syracuse University in 1958 with an A.B. in English. He has taken graduate courses in public administration at both American and George Washington Universities.

Safety Tips for NIH



Good laboratory practices for persons using radioisotopes lead to safe conditions. Some helpful hints are:

- 1) Never pipette by mouth.
- 2) No smoking or eating permitted in the work area.
- 3) Gloves and laboratory coat are required when using radioisotopes.
- 4) Prescribed personnel monitors must be worn.
- 5) Hands, shoes, and clothing should be frequently monitored.
- 6) Work with radioactive materials in an approved hood or glove box, unless the safety of working on an open bench can be demonstrated.

More Helpful Hints

- 7) Radioisotope work should be conducted in an impervious tray or pan, lined with absorbent paper.
- 8) Utilize shielding and distance whenever possible.
- 9) Dispose of liquid and solid radioactive waste in the approved containers provided.
- 10) Refrigerators containing isotopes shall not be used for storing food.
- 11) Monitor radioisotope work areas at least once daily for contamination and make notation of this survey in laboratory records.
- 12) Thoroughly wash hands after manipulating isotopes, before eating or smoking, and on completion of work.
- 13) Maintain records of receipt, use, transfer, and disposal of radioactive materials.
- 14) Report accidental inhalation, ingestion, injury of spills to your supervisor and the Radiation Safety Office.
- 15) Review pertinent safety practices frequently, especially before using a new radionuclide.
- 16) Assure compliance with NIH Radiation Safety Guide and Title 10, Code of Federal Regulations, Part 20.

For further information or assistance, contact the Radiation Safety Section, Ext. 65774.

Internat'l Group Confers On Methods of Training The Medical Assistant



Dr. Milo D. Leavitt, Jr., Director, FIC, and Dr. Mahler (r) chat briefly before the latter's appearance at the Medical Assistant Conference.

Representatives and official observers from 24 countries participated in a conference on The Medical Assistant: Intermediate Levels of Health Care Personnel, sponsored by the World Health Organization and the Fogarty International Center at NIH June 5-7.

Thirty of the 137 member countries of WHO employ medical assistants in their health care systems.

The conference was organized by Dr. Daniel M. Flahault of WHO and Dr. Donald M. Pitcairn, FIC.

Current developments in the United States were compared with programs in other parts of the world. In addition, the conferees discussed such topics as roles for the medical assistant, training, career status, public and professional acceptance and assurance of competence and accountability.

Conference participants and observers included high-ranking public health officials, educators and administrators from Africa, Southeast Asia, Latin America, the Middle East, Europe, the South Pacific, Canada, and the U.S.

Dr. H. Mahler of Denmark, re-

Organization Changes of NIAID Reflect Institute's New Alignment of Duties

Several organizational changes within the National Institute of Allergy and Infectious Diseases have been announced by its Director, Dr. Dorland J. Davis.

Dr. Howard A. Minners has been appointed associate director for Collaborative Research.

He will administer the branches of the Collaborative Research program—Infectious Disease, Research Resources and Transplantation Immunology—formerly the responsibility of Dr. John R. Seal, the Institute's scientific director.

In addition, the Collaborative program will include the Geographic Medicine Branch which Dr. Minners headed since 1968.

Dr. Seal will continue to direct the Institute's intramural research programs. He will also plan and



Dr. Beck



Dr. Galasso

coordinate joint intramural and collaborative research programs, particularly those related to influenza and hepatitis.

Dr. Minners came to NIH in 1966 as special assistant to the Director,

recently elected Director-General Designate of the World Health Organization, made an unexpected appearance at the conference.

His extemporaneous comments emphasized that, given proper organization and utilization, present-day knowledge and technology are sufficient to provide good health care to all the world's populations.

Office of International Research. Prior to his NIH assignment, he had been chief of the Flight Medicine Branch, Medical Research and Operations Directorate, NASA Manned Spacecraft Center, Houston, Tex., and a flight surgeon for the astronauts.

Dr. Robert J. Byrne, who has been with NIH since 1963, has been named assistant associate director for Collaborative Research.

Dr. Early S. Beck, the new chief of the Geographic Medicine Branch, previously headed the U.S.-Japan Cooperative Medical Science Program. He has been with NIH since 1965 and with NIAID since 1966.

The Geographic Medicine Branch administers the U.S.-Japan Program, International Centers for Medical Research Program, and associated international activities.

Dr. George J. Galasso, named chief of the Infectious Disease Branch, was formerly the acting chief. He was an NIH Grants Associate from 1968 to 1969, when he joined the NIAID staff.

Dr. John E. Nutter came to the Institute as chief of the Research Resources Branch last fall. Before his appointment he was Immunology Project Director at the Armed



Dr. Nutter



Dr. Kayhoe

Forces Radiobiology Research Institute.

Dr. Donald E. Kayhoe has been chief of the Transplantation Immunology Branch since 1966. He originally joined the NIAID in 1955, but since then also served with the Georgetown Univ. Hospital and National Cancer Institute.



Dr. Minners has been named NIAID associate director for Collaborative Research.

Soviet Scientists Visit NIEHS; Environmental Protection Discussed

Cooperation between the United States and the Soviet Union in the area of environmental protection aims at solving the problems that threaten the environment.

Their goals include working out measures to prevent pollution, studying pollution and its effects, and developing a basis to control the impact of human activities on nature.

As part of the U.S.-Soviet Agreement signed in Moscow last year, a delegation of Russian scientists, headed by Academician N. P. Dubinin, came to Research Triangle Park, N.C., to visit the National Institute of Environmental Health Sciences, June 8-11.

Eleven areas of concentration are included in the agreement—Cooperation in the Field of Environmental Protection.

During June 3-17, a working group, co-chaired by Dr. David P. Rall, NIEHS Director, and Dr. Carl M. Shy, Environmental Protection Agency, met to discuss one aspect of this field—Biological and Genetic Effects of Pollutants.



The U.S. Environmental Diseases Panel of the U.S.-Japan Cooperative Medical Science Program held its first meeting recently at NIH. Panel members attending were (l to r): Dr. Norton Nelson, New York University Medical Center; Dr. Arno Motulsky, University of Washington School of Medicine, Seattle; Dr. Frederick J. de Serres, panel chairman, NIEHS; Dr. Warren W. Nichols, Institute for Medical Research, Camden, N.J., and Dr. Robert W. Miller, NCI. The seventh panel established by the cooperative program aims at developing better methods for detecting chemical pollutants that could cause cancer or genetic changes and at evaluating existing methodology.



During their visit to NIEHS, Dr. Yevgeniya Korenevskaya (l), Deputy Science Director, Institute of General and Communal Medicine; Dr. Lidiya Dubinina, researcher, Institute of General Genetics, and Academician Dubinin, Director of the Institute of General Genetics of the Academy of Sciences of the U.S.S.R., attended several environmental discussions.

National Institute of Dental Research

Twenty-fifth Anniversary 1948-1973

Dental Studies Assist Several Other Fields Of Science, Medicine

NIDR studies have opened other areas of biomedical research and contributed to further knowledge in several fields. Examples are:

- Fluoride has been shown to be essential for life in trace quantities. Studies of fluoride metabolism in humans should improve therapy for osteoporotic (bone-thinning) conditions.

- Methods developed for testing the safety of solid, liquid, or gaseous substances used in dentistry should improve the safety of such substances used elsewhere in the body.

- Knowledge of mechanisms of the disappearance of bone and other connective tissues in periodontal disease may help explain tissue loss in various inflammatory, rheumatic, and collagen diseases.

- Studies of ways to stimulate growth of new bone should help not only patients with periodontal disease, but also orthopedic and trauma cases.

- Research in pain control applies to all branches of medicine. One example: pain from pressure and pain from temperature have different mechanisms and require different therapies.

- Studies of the evolution of bacteria show some of the heritable molecular changes that separate disease-causing forms from



Dr. Seymour J. Kreshover, Director of NIDR, was named to his present post in 1966, following 7 years as NIDR associate director in charge of research. During his administration, the Dental Institute has demonstrated the expansion of dental sciences and the interdependence of biology, medicine, and dentistry.

harmless relatives, and may well lead to better control of bacterial disease.

- Investigations of genetic factors in such problems as clefting, faulty enamel, saliva, and collagen defects, throw light on other heritable human diseases such as deafness and Marfan's syndrome.

- Research into persistent infectiousness of complexes of the herpes simplex virus with antibody have led to better understanding of mechanisms by which slow viruses operate. This research links viral effects with parts of the immune system and possibly with other diseases such as rheumatoid arthritis, diabetes, and cancer.

- Knowledge that the oral mucosa reflects inner disturbances of the body should aid in their diagnosis.

- Saliva is sometimes used as a diagnostic aid in digitalis toxicity, certain adrenal gland tumors, and in the detection of hereditary differences.

mals have shown the importance of adhesive bacterial films called plaque and such bacterial products as dextrans which stick to teeth, forming a framework for more bacteria to collect and attack the tooth.

Scientists now think that there are several varieties of decay involving different types of organisms.

For example, NIDR scientists have found that a particular type of organism can produce decay on the roots of hamster teeth but not

(See SUCROSE, Page 8)

Efforts of Many Scientific Disciplines May Help Solve Oral Disease Problems

It has been said that "the mouth is an even tougher environment than outer space." Because of their complexity, oral problems must be attacked through a comprehensive program of laboratory, clinical, field and epidemiological studies in such areas as developmental biology, genetics, microbiology, virology, materials science, and geographic pathology.

Today the studies of over 30 scientific disciplines are contributing to information on how to treat and prevent disease.

The National Institute of Dental Research is the chief instrument of support for such studies. Major program activities are concerned with dental caries (tooth decay); periodontal (gum) disease, problems of growth and development, especially cleft lip and palate and malocclusion, and a variety of oral lesions affecting the tongue, cheeks, and lips.

Other areas of emphasis include the development of improved restorative materials, including successful tooth implants, and the control of oral pain.

Congress Authorizes NIDR

NIDR was authorized by the 80th Congress through Public Law 755, which was approved June 24, 1948. However, at first, a lack of trained investigators handicapped the Institute.

The development of necessary manpower was spurred by the establishment in 1958 of a grant program for graduate research training in disciplines fundamental to dental research.

Through this program, hundreds of dental scientists have been trained in dental, medical, graduate schools, and in other research institutions throughout the country.

Dentistry Deficit Persists

The fellowship program, dating back to when the Institute was founded, was also greatly strengthened.

Even so, the early gaps have not been bridged entirely. Dentistry's late start in training and research has contributed to a deficit which persists to this day.

In the United States, there is only one dental researcher behind every 44 dentists, as compared with one investigator in biomedical research to back every 7 physicians.

A notably successful effort in attracting outstanding scientists in fields not previously involved in dental research has been the special grant program, established

in 1967, to support a limited number of dental research centers in universities.

The participation of biological, physical, and social science specialists in the study of oral health problems comes from the interaction of the centers with the research and educational programs of the parent universities, and from collaboration with other institutions.

Five such centers are now in operation at the Universities of Alabama, Michigan, North Carolina, Pennsylvania, and Washington.

Although about 80 percent of the Institute's total appropriations are spent for extramural research and training activities, the intramural staff has played a crucial role in advancing dental knowledge.

The Institute's productivity over the years, much of it in fundamental disciplines, such as biochemistry and microbiology, has



NIDR dental clinicians collaborate with Institute intramural programs for emergency dental care to CC patients. Oral health specialists conduct their own studies and also team up with researchers in heart, cancer, and other areas to give the best possible therapy.

attracted well-trained and enthusiastic researchers from a variety of backgrounds.

Of the nearly 100 people comprising the present research staff, almost two-thirds were trained at

(See ORAL PROBLEMS, Page 7)

Combination of Dentistry And Computers Produces 1st Reliable Skull Pattern

Computer-assisted orthodontics is one new approach to meet the problems of malocclusion—the improper way upper and lower teeth meet.

An NIDR grantee at the University of Michigan Dental School has a series of some 15,000 skull profile X-rays taken over a period of years of growth.

He and his research team have developed a combination of statistics, mathematical models, and electronic technology to convert these X-rays to x-y coordinate maps of the skull and jaws.

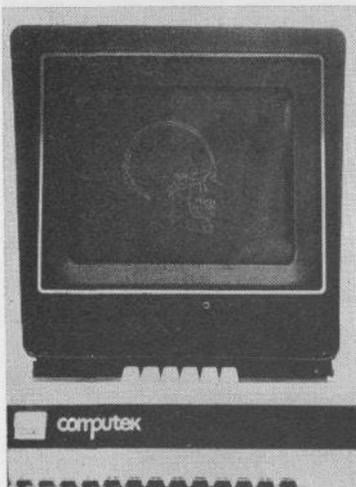
The models or maps are automatically converted into punch cards or transferred via telephone lines into the memory bank of a computer.

This combination of dental science and computer technology has produced the first statistically reliable pattern of human skull and jaw growth.

From the data bank, the researcher or clinician can quickly extract many thousands of measurements and growth changes. They form the basis for diagnosing, monitoring, and treating dental and facial problems.

With this method, an orthodontist or a dental student can see the changing growth pattern of normal and abnormal cases in minutes instead of waiting years for the same events to unfold in his practice.

Other NIDR-supported orthodon-

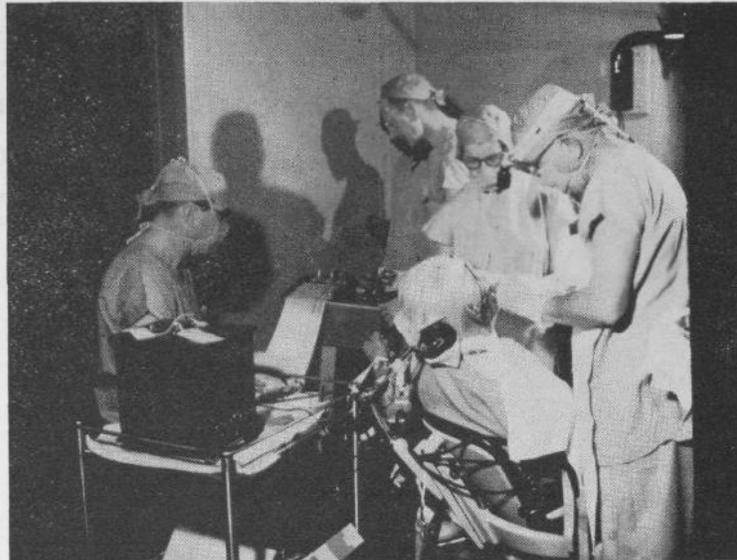


The skull outlines viewed on the TV display is called out of the computer's memory bank, evaluated, and changed—if necessary—in seconds.

tie advances include a better understanding of forces from lips and tongue that tend to push teeth or control the position of teeth naturally, improved materials for appliance therapy, and better cements for attaching appliances to teeth.

(See COMPUTERS, Page 2)

Fear and Anxiety Related to Dental Visits Probed; Pain Control Vital Study Area



Studies in general anesthesiology on ambulatory dental patients include extensive physiological monitoring.

The intense interest in acupuncture is a reminder that pain and its relief are a major concern of the American people.

Pain associated with the face and oral cavity is particularly distressing and may have a marked influence on the behavior of those seeking dental care.

The fear and anxiety associated with painful dental procedures are among the reasons that less than half of the U.S. population visits a dentist each year.

Oral pain control has recently been highlighted by NIDR for special research. The Institute's interest in the problem is not new, extending back over a 17-year period during which NIDR intramural investigators identified, for the first time, the full range of physiological response to a variety of general anesthetic agents.

Anesthesia for oral procedures and the conditions under which they are administered continue to be an important area of clinical research.

Important Research Area

For example, NIDR grantee-researchers have recently reported that a semi-reclining—45 degree angle—position used during anesthesia for ambulatory patients permits the best cardiorespiratory functioning and significantly reduces the fainting problem.

The researchers pointed out that these same physiological functions of fainthearts and near fainthearts do not return to normal for more than an hour after the episode.

A promising sedation technique has been reported by a New Zealand dentist who combines an amnesic tranquilizer, diazepam, with a short-acting barbiturate, methohexital.

Less of each drug is required for sedation and amnesia than when either is used alone. The patient

feels as if he were floating, yet responds to all directions from the dentist and recovers quite quickly without memory of the procedure.

A local anesthetic is given with the drugs to block out the painful stimuli which would cause adverse physiologic reactions and side effects.

Other pain control studies supported by NIDR have shown that the sensation of pain from heat seems to be produced by a different mechanism than that from pressure or from electrical stimulation of a tooth.

Therefore, heat tests alone are not suitable for evaluating drugs for dental pain.

Difficult Dental Problem

NIDR investigators have analyzed a very difficult diagnostic dental problem involving tooth sensitivity—the invisible crack syndrome. These cracks may occur around fillings, which may open under chewing pressure.

Fine cracks can also appear on the surface of a tooth when cold or iced foods contact the outer shell of enamel while the warmer dentin beneath remains expanded.

Research continues on ways to overcome extremely irrational fears which prevent so many people from ever consulting a dentist. According to one theory, it is impossible to be anxious and physically relaxed.

A behavioral therapist reported that frightened people can be taught to relax and can then be led to visualize threatening situations such as those involved in traumatic dental treatments.

NIDR Stresses Studies On Periodontal Disease, Major U.S. Affliction

Today, largely as a result of periodontal (gum) disease, nearly 23 million Americans have lost all their teeth, and another 75 million are afflicted with the disease.

In the past year NIDR has appointed a standing advisory committee to help guide a program against this problem.

Earlier, a group of consultants had identified areas of research where the greatest impact could be made. The resultant "blueprint" calls for both long- and short-term studies, with particular attention to dental plaque formation; inflammation and host/parasite relationships, and bone resorption.

Several Types Exist

Periodontal disease is a collective term since more than one type of the disease is believed to exist. The crucial factor in most cases of the disease appears to be the adhesive mat-like collection of microbes and debris around the gum line called dental plaque—a consequence of poor oral hygiene.

Other contributing factors include the trauma of malocclusion (faulty bite) and systemic influences as nutritional deficiency, diabetes or other conditions.

Periodontal disease generally begins with inflamed gingival tissue which bleeds easily. In time, the gums become detached so that pockets in which harmful bacteria thrive form between the teeth and the soft gum tissue.

Toxic Products Responsible

Eventually, the fibrous tissues connecting teeth to their bony sockets and some of the jawbone itself are destroyed; perfectly sound teeth may be lost.

Toxic bacterial products are now believed to be chiefly responsible for the damage caused by plaque.

Such products as hydrogen sulfide and ammonia can alter the barrier cells at the juncture where the tooth emerges from the gum. Other products, including enzymes, may help cause damage.

Laboratory and chemical studies have produced evidence that the inflammation of gums is basically allergic in character.

In one such study investigations were made of actinomycetes, a group of suspect organisms found in the human periodontal pockets and known to cause the disease in experimental animals.

Several years ago, scientists found that, according to skin tests, periodontal patients are twice as likely to be sensitive to these organisms as people without the disease.

(Continued on Page 8)



The modern facilities available to NIDR scientists today contrast with the Institute's earlier years when a group of determined investigators discovered that fluoride in drinking water protects against dental caries. In 1937 two scientists were at work on this project in Grand Rapids, Mich., one of the first cities to fluoridate its water system. In the foreground is Dr. Francis A. Arnold, Jr., later an NIDR Director, and Dr. Philip Jay, then a member of the University of Michigan Dental Faculty.

Fluoride—A Serendipitous Event Sweeps Across U.S.

Millions of children help themselves to better oral health every day by simply drinking fluoridated water. This boon to preventive dentistry may be described as serendipity—a fortunate accidental discovery.

The story which began almost three-quarters of a century ago, combines mystery and adventure stretching from the fluoride-laden lava beds of Italy's Mount Vesuvius to areas in the western United States.

It is a tale of hunting for the cause of a problem, and finding an answer to a more serious one—dental caries.

The problem was mottling or staining of teeth. This country first

teeth of emigrants embarking for America.

The black teeth were then known as "Chiaia" teeth, named after the Neapolitan coastal resort where the condition was observed.

But dark teeth also troubled many in America.

To find a solution to this dental health problem, PHS in 1931 established the Dental Hygiene Unit, headed by Dr. H. Trendley Dean, later named the first Director of the National Institute of Dental Research.

Researchers examined thousands of children in many areas of the U.S. where mottled enamel was prevalent. Their findings showed clearly that the severity of mottling was directly related to the concentration of naturally occurring fluoride in the water, which ranged up to 10 parts per million (ppm) or more.

As the amount of fluoride decreased, the numbers of people affected and the severity of mottling became progressively less.

It was also noticed that there was less decay in those areas where mottling was prevalent. Eventually, the connecting link between mottling and tooth decay became discernible.

Examinations of over 7,000 children in 21 cities showed that those in areas with as little as 1 ppm natural or added fluoride in water had far less tooth decay than those living in non-fluoride areas.

In 1945, the fluoride level of water in Grand Rapids, Mich.; Newburgh, N.Y.; and Brantford, Ontario, Canada, was raised to 1 ppm, and long-term studies were initiated to monitor the effects of this measure.

A report showed that children in Grand Rapids had 60 percent less decay than those in the nearby control city of Muskegon.

Researchers Continue Studies on Dental Adhesives for Preventing Tooth Decay

Repair of decayed teeth presents problems that research hopes to overcome through the development and use of dental adhesives.

Now the process includes grinding away the decay and removing some of the healthy tooth tissue for the fillings to be mechanically locked into the cavity.

Today, fillings in common use sometimes leak around the edges because their expansion and contraction with temperature changes are different from those of teeth. Fillings may also develop fractures which might result in new decay.

A search has been underway for many years for a material which would adhere to the tooth and protect susceptible areas from decay.

The chemistry of polymers has introduced candidates which may serve the desired adhesive purpose. For a long time it was hoped that molecular bonding might be induced between the tooth material and polymers.

This type of bonding would produce the tightest of seals, and have an adhesive strength which could resist oral stresses. Then, it would not be necessary to carve the retaining undercuts—the filling could be held in a simple cavity preparation.

Another lead, pursued by NIDR-supported research, but now giving way to new approaches, is the cement produced by marine animals such as the barnacle.

Cement Serves Purpose

Researchers felt that this cement which allows marine animals to adhere to hard submarine objects, may serve the same purpose for dental fillings.

However, these insoluble natural cements have proved extremely difficult to analyze, let alone synthesize with biochemical methods.

While the search for adhesive bonds continues, emphasis is turning toward developing better mechanical bonding at the microscopic level.

This is done by flowing a highly fluid monomer of low molecular weight over surfaces that have been altered by acid etching to produce tiny voids.

Helps Prevent Decay

When the monomer is hardened to form a high molecular weight plastic polymer, a mechanical lock results. The material holds tightly to the surfaces of the repaired tooth.

This method is also being used to help prevent tooth decay in healthy teeth. Applying a thin layer of the adhesive material to the chewing surface of teeth prevents food and bacteria from filling the deep pits and fissures. These sealants are protection as

ORAL PROBLEMS

(Continued from Page 5)

the doctoral level in fields other than, or in addition to, clinical dentistry, and approximately one-fourth were trained as physicians.

The majority of over 100 research projects now being conducted at NIDR involve collaboration with investigators from other NIH Institutes and Divisions or with scientists outside of Government.

Caries Is Special Concern

A major contribution of the NIDR intramural staff has been to help establish a base on which to build a program of research and development in dental caries.

In FY 1971, President Nixon declared dental caries a special health concern.

As a result, the National Caries Program was born. NIDR received an additional \$5 million to start this program.

Budget Helps Program

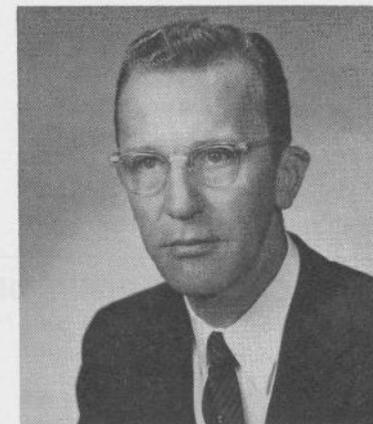
In 1973, strengthened by a budget of \$8,697,000—mostly for contracts and grants—the program has gained momentum toward its goal of reducing the incidence of caries and extending the capability of the dentist, the hygienist, and others on the dental team.

With a special focus on prevention, NIDR scientists and their extramural colleagues are working to bring Americans greater freedom from the tyranny of oral diseases.



Dr. H. Trendley Dean, an international authority on the relation of fluorides to dental health, was named the first Director of NIDR in 1948—a post he held until March 1953.

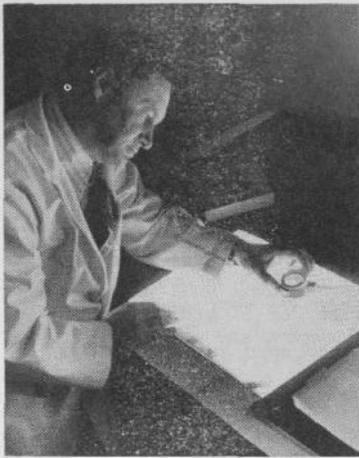
became interested in mottling in 1901, when a U.S. Public Health Service officer stationed in Naples, Italy, forwarded to the Surgeon General in Washington, D.C. a brief communication describing the black



Dr. Francis A. Arnold, Jr., pioneered in the study of fluorides and their epidemiological effects. He served as Director of NIDR from 1953 to 1966.

long as they remain attached.

Many years of testing are required before definite conclusions are made as to the effectiveness of adhesive materials.



Dr. Geoffrey F. Walker, whose work in computer-assisted orthodontics at the University of Michigan is NIDR-supported, operates a digitizer, the key device for converting profile skull X-rays into the skull outline maps which are stored in the computer's memory and on punch cards. After they are fed into the computer, the outlines can be reproduced at any time as well as analyzed and evaluated in comparison with other skulls.

COMPUTERS

(Continued from Page 6)

Also, an occlusal treatment has been developed to force the use of the underdeveloped side of the mouth when there is a severe growth imbalance.

The appliance apparently causes those muscles on the small side to develop, resulting in improved symmetry of the face without resorting to surgery.

While orthodontists may not agree as to which cases are severe enough to warrant treatment or on the criteria for therapy, they agree that malocclusion appears to be an increasing health problem and there is a growing demand for treatment.

In the United States, about one-third of school-age children suffer from malocclusion severe enough to require orthodontic treatment.

It is estimated that at present over \$600 million is spent a year for orthodontic treatment for a small fraction of this group.

CAUSES OF GUM DISEASE EXPLAINED

(Continued from Page 6)

Studies of enzymes have focused particularly on collagenase and hyaluronidase, both demonstrated for the first time in human gingival tissue by NIDR scientists.

One degrades collagen, the chief protein in connective tissue, while the other breaks down hyaluronic acid, the gel-like ground substance present between collagen fibers in connective tissues.

NIDR grantees have recently shown that levels of prostaglandins—hormones or hormone-like sub-

SUCROSE

(Continued from Page 5)

stances—in human periodontal tissues are increased in periodontal disease.

Several antibiotic pastes will prevent plaque accumulations and gingivitis.

A mouthrinse containing chlorhexidine is being tested in Europe. It can reduce plaque and inflammation, but has shortcomings.

These deficiencies must be surmounted before the rinse can be recommended for wide-scale use.

Now it is also generally accepted that a triad of factors is necessary for the development of caries: a susceptible tooth, the presence of caries-causing bacteria, and a decay-producing diet rich in carbohydrates, notably sucrose—table sugar.

These factors must interact at one and the same time. Since it is unlikely that a "magic bullet" will be developed against tooth decay, attempts are being made to depress all these factors to a minimum.

The primary function of fluoride is to strengthen the enamel of the tooth against dissolution by acid produced when the bacteria ferment carbohydrates. Investigators are seeking other trace elements that inhibit caries production.

In addition, dental scientists are looking for sugar substitutes, as well as food additives that may counteract the cariogenic effect of sugar.

Other studies seek to develop and test new antibacterial agents which suppress the growth of caries-inducing bacteria, reduce their products, or prevent their adhesion to the teeth.

Plastic Seals Fissures
An outstanding accomplishment, under further research, is the development of an adhesive plastic which seals pits and fissures of the chewing surfaces of the teeth.

The avoidance of sweet snacks, meticulous home care, including brushing and daily plaque removal with dental floss or tape, and periodic visits to the dentist can help prevent tooth decay.

However, many people do not have the motivation to follow the necessary regimen. For this reason, a major research aim is the development of simpler, less demanding means of keeping the mouth free of oral disease.

Several antibiotic pastes will prevent plaque accumulations and gingivitis.

A mouthrinse containing chlorhexidine is being tested in Europe. It can reduce plaque and inflammation, but has shortcomings.

These deficiencies must be surmounted before the rinse can be recommended for wide-scale use.

Team Approach To Cleft Research Helps Diagnostic, Surgical, Speech Techniques

Thousands of facially disfigured people—victims of birth defects—remain isolated from society behind a "gauze curtain."

In order to help them, NIDR is planning to expand its oral-facial anomalies program.

In the past, research emphasis has been on cleft lip and cleft palate, now studies will be directed to a broader spectrum of craniofacial malformations which leave an imprint on the lives of a growing number of people. New radical surgical procedures are being used to effectively treat this once untreatable group.

Dr. Seymour J. Kreshover, NIDR Director, pointed out that research will continue on clefts of lip and palate, which affect 7,000 babies in the United States each year. Because of this research support, dramatic progress has been made in improved diagnostic, surgical, and speech techniques to restore afflicted children to near-normal appearance and function.

Team Approach Used

NIDR has sponsored the development of the team approach to clefts. Physicians, surgeons, pediatricians, dentists, speech pathologists, psychologists, and others with specialized training coordinate their efforts to study and treat the "total" person. Psychological studies are contributing insights to the problem of total rehabilitation.

Attention is now also being directed to etiologic factors. It is clear that clefts are due to events which occur in embryonic life, but specific causes can be identified in only a small percentage of cases.

Some clefts are linked to defective chromosomes, or run in families, indicating a simple genetic influence. However, most have complex bases.

Clefts Explained

Studies show that clefts usually result from a number of predisposing genetic and/or a variety of environmental factors, and that cleft palate without a cleft lip is a different condition from cleft lip with or without cleft palate.

Since clefting occurs during embryonic development, investigations of the developing defect and of possible environmental causes, such as drugs and diseases, are conducted on animals.

For example, studies of the migration and development of small groups of embryonic cells labeled with radioactive tracers are beginning to show that harmful events in early fetal life can delay or distort the growth and development of various parts of the head and mouth.

Some embryologists think a good blood supply is needed to provide energy for upright palatal shelves to turn horizontally and fuse.

It may be significant that blood vessel patterns in mouse embryos whose cleft palates were caused by treating their mothers with cortisone are smaller, more uneven, and more primitive than the symmetrical, adult-type pattern which develops in normal mice 24 hours before palatal closure.

Further studies to determine whether tranquilizers and other drugs that affect muscles contribute to clefting show that different species react differently to various drugs, and no conclusions can be drawn for humans.

Other studies at the cellular level try to discover whether fluid retention and certain drugs upset the work of energy-converting enzymes during pregnancy and contribute to animal clefting.

Too little thyroxin, vitamin imbalance, stress, toxoplasmosis, and viral infections are some factors suspected of contributing to clefting.

A new and very difficult type of research attempts to investigate how those with a cleft or a speech defect are affected, and the effect on their parents and associates.

To help the mothers, group therapy sessions were held by a cleft palate center. The mothers helped each other work out feelings on the birth of a child with a defect and were better able to cope with their problems.

The success of these sessions led to setting up a 6-month program to train the mothers as paraprofessional group leaders who now lead about five group sessions a year. Each session runs 8 weeks and is carefully supervised.

Oral Medicine Lab to Focus On Herpes Simplex Studies

A new Laboratory of Oral Medicine has been created at NIDR. The lab will focus on research leading to treatment and ultimate prevention of herpes simplex infections.

NIDR research shows that protection against herpes and probably other recurring viruses depend on three body functions: the ability to make antibody, the ability to make and activate the complete set of complement enzymes, and the ability to activate and attract leukocytes to infection sites.

NIDR and the National Cancer Institute are collaborating on a program to increase information on oral cancer, its prevention, early diagnosis, and better therapy.

Chinese Journalists Visit NIH, Tour Clinical Center



Chinese journalists watch open-heart surgery from the observation gallery of the CC Surgical Wing. Some used field glasses for a closer look; several photographed the procedure.

A delegation of 21 newspaper executives and journalists from the People's Republic of China, on a six-city tour of the United States, visited NIH May 30.

Their trip is being sponsored by the American Society of Newspaper Editors.

The group was greeted by Dr. Charles C. Edwards, HEW Assistant Secretary for Health, and Dr. Robert S. Stone, NIH Director.

Much of their visit was spent touring the Clinical Center, where they watched an open-heart operation by Dr. Andrew G. Morrow, chief of the Surgery Branch, National Heart and Lung Institute.

Later the delegates visited the CC Blood Bank and the Nuclear Medicine Department.

Dental School Deans Laud Special Research Award

The Special Dental Research Award Program, initiated by NIDR in 1972, helps newly-trained investigators to engage in dental research.

Several dental school deans have stated that, "Of all the programs that NIDR has, this is one we would hate most to lose."

The program is limited to dental schools, and helps young investigators lacking other research support to compete against each other; they do not compete with established scientists.

Doctorate Required

Requirements for program candidates are a doctoral degree or the completion of research training no more than 4 years prior to the date NIH receives an application.

Awards are for up to 3 years, with renewals only under exceptional circumstances.

The sum usually cannot exceed \$7,500 a year, and is paid from NIDR research grants program funds set aside specifically for that purpose.

Soviet Science Writers Briefed on Health Topics During Exchange Visit

Five Soviet science writers—among the most influential journalists in the USSR—were briefed by Dr. Robert S. Stone, NIH Director, and other HEW scientists on a visit to NIH on June 1.

The journalists' visit here was part of a 2-week swing across the country arranged by the Council for the Advancement of Science Writing.

Their trip was the second part of a two-way exchange of journalists which began last winter when six U.S. writers visited the USSR.

Joining Dr. Stone in greeting the writers and explaining health-related problems and progress were: Dr. Milo D. Leavitt, Jr., FIC; Dr. Anthony M. Bruno, NCI, and Dr. Ruth J. Hegyeli, NHLI.

Also, Dr. William Payne, NIEHS; Dr. Jack H.U. Brown, HSMHA, and Dr. Lloyd Tepper, FDA.

The writers and their affiliations were: Yaroslav K. Golovanov, *Young Communist League Truth*; Mikhail Rebrov, *Red Star*; Bronislav Koltovoi, *Izvestia*; Oleg Kuprin, *Knowledge-Strength*; Lev Koshelev, International Commission, Union of Journalists of the USSR, and Nikolai G. Shartse, Tass News Agency.

DR. BERLINER

(Continued from Page 1)

Kidney and Electrolyte Metabolism, NHLI. He later served as Director of Intramural Research for that Institute and was named Director of Laboratories and Clinics for NIH in 1968.

Commenting on Dr. Berliner's announcement, Dr. Stone said:

"I have long known and admired Dr. Berliner as one of America's most distinguished scientists and science-administrators. For all-too-brief a time, I have been associated with him as a colleague at NIH. In his 23 years of service here he has contributed greatly to the excellence and stability of this institution, traditions which we must maintain.

"In his new position, which is one of the foremost in American medicine, I know that Dr. Berliner will continue as a leader."

Zelda Knowles to Retire After 31 Years' Service

Zelda D. Knowles, a translator in the NIH Library, Division of Research Services, is retiring on June 29 after more than 31 years of Federal service.



Miss Knowles

A graduate of the University of Illinois, Miss Knowles taught French and Latin before becoming a translator in the Office of Censorship during World War II.

After the war she served in the Department of Agriculture before joining the staff of the NIH Translating Service in August 1947.

Except for the period 1957-61, when she was part of the NIH Russian Scientific Translation Program, Miss Knowles has assisted countless NIH scientists by translating foreign language literature related to their research projects.

Pronove, Fisher Retire From Federal Service



Dr. Pronove



Dr. Fisher

Drs. Pacita Pronove and Wilton Fisher retired from Federal service in May.

Dr. Pronove has been a scientist administrator with the Division of Research Grants since 1961. She joined DRG as executive secretary of the Neurology A Study Section until 1964 when she became executive secretary of the Child Health and Human Development Program Project Committee, Research Grants Review Branch in DRG.

Later Dr. Pronove became executive secretary of General Medicine B Study Section where she remained until early this year when she joined the Division's Institutional Relations Branch.

Dr. Fisher, a PHS Commissioned Officer, began his Federal career with the U.S. Public Health Service in 1948.

He joined NIH as assistant to the chief of DRG in 1962, and the following year was appointed executive secretary of the General Med-

Dr. Benjamin Receives J.D. Lane Award

Dr. R. S. Benjamin, surgeon and clinical associate at the Baltimore Cancer Research Center, National Cancer Institute, recently received the J.D. Lane Award for the best scientific paper given by a junior investigator.

The award, which includes a plaque and a \$200 prize, was presented at the 8th Combined Annual Meeting of the U.S.P.H.S.



Dr. Benjamin receives congratulations from Dr. Zwemer on winning the J.D. Lane Award for the best paper presented by a junior investigator.

Clinical Society and the Commissioned Officers Association, held last month in Phoenix, Ariz.

The title of Dr. Benjamin's winning paper was Adriamycin Chemotherapy—Clinical and Pharmacologic Correlation. Drs. P. H. Wiernik and N. R. Bachur of BCRC collaborated with Dr. Benjamin.

Dr. Frank L. Zwemer, of the Phoenix Indian Medical Center and the newly-elected president of the Clinical Society, presented the award to Dr. Benjamin.

Some 600 members and guests turned out for the meeting, which featured more than 300 scientific papers, many presented by NIH investigators.

Dr. Herbert Sober of NIAMDD Elected to American Academy

Dr. Herbert A. Sober, chief of the Laboratory of Nutrition and Endocrinology in the National Institute of Arthritis, Metabolism, and Digestive Diseases, was recently elected to membership in the American Academy of Arts and Sciences at its 193rd annual meeting in Boston.

The Academy, the second oldest learned society in the United States, was founded by John Adams to establish a society "of men of genius and learning" to cultivate and diffuse the arts and sciences.

When General Medicine was split into two sections, Dr. Fisher became executive secretary of the General Medicine A Study Section.

In 1968 he was awarded the PHS Commendation Medal.

Research on Acupuncture Technique to Determine Extent of Pain Relief

Federal funding for research to assess the pain-relieving capabilities of acupuncture has begun with a 3-year grant to the Missouri Institute of Psychiatry in St. Louis.

The project, recently announced by the National Institute of General Medical Sciences, will be supported at a rate of \$48,511 for the first year with future support to be determined at the end of each fiscal year.

Acupuncture is an ancient form of Chinese medicine in which fine needles are inserted in the body at strategic points to treat disease, relieve pain, or serve as an anesthetic during surgery.

NIGMS is coordinating acupuncture research activity for NIH and the Federal Government.

Volunteers Recruited

Physicians and scientists at the St. Louis facility, an affiliate of the University of Missouri School of Medicine, will compare the analgesic qualities of acupuncture anesthesia with those of standard pain-relieving drugs and hypno-anesthesia.

The research team under Dr. George A. Ulett, professor of psychiatry, has recruited two small groups of volunteers for their studies. The first consists of healthy students from the St. Louis area between 18 and 35.

The second group is made up of patients suffering chronic and continuing pain from osteoarthritis, migraine headaches, "phantom limb" pain, and pain from spinal cord damage or injuries to periph-



Dr. Richard C. Greulich, National Institute of Dental Research, has been elected secretary-treasurer of the American Institute of Biological Sciences. Dr. Greulich has been director of Intramural Research, NIDR, since 1966. He has held academic positions in institutions here and abroad, including UCLA Schools of Medicine and Dentistry; Karolinska Institutet in Stockholm; University of London, Royal Veterinary College, and McGill University. Presently, he is visiting professor of anatomy, University of Virginia School of Medicine.

eral nerves.

The healthy volunteers will be subjected to a series of uninjurious experimental pain stimuli and will be given acupuncture anesthesia and pain-relieving drugs. The patients already in pain also will be given acupuncture anesthesia and analgesic drugs.

In both groups of volunteers, degrees of pain will be assessed by measuring changes in brain waves, heart rate and pulse, and by observing other discernible responses to pain. Each volunteer will also be asked to evaluate the degree of his pain by assigning it a number on a low-to-high numerical scale.



For the second year in a row, the "Invaders" have won the R&W Basketball League championship. Over this period, the team won 38 games while losing only one. Seated (l to r) are: Rodney Fitzgerald, CC, Roy Danner, DCRT, Elmer Dyson, DRS, Stanley Bissey, ODA, and Elliott Alterman, DCRT. Standing (l to r) are: Ed Radden, DRS, player-coach; Gerald Winston, DRG; Thomas Allen, CC; Robert Shields, ODA; Melvin Hubbard, ODA; James Lange, CC, and Leonard Williams, ODA.

\$2.9 Million Grant Awarded by NIEHS To Establish 7th Environmental Center

The Mount Sinai School of Medicine has been awarded a grant of approximately \$2.9 million to establish the seventh Environmental Health Sciences Research Center.

Awarded by the National Institute of Environmental Health Sciences in Research Triangle Park, N.C., the funds will be distributed over the next 5 years.

The new Center will be headed by Dr. Irving J. Selikoff, professor of community medicine, who has been an NIEHS grantee and has done research on asbestos as a disease-causing agent for several years.

"The Mount Sinai group has already developed much fundamental knowledge needed to protect man against hazardous substances in the environment," Dr. David P. Rall, NIEHS Director, commented.

Plan Many Studies

"We expect much new valuable research from them, and it is for this reason that Mount Sinai has been chosen as the seventh Center supported by the NIEHS for research on multifaceted environmental health problems."

Center personnel will study a wide spectrum of environmental agents and combinations of agents that contribute to the development of heart and lung diseases and cancer. Research on asbestos-related disease will be given high priority.

According to Dr. Rall, asbestos is now a general urban environmental problem, not merely an occupational hazard for certain industrial groups.

The air of large cities is almost always contaminated with asbestos fibers, and these fibers are present in the lungs of all persons who grew up in large cities.

Asbestos-related diseases take several decades to develop, often 30 to 35 years, which heightens the concern about present exposure of large populations from fibers continually released into the air as a result of brake lining wear and installation and use of insulation in industrial buildings, among other urban sources.

Effects Discussed

Little is known of the effects of such prolonged low-level exposure, Dr. Rall said.

However, it is known that some 40 percent of workers heavily exposed to asbestos eventually die of diseases related to the exposure. Lungs of the victims develop fine scars—a condition called asbestosis.

As the disease develops, scar tissue restricts air passages and limits oxygen absorption and carbon dioxide removal.

In addition, about 7 percent of workers directly exposed to asbestos develop a rare, lethal form of cancer on the surface of the lungs

Fact Sheets Published By Nat'l Eye Institute

Seven fact sheets, each describing a common visual condition or cause of blindness, are now available from the National Eye Institute.

The fact sheets are:

Glaucoma—a disease characterized by loss of visual function associated with increased pressure within the eye and subsequent damage to the optic nerve.

Diabetic Retinopathy—stemming from diabetes, this disturbance in the blood vessels of the retina, the light-sensitive tissue at the back of the eye, can cause blindness.

Corneal Disease—often very painful disorders which affect the transparent membrane at the front of the eye.

Macular Degeneration—a common cause of visual disability among the elderly that affects a small part of the retina called the macula which is responsible for fine or reading vision.

Refractive Errors—nearsightedness, farsightedness, and other conditions that can usually be corrected with glasses or contact lenses.

Retinal Detachment—a separation of the layers of the retina that can cause permanent impairment of vision.

Retinitis Pigmentosa—an inherited disease involving progressive loss of peripheral vision beginning in childhood or adolescence.

Each fact sheet is written for the general public and describes the condition, its cause (if known), treatment (if available), and current research.

Single copies of any or all of the fact sheets are available free from the Office of Information, National Eye Institute, NIH, Bethesda, Md. 20014.

The pamphlets may also be purchased in quantity from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402, for 15 cents each postpaid, or five cents at the GPO bookstore.

or abdominal cavity called mesothelioma.

A still larger number, about 20 percent, develop carcinoma of the lung. Cigarette smoking aggravates this type of cancer which is eight times more common in smokers who have been exposed to asbestos.

Another 5 percent die of otherwise unexpected gastrointestinal cancer.

Richard Seggel Joins NAS Inst. of Medicine

Richard L. Seggel, HEW Deputy Assistant Secretary for Program Operations, will leave Federal service at the end of June to join the Institute of Medicine of the National Academy of Sciences.

Mr. Seggel will assist in the development of the Institute's new program of fellowships in health policy established under a grant from the Robert Wood Johnson Foundation, and will also participate in Institute studies of health policy.

Began Career in 1940

Beginning his Federal career in 1940, Mr. Seggel served with several agencies before joining NIH in 1957 as Executive Officer.

After 12 years in this position, he was named NIH Associate Director for Administration. In 1971 he was appointed to the HEW post.

Citing Mr. Seggel's work, Dr. Charles C. Edwards, HEW Assistant Secretary for Health, said his "contributions to the Federal Government, to the NIH, and most recently to this office in our efforts to create a single voice for health in HEW, have been many and significant. We shall miss him deeply."

To Swim or to Sail, That's the Question Sailing Association Offers Some Answers

Every year an increasing number of Americans go down to the sea—not to swim but to sail. The NIH Sailing Association was created for this purpose, and the fact that its membership list has grown steadily testifies that it is fulfilling its desire.

The NIHSA has helped provide NIH R&W members with ways to sail at reduced cost, and it has helped train sailors how to stay on instead of in the water.

The Association, which meets on the last Thursday of each month, owns four 19-foot Flying Scot day sailers which are available for charter at any time—at cost. That is, the charter fees only cover materials for maintenance.

Qualified members also have access to a variety of cabin boats which range in length from 25 to 60 feet.

Regatta Scheduled

Courses of instruction are offered ranging from classes for the novice (those that cannot tell port from starboard at the outset) to advanced and advanced racing levels.

The Association enters races and regattas held on Chesapeake Bay, and it can arrange charters to many different areas. In addition to the racing sessions that are held every Friday afternoon at Back Creek Marina near Annapolis, a regatta has been scheduled for later in the season.

Each month speakers of special interest are asked to address the Association, and informative, as well as entertaining, movies are often shown on subjects relevant to sailing.

The next meeting of the Sailing

Dr. Ajmone Marsan Heads AES

Dr. Cosimo Ajmone Marsan, chief of the NINDS Electroencephalography Branch, has been elected president of the American Epilepsy Society.

The AES is a professional association for neurologists, neurosurgeons, and other research scientists whose specialty is epilepsy.

Dr. Ajmone Marsan succeeds Dr. Arthur Ward, Jr., an NINDS grantee at the University of Washington in Seattle.

Dr. Chanock Receives H.T. Ricketts Award

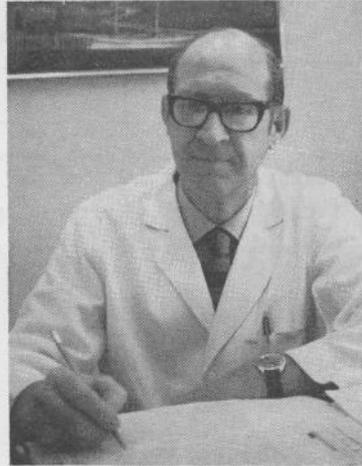
Dr. Robert M. Chanock, National Institute of Allergy and Infectious Diseases, was recently given the Howard Taylor Ricketts Award of the University of Chicago.

Dr. Chanock, who is chief of the Laboratory of Infectious Diseases, was given the prize "in recognition of outstanding accomplishment in the field of medical sciences."

After the presentation, he delivered the Ricketts Lecture on

Genetic Manipulation of Viruses and Mycoplasmas with the Aim of Preventing Acute Respiratory Tract Disease.

The Ricketts Award was established in memory of the scientist who demonstrated that Rocky Mountain spotted fever is transferred to man by ticks. Later, he found the related organism that causes typhus fever. In 1910 he died of that disease.



Dr. John G. Bieri, National Institute of Arthritis, Metabolism, and Digestive Diseases, has been elected president of the American Institute of Nutrition for 1974-75. Dr. Bieri, chief of the Section on Nutritional Biochemistry in the Laboratory of Nutrition and Endocrinology, is noted for work on nutritional problems concerning vitamins A and E, selenium, and the essential fatty acids.

Association will be held on Thursday, June 28, at 8 p.m., in Bldg. 30, room 117. It will be a "Chesapeake Bay Evening."

The Boating Administrator of the State of Maryland will speak on Historical and Practical Aspects of Sailboat Cruising on the Chesapeake Bay.

Anyone interested in sailing is invited to attend; guests are also welcome. For further information, call Rick Newell, Ext. 64957, or Beth Horigan, 530-7212 (evenings).

COLE MEDAL

(Continued from Page 1)

Perspectives in Membrane Biophysics—A Tribute to Kenneth S. Cole.

The book contains articles on membrane research by 22 authors—students and friends of Dr. Cole. Articles for the book, edited by Daniel Agin, were collected in 1970 for Dr. Cole's 70th birthday.

The snowy-haired, soft-spoken scientist, who pioneered studies of the electrical properties of nerves and other living cells, organized the NINDS Laboratory of Biophysics and served as its chief until 1966.

His work here and at Woods Hole, Mass., where he studies the squid's giant nerve axon, has given a tremendous impetus to biophysical studies of the nervous system.

Profs. Hayaishi, Nakai Join Fogarty Scholars

Prof. Osamu Hayaishi and Prof. Junnosuke Nakai, both from Japan, joined the Fogarty International Center's Scholars-in-Residence program early this month.

Prof. Hayaishi, Department of Medical Chemistry, Kyoto University Faculty of Medicine, returned to the reservation on June 8 to resume his scholarship. He was originally a scholar-in-residence during the summer of 1972.

Last October, Prof. Hayaishi received the Order of Culture from the Japanese Government for his achievements in the field of science.

Initiates Symposium

Normally this award is made to persons in an older age group, however, Prof. Hayaishi has the honor of being one of the younger, if not the youngest, to receive it.

During June 11-13, in cooperation with scientists from the National Institute of Arthritis, Metabolism, and Digestive Diseases, Prof. Hayaishi initiated a successful symposium on Poly ADP-Ribose.

He currently resides in Stone House and will be joined by Mrs. Hayaishi in early July. He will participate in the program through August.

Prof. Nakai, professor of anatomy and former dean of the Faculty of Medicine, University of Tokyo, became a Fogarty scholar on June 1.

He is a graduate of the University of Tokyo Medical School and has continued his affiliation there as a faculty member.

Worked at Texas

During 1953-55, Prof. Nakai worked in the Tissue Culture Laboratory of the late Dr. C. M. Pomeroy of the University of Texas.

His research interests include the area of neurobiology with emphasis on neuronal synapses.

While a scholar-in-residence, he will collaborate with Dr. Marshall Nirenberg of NHLI, and the staff of the Behavioral Biology Branch, NICHD.

In addition, Prof. Nakai will undertake some writing and will present a number of informal lectures.

He plans to be in residence for 6 months. Prof. Nakai will be joined later by his wife; they will reside in Stone House.



Prof. Hayaishi



Prof. Nakai



Lois Spencer, a medical technologist in the Hematology Service of the Clinical Pathology Department, retired May 31. Mrs. Spencer came to the Clinical Center in 1955 after 3 years of service in the Fort Myer dispensary.

OUTPATIENT RESEARCH

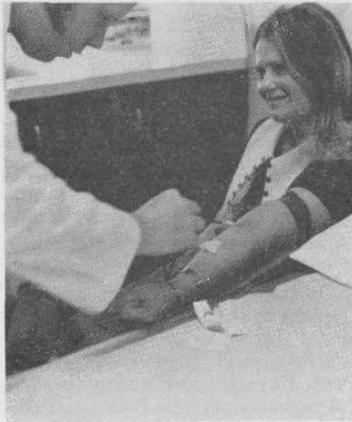
Subjects Remain in 'Natural Environment' While Under Study at Vanderbilt Center

By Jerry Gordon

At 5:20 a.m., the new Ambulatory Patient Research Center at the Vanderbilt University Hospital in Nashville, Tenn., begins to stir.

Two doctors are busily engaged in turning on recording machines and sensors, preparing IV's (intravenous lines), and loading syringes in preparation for a research patient scheduled for 5:30 a.m.

Mark Taylor, a 25-year-old



The Vanderbilt ARPC has been found to be ideal for in-depth investigations on anemia. Dr. Jeffrey W. Bullard takes blood samples from Janice Lotterer. Originally an inpatient suffering from red cell aplasia and aplastic anemia, Mrs. Lotterer is now being observed and treated on an outpatient basis.

draftsman for an architectural firm, gets up at 4 a.m. once a week. He drives to the hospital's emergency entrance, goes to the third floor, has his patient's card stamped at the Clinical Research Center desk, and in a matter of minutes is reclining on a bed in one of the procedure rooms.

Taylor is a "normal"—a voluntary subject of glucose tolerance levels and insulin secretion. His

"study" session lasts approximately 1½ hours.

During this time a vein in his right arm is infused with a fluid containing a certain new drug, and then blood is drawn from a vein in his left arm.

After the session is concluded, band-aids are applied to his arm, he puts his shirt and coat on, walks into the division kitchen, is served a hot breakfast, and by 7:30 a.m., he's off and on his way to work.

This is an example of a new technique in biomedical research being evolved at Vanderbilt with subjects who continue daily activities in "their natural environment."

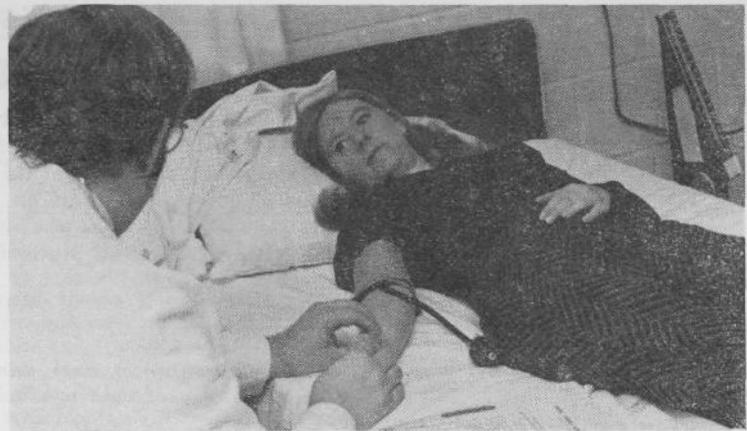
The APRC in Nashville is the first full-fledged outpatient center launched by the General Clinical Research Centers Branch of the Division of Research Resources.

Concept Is Important

It is considered an important concept, and it is the intention of the branch chief, Dr. William R. DeCesare, and his NIH advisory committee, to broaden the scope of research with ambulatory cases in 84 clinical centers operating throughout the country.

Approximately 45 centers now conduct a limited amount of outpatient research. A second outpatient facility has been initiated at the Johns Hopkins GCRC in Baltimore.

"The adjunct of an outpatient facility to the ongoing General Clinical Research Center makes a



Harriet Cooper, a hypertensive patient, undergoes study and treatment lasting one-half hour. Dr. John W. Hollifield, staff physician and investigator, is researching adrenal overactivity affecting the renin plasma level in hypertensives. He is nearing completion of the project in which non-specific diuretics are used to affect blood pressure. In 19 of 25 cases, he reports, he has successfully administered an agent which reduces plasma volume almost as effectively as a specific adrenal blocker.

more efficient and viable clinical research resource," Dr. DeCesare maintains.

"There are certain types of research—chronic diseases, genetics, mental health, clinical pharmacology—that cannot be carried out on a scale commensurate with their importance unless ambulatory patients are studied."

Operated since September 1972 in conjunction with the existing 21-bed inpatient CRS, the combined facility has taken on new dimensions, according to Dr. William W. Lacy, program director.

"I think the trend is towards taking the research out of the wards and into the population environment to find out what causes certain physiological mechanisms to malfunction," he says.

Researchers at Vanderbilt say that the combined status of the center has brought new elements to old studies. The four outpatient procedure rooms on the Medical Center's third floor are constantly used from 5 a.m. until 5:30 p.m.

Another bright plus for ambulatory patient research operation is the reaction of people involved and their willingness to continue, the Vanderbilt investigators report.

"People are much more likely to be volunteers if we can get them in and out quickly with a minimum loss of time," the scientists say.

By scheduling the outpatient either before or after work, they found that the rate of patient compliance has jumped considerably.

In addition to their pharmacology projects, the researchers are working on studies in obesity, postsurgical follow-ups, pediatric diseases, epidemiological group analysis, genetic abnormalities, and chronic diseases. The majority of these projects are NIH supported.

Drs. Garrington, Green Presented With Medals For Meritorious Service

Drs. George E. Garrington and Jerome G. Green were awarded Meritorious Service Medals at the Fifth Annual Honor Awards Ceremony held at NIH on June 11.

The two Commissioned Officers—not listed in the last issue of



Dr. Garrington



Dr. Green

the NIH Record—received the following citations:

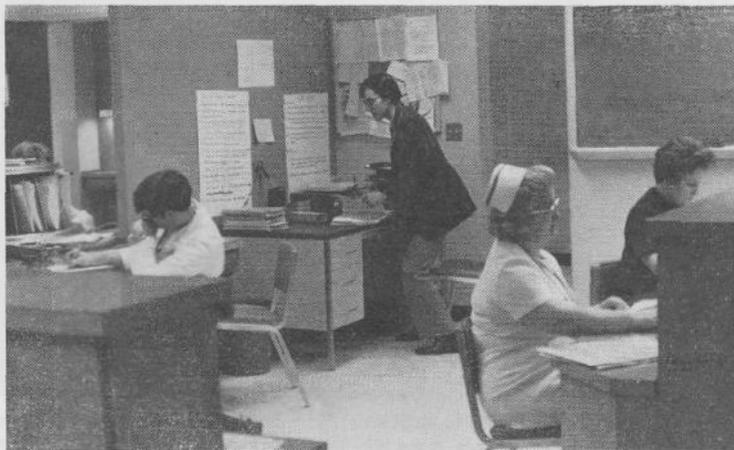
Dr. George E. Garrington, Deputy Director, Intramural Research, National Institute of Dental Research, "... sustained outstanding leadership in public health and research administration."

Dr. Jerome G. Green, Director, Division of Extramural Affairs, National Heart and Lung Institute, "... outstanding contributions in the administration of the Division of Extramural Affairs, NHLI, during a period of transition ..."

Combined outpatient and inpatient clinical research have now become a way of life on the third floor of the Vanderbilt CRC.

Many investigators—mostly Vanderbilt staff doctors—rouse themselves out of bed in the wee hours of the morning to meet their subjects in the procedure rooms for a quiet and careful 90 minutes.

Then they grab a cup of coffee and proceed to make their regular rounds through the hospital.



The Central Information and Nurses' Station for Vanderbilt CRC operations enables patients to check in within a few minutes without formal hospital admittance procedures. Manager Bill Robertson (c) coordinates patient schedules, room preparation, medication and equipment supplies, and personnel.