

the



# Record

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

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NATIONAL INSTITUTES OF HEALTH

## Research Teams Establish New Approach To the Study of Genetic Blood Diseases

Three teams of scientists participating in the Special Virus Cancer Program of the National Cancer Institute, have successfully reversed the normal flow of genetic activity among fundamental cell chemicals to permit reconstruction of a portion of the gene for red blood cell protein.

Their findings establish a new approach to the study of genetic diseases of the blood such as thalassemia.

One team, made up of NIH scientists reported their results in a recent issue of the *Proceedings of the National Academy of Sciences*.

The researchers are Drs. Jeffrey Ross and Edward Scolnick of NCI's Viral Leukemia and Lymphoma Branch, and Drs. Haim Aviv and Philip Leder, National Institute of Child Health and Human Development.

The other two groups, from the Massachusetts Institute of Technology and the Institute of Cancer Research and College of Physicians and Surgeons, Columbia University, reported their findings in the journal, *Nature New Biology*. Their research is supported in part by NIH.

In their initial experiments with rabbit cells, the scientists purified a messenger RNA which directs production of globin, the protein part of the hemoglobin or red blood cells.

Later, they applied the method to experiments with human messenger RNA.

(See RESEARCH TEAMS, Page 4)

## Dr. Marston to Be Inducted In Honorary Hopkins Society

On May 26 NIH Director Dr. Robert Q. Marston will be inducted into The Johns Hopkins Society of Scholars in ceremonies to be held at the university in Baltimore.

The Society was established 4 years ago to honor distinguished, former postdoctoral fellows of the university.

Those elected to membership must have "gained marked distinction in their fields of scholarly or professional interest."

## Two Framingham Study Directors Receive First Eleanor Dana Award

Drs. William B. Kannel and Thomas R. Dawber, Director and former Director, respectively, of NHLI's Framingham Heart Disease Epidemiology Study, are co-recipients of the American Health Foun-



Dr. Kannel



Dr. Dawber

ation's first Eleanor Dana Award for 1971 for "... significant contributions in the field of preventive medicine."

The citation and \$5,000 prize were presented in April during an award luncheon that also opened the AHF's Health Maintenance Institute.

Dr. Dawber, associate professor of Medicine at Boston University Medical Center, was Director of the Framingham Heart Study from 1950 to 1966.

Dr. Kannel joined the study as deputy director in 1957, and has been Director of the study since 1966.

## Gives Long-Term Look

The Framingham Study is a long-term prospective look into constitutional and environmental factors involved in the development and progression of heart disease in a general population sample (more than 5,000 residents) of a typical American city, Framingham, Mass.

By identifying major risk factors in coronary heart disease, hyper-

(See DANA AWARDEES, Page 6)

## NIEHS Role Is Evaluated At Congressional Hearing



Rep. Fountain (foreground), Dr. Rall (l), Rep. William Alexander (D-Ark.), and Dr. D. C. Goldberg (r), professional staff member of the Subcommittee, view tissue cultures being studied by the NIEHS Mutagenesis Branch.

The Intergovernmental Relations Subcommittee of the House Committee on Government Operations held a hearing on April 24 in Raleigh, N.C., on the role of the National Institute of Environmental Health Sciences with respect to environmental problems which may endanger the Nation's health.

Rep. L. H. Fountain (D-N.C.), conducted the hearing to learn how the Institute relates to other governmental agencies in the same field and to discuss scientific knowledge and capabilities needed to combat environmental hazards.

"During the past year, the Subcommittee has intensively studied the potential dangers from chemical additives and drug residues in our food supply," Congressman Fountain disclosed.

Dr. Robert Q. Marston, Director of NIH, welcomed the group.

In discussing his Institute's role, Dr. David P. Rall, NIEHS Director, said, "Our primary task is performing the basic biomedical research needed in the environmental health field.

"We seek to provide the information necessary to insure that the environment is as free as possible from dangerous concentrations of

(See NIEHS ROLE, Page 7)

## Medical Award Presented To Dr. Makio Murayama For Sickle Cell Studies

The Rev. Dr. Martin Luther King, Jr. Medical Achievement Award will be presented to Dr. Makio Murayama, the National Institute of Arthritis and Metabolic Diseases' noted sickle cell anemia researcher.

The award, which highlights Dr. Murayama's research in elucidating the molecular concept of sickling, will be given to the researcher at a May 31st banquet. Noted guests who are expected at the banquet include Aretha Franklin, Bill Cosby, Ossie Davis, and Count Basie.

Dr. Murayama will be honored with other award recipients at the award banquet to be held in the Philadelphia Civic Center, Convention Hall. The banquet is sponsored by the Philadelphia Chapter of the Southern Christian Leadership Conference.

Co-chairmen are Pennsylvania Governor Milton J. Shapp and Muhammad Ali. Philadelphia Mayor Frank L. Rizzo and Rev. Ralph David Abernathy are acting as honorary chairmen.

Through the efforts of Dr. Mura-

(Continued on Page 5)



When Dr. Frank J. Rauscher, Jr. took the oath of office as Director of the National Cancer Institute in a White House ceremony May 5, President Nixon told him he "must put in an 18- to 20-hour day" in search of a cancer cure.

# the NIH Record

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## Dick Gregory Visits NIH; Speaks Out Against War

On May 4 some 500 NIH employees gave up their lunch hour to hear Dick Gregory call for an end to the Vietnam war.

The thin comedian, who has not eaten solid food for 54 weeks in protest, said he would continue his fast until the conflict was over.

He spanned subjects ranging from the 1968 Democratic national convention in Chicago to racism, sprinkling his remarks with sharp humor.

In conclusion, Mr. Gregory advocated an economic boycott which he said could end the war in 30 days.

The rally was sponsored by All Concerned Employees, Federal Employees for Peace—Parklawn, and The Vietnam Moratorium Committee at NIH/NIMH.

## NIH Art Show Opens June 5; Submit Work June 2

Entries will be accepted for the 14th Annual NIH Art Show on Friday, June 2, in the Clinical Center lobby, from 3 to 6 p.m.

Accepted work will be exhibited in the CC lobby starting Monday, June 5 through Friday, June 30. At noon on Monday—the opening day—Mrs. Robert Q. Marston, honorary chairman, will present awards to the winning artists, and the NIH orchestra will perform.

The art show is open to all R&W members and their families—members' children must be over 16

## Eligible Employees May Apply In Person for College on Campus

Upward Mobility College on the NIH campus, is accepting applications for the 1972-73 school year. UMC, a part of Federal City College, is offering two types of degrees, an Associate of Arts degree and a bachelor's degree.

The college has an open admissions policy for employees meeting eligibility requirements. Applications will be accepted—in person only—in Room B2B15, Bldg. 31.

## Dr. Martin Cummings Honored

Dr. Martin M. Cummings, Director of the National Library of Medicine, will be awarded an honorary degree of doctor of medicine from the Karolinska Institutet in Stockholm on June 1.

The honor will be bestowed upon Dr. Cummings during the Institute's commencement ceremonies.

years of age. Entry forms are available from the R&W office, Bldg. 31, Room 1-A-18 and at the registration booth. For those NIH employees who are not members of R&W, membership cards may be obtained when art work is submitted.

A total of about \$350 will be awarded in prizes for paintings and collage, sculpture, graphics, watercolor and pastels, and drawings. Artists are limited to three entries. There is a processing fee of one dollar for each entry.

## Dr. Estep Tells Scope of DRS Activities, Extols Employees' Skills in Research Aid



At the end of a seminar, Dr. Estep meets with co-workers and chats informally about goals and "... effective communications among all employees ..."

A series of "get acquainted" seminars were held by Dr. Roger Estep, Director, Division of Research Services, with DRS employees.

Four seminars were held in Wilson Hall, and the fifth was held at the NIH Animal Center in Poolesville.

The five DRS Branches were represented in each of the 85 member groups. The seminars featured color slides emphasizing the skills and diversified services provided by DRS in support of NIH research. A color motion picture telling about the NIH Animal Center was also shown.

After the presentation, many employees said they had not fully realized or appreciated the variety of research support DRS gives to the scientific community on the campus.

Dr. Estep termed DRS employees its most important resource. He said the meetings were called in order for him to share his aspirations, and to seek help in achieving common goals. At the close of the meetings employees were asked for questions, comments, and suggestions.

In reviewing the year's work, Dr. Estep quoted statistics to show the range of activities DRS employees engage in, and on which research depends.

He said 113,000 liters of tissue media were produced; 11 million pieces of glassware were cleaned, processed, and issued; 30,000 books and journals were loaned, and 180,000 photographs and 6,300 statistical charts and technical drawings were produced.

In addition, 516,000 mice, rats, hamsters, and guinea pigs and 7,700 rabbits were issued to research laboratories. He explained that this means employees have to work overtime, and are on standby around the clock, weekend and holiday shifts.

Dr. Estep said special efforts

were underway to refine the DRS training program. Last year that program provided 17,000 hours of employee training, 11,000 of which were at colleges, universities, and private firms.

He also announced plans for smaller, more personalized seminars which would emphasize supervisory responsibilities, employee rights, and employee services provided by the personnel office.

## Good Management Explained

In his comments on the seminars, Dr. Estep said, "Good management and good performance begin with clear, reliable communications.

"In an organization as diversified ... as DRS, effective communications among all employees are essential... By expanding an appreciation of all the Division is asked to do—and does or could do—I hope together we see new horizons."

## NIH Television, Radio Program Schedule

### Radio

### DISCUSSION: NIH

WGMS, AM—570—FM Stereo  
103.5—Friday about 9:15 p.m.  
May 26

Dr. Robert O. Wolf, NIDR  
Subject: Saliva

June 2

Dr. Harold M. Schoolman, special assistant to the Director, NLM  
Subject: Regional Medical Libraries (R)

Interview takes place during intermission of *Music Room*.

## First Report Indicates NIH Savings Bond Drive Canvassers 'Doing Well'

Figures for the first reporting period from May 1 to 10 indicate that the U.S. Savings Bond Drive at NIH is doing well.

Dorothy Wipf, drive coordinator, attributes much of this success to volunteer canvassers who are informing employees about the advantages of the Payroll Plan.

To build tuition funds, parents may purchase the bonds in their children's names with the parents as beneficiary, not co-owner.

At the end of the first year, a Federal income tax return filed in the child's name, listing increased bond value as income to the child, establishes "intent."

No further returns need be filed when bond interest plus other in-

### Canvassers Will Explain How Payroll Savings Plan Aids U.S. Bond Purchasers

For explanation of savings methods made possible by purchase of U.S. bonds through the Payroll Plan, employees may consult their B/I/D canvasser on the extension given.

BHME	—Joel R. Hedetniemi	65144
CC	—Steven Galen	63227
DBS	—Raymond Jones	64691
DCRT	—Doven Vest	64647
DRG	—Timothy Gregory	67591
DRR	—David L. Chicchirichi	65175
DRS	—Anna Dougherty	64541
FIC	—Dr. Maureen Harris	64331
NCI	—Jack Patterson	66556
NEI	—Mabel Nichols	
	—Dr. J. Theodore Schwartz	66583
NHLI	—Evelyn Attix	63483
	—Ruth Townsend	
NIAD	—Doris Parkinson	65367
NIAMD	—Eve Larson	65765
NICH	—George Russell	63454
NIDR	—J. E. Fitzgerald	65715
NIEHS	—Ralph Hester	3308
NIGMS	—Daniel McMonagle	61138
NINDS	—Jean Farrady	64697
NLM	—Roger Gilkeson	66308
OD/ODA	—William Anderson	61451

come is less than a specified amount.

When bonds are cashed to meet college costs, all accrued interest is free from Federal tax. Savings bonds interest is exempt from all state and local income taxes.

Retirement planners purchase E bonds during their working years, reporting interest as income on their Federal tax return. Retirement income is usually lower, and with the double tax exemption after age 65, taxes are greatly reduced or entirely eliminated.

Other employees increase their retirement income by purchasing E bonds for conversion to H Bonds, which pay interest semi-annually.

The accumulated interest on the E Bonds is applied to the purchase of H Bonds with the privilege of further deferring tax liability on E Bond interest until the H Bonds are cashed or mature.

## Ruby Payne, Mailroom Trouble Shooter With 'Patience of a Saint,' Is Retiring

By Marie Mastin

NIH Information Aide

"Always accommodating," "has the patience of a saint," "exhausts all avenues in getting the job done," "a real salt of the earth employee."

Friends and co-workers of Ruby Payne, an NIH mail supervisor, describe her in glowing terms.

They will miss her after May when she retires from the Government with nearly 30 years service at NIH.

Mrs. Payne and five clerks process some 2,000 pieces of mail a day. Their responsibilities entail opening, routing, and locating letters and packages, in addition to handling all special deliveries between NIH and DHEW. These duties often place Mrs. Payne in the role of a "trouble shooter."

"I try to help with any problems that come up," she says. "That's my job."

Others at NIH do not take her job so lightly. Many are indebted to her for swift and thorough sleuthing in locating important, misplaced pieces of mail.

"She has gotten our office out of a lot of problems," says one admirer who describes herself as "only another beneficiary of Ruby's excellent service."

Mrs. Payne has also been called upon for information about NIH in its earlier days because of her unique stock of old phone books.

The campus was quite different when she came to NIH in 1942 as a mail messenger in Building 1, she recalls.

"It was so small that everybody knew everybody in those days," she remembers. There were only six buildings on the campus at the time and all shops were in Building 1.

### Hazards Involved

Except for brief service in the Laboratory Aids Branch, now in DRS, the Laboratory of Biochemistry and Nutrition, NIAMD, and the Library in Building 1, Mrs. Payne has worked continuously in the mailrooms.

It has involved its hazards. "I've opened mail directed to the wrong place and found human hearts, eyeballs, and appendices," she exclaims. Once the entire mailroom had to be evacuated because of strange fumes which came from a package she opened.

"Later, they told me the fumes were dangerous," Mrs. Payne recalls. "I'm a little cautious opening packages now."

Retirement will give Mrs. Payne more time to work in her yard in Frederick, Md., and spend with her three daughters, seven grandchildren and one great-grandchild. She is also looking forward to traveling and participating in sports, especially bowling and baseball.

However, she will miss NIH,



For almost 30 years Ruby Payne has served NIH by contributing to an efficient mail system. Although soft-spoken, she is known for "getting the job done."

coming to work everyday, and, most of all, the "nice and interesting" people she has met here. Her friends and associates, the mailroom and all of NIH will miss Ruby Payne.

## Subscriptions for Series Of 6 Concerts Sponsored By FAES Now Available

The Foundation for Advanced Education in the Sciences is offering six concerts for its 1972-73 Chamber Music Series at NIH. Performances will be given on Sundays at 4 p.m., in the Clinical Center's Jack Masur Auditorium.

Because the music series for last season was completely sold out, FAES has requested employees to subscribe as soon as possible. Subscription for the season is \$24—half price for those under 17 years of age.

For further information call FAES, Ext. 65273, Bldg. 10, Room B1-L-101.

The following performances will be given:

- Nov. 5—Rudolph Firkusny, pianist.
- Dec. 17—Pina Carmirelli, violinist, and Murray Perahia, pianist.
- Feb. 4—Benita Valente, soprano; lieder program with three instrumentalists.
- Feb. 25—J. P. Rampal and R. Veyron-Lacroix, flute and harpsichord.
- March 18—Silvia Marcovici, violinist.
- April 8—Quartetto Italiano.

## Dr. Kenneth Cole Named To London Royal Society As a 'Foreign Member'

Dr. Kenneth Cole, senior biophysicist, National Institute of Neurological Diseases and Stroke, has been named a Foreign Member of the Royal Society of London. Only a few Americans have received this honor.

Dr. Cole will participate in the formal admission ceremonies of the society next November, in London.

In 1954, the year he came to NINDS, Dr. Cole organized the Laboratory of Biophysics, and he also served as chief of that laboratory.

### Well Known Researcher

He is internationally known for his pioneering studies of electrical properties of nerves and other living cells. His electrical studies, particularly those done on the axon of the giant squid, have been found to apply to membranes of various other nerve cells and muscle fibers.

Dr. Cole's explanation of the electrical aspects of living cell membranes has given impetus to numerous biophysical research projects, particularly those related to the nervous system.

For this work he has received the National Order of the Southern Cross of Brazil, particularly in recognition of his work at the Instituto de Biofisica of the University of Brazil.

He has also received the honorary degree of Doctor of Medicine from the University of Uppsala, Sweden, and honorary doctorates in Science from Oberlin and the University of Chicago.

He was also given the Silver Medallion commemorating the 200th Anniversary of Columbia University College of Physicians and Surgeons, and the 1967 National Medal of Science award.

Dr. Cole's book, *Membranes, Ions and Impulses*, which was written in 1968 under the joint auspices of the University of California at Berkeley and NIH, has entered its second printing.



Dr. Cole, who is internationally known for his electrical studies, has received honors from foreign countries, including Sweden and Brazil.

## Computerized Method Teaches Diagnosis, Allows for Changing Condition of Patient

A new computerized method of teaching medical students to diagnose illnesses has been developed at the Clinical Center.

Dr. Richard B. Friedman, assistant chief of the Research, Development, and Laboratory Automation Section of the CC Clinical Pathology Department, devised the computer program that mimics the physician-patient encounter.

To participate in this program, the student, using a standard typewriter keyboard, asks questions of a computer. In reply, the computer reports symptoms, results of diagnostic tests, and reactions to treatment—information a physician might need in a real-life situation to determine the cause of an illness.

First, the student receives a brief statement describing a hypothetical patient's illness. He may then request any test or other information for the diagnosis as he would if the patient were in a hospital emergency room.

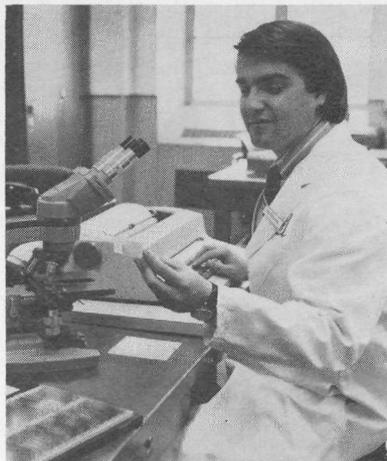
The computer informs the student whether a test is available, when it can be performed (daytime only or 24 hours daily), how much it costs, and how soon the results will be available.

If the student wants the test to be made, the computer gives the test results. It also records the cost and time required for the test.

Then the computer reports the patient's condition or reactions to medication that may have been administered during the elapsed time. If the student takes too long to reach a diagnosis, the computer may inform him the patient has died.

Although similar teaching techniques are in use, they do not allow for time lapses and changes in test results due to the altered condition of the patient.

Nor do other methods take into account cost and availability of



**Dr. Friedman demonstrates how his recently developed system works. The computer refers the student to a slide on which he observes diagnostic test results. As many as 100 students throughout the Nation could use the program at one time by means of telephone hookup from computer terminals. Computer time costs about \$5 for a 1¼ hour session—the average time it takes for diagnosis.**

diagnostic procedures, according to Dr. Friedman.

He said that the program is also adaptable to most computer systems.

The conversational format of the system enables a person totally unfamiliar with computer operation to enter a new case history or example into the system in less than 1½ hours.

The program, now being evaluated by some 30 agencies and universities, may help medical students, military medics, or physicians' assistants to develop diagnostic skills.

## RESEARCH TEAMS

(Continued from Page 1)

To assure that the purified messenger RNA was responsible for globin production, the scientists made rabbit globin in the test tube using the rabbit messenger RNA and the necessary chemical components for globin.

They then added a special enzyme—reverse transcriptase—to a combination of the globin messenger RNA, plus the subunits needed to make DNA and a short nucleic acid primer to start the reaction at the proper RNA site.

The scientists found that the messenger RNA directed the formation of a DNA strand complementary to itself.

### Experiment Described

By chemically eliminating the RNA strand of the resulting RNA/DNA hybrid, the scientists successfully produced a single-stranded DNA for rabbit globin, presumably a portion of the globin gene.

With the rabbit globin experiments as a model, investigators from Columbia University synthesized and characterized similar DNA copies of biologically active human globin messenger RNA.

NIH investigators also reported making the genetic material for red blood cell protein.

The scientists caution, however, that the copies, while extensive, may not be complete. In addition, because of technical problems, the biological activity of the "gene" has not been proven.

### Used Reverse Transcriptase

In their experiments, the scientists used reverse transcriptase from avian myeloblastosis virus, a virus that causes a type of leukemia in the chicken.

Last November, the Columbia group showed that the AMV enzyme is able to make DNA from a variety of RNA templates and therefore potentially could be used to synthesize a gene.

Unlike reverse transcriptases of mammalian cancer viruses, the enzyme from AMV is sufficiently available to be useful in a variety of genetic research, including human genetics.

Using synthesized globin-specific DNA that has been tagged with radioactive tracers, the scientists believe that, within a year, they will determine how messages to produce globin are processed within the mammalian cell.

The scientists also foresee using their method to study diseases caused by mistakes in the processing of genetic messages.

For example, thalassemia, a type of anemia, is characterized by production of abnormally thin red blood cells resulting from an inadequate level of hemoglobin.

By isolating messenger RNA,

## Dr. James Named Chief Of DRG Analysis Branch

Dr. John C. James has been appointed chief of the Research Analysis and Evaluation Branch, Division of Research Grants.

In his new post, Dr. James will be responsible for analyzing and evaluating the scientific character and trends of NIH grants and programs.

He will direct the preparation of reports on selected biomedical fields and other topics relevant to the administration of NIH programs, and also handle requests from Government officials and private organizations for information about NIH programs.

Dr. James joined the branch in August 1970, serving first as a scientific evaluation officer and then as acting assistant branch chief.

Previously, he served for 3½ years as executive secretary of the Medicinal and Organic Chemistry B Fellowship Review Section in the Career Development Review Branch.

Before coming to DRG, he was a senior chemist in private industry.

Dr. James earned the B.S. degree in Chemistry from the West Virginia Wesleyan College in 1949, and the Ph.D. degree in Organic Chemistry from the University of Delaware in 1960.



**Dr. James holds three patents on organic chemistry processes of which he is the sole inventor, and eight other patents on which he is co-inventor.**

synthesizing radioactive DNA from it, and using that DNA to measure the messenger RNA in the thalassemic cell, scientists may be able to determine whether the disease is caused by an inadequate amount of normal messenger RNA or by the production of defective messenger RNA for globin.

Ultimately, the researchers believe that an understanding of the processing of gene instructions in the mammalian cell will provide insight into how a cell acquires a specialized function in the animal, such as its functioning as a muscle, bone, or blood cell.



**At a recent meeting of the Tidewater Environmental Health Conference in Wilson Hall, Bldg. 1, Dr. Roger Estep, DRS Director, told the group that "environmentalists have the opportunity . . . to define the problems . . . and work out solutions with the best of the available technology that we have today." Among the conference participants (l to r): James Bowman, president, National Capitol Area Environmental Health Association; John R. Pattillo, president, Virginia Environmental Health Association; Leo A. Schuppert, president, Maryland Association of Sanitarians; Dr. Estep, Stephen J. Pijar, conference program chairman, ESB, DRS, and Vinson R. Oviatt, ESB chief.**

## Dental Educators Gain New Insights Into Testing Techniques Through DDH Workshops

Dental educators are gaining new insight into ways of testing students during 2-day testing and measurement workshops which the Division of Dental Health, BHME, is conducting at U.S. universities and colleges.

The workshops are designed to help dentists and other instructors construct reliable written examinations for testing students.

Slide-tape presentations, divided into five units, or courses, have been developed by the Division's Training Program staff as guidelines for the workshops.

In addition, ten 4-10 minute color trigger films are offered. Portraying typical student-teacher situations and interaction, the films stimulate group discussions by workshop participants.

"Nothing will improve class morale more than the students' conviction that they are being tested fairly—even if rigorously," according to Dr. Robert J. Lucas, chief of the Training Program.

The workshop helps teachers to construct informative and fair tests that will accurately measure their students' achievements.

The first Workshop on Tests and Measurement was held last December at Lake Tahoe, Calif.

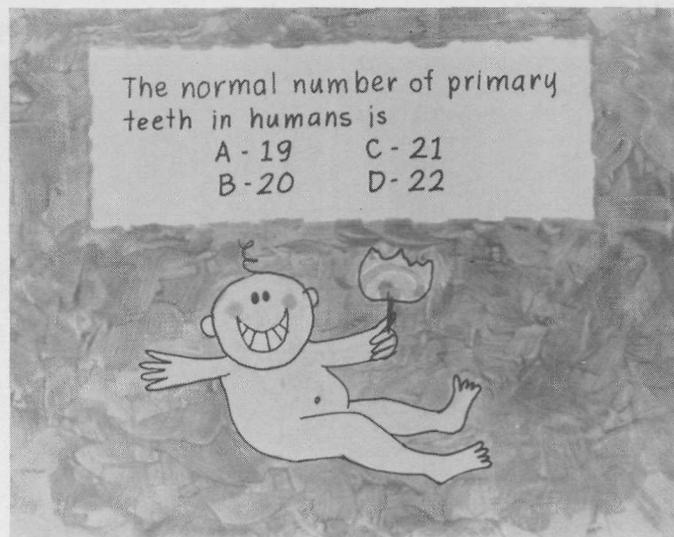
Recently a joint workshop was held for the faculty of Maryland, Howard, Virginia, and Georgetown Universities at the University of Maryland.

Another session was held for the University of Pennsylvania and Temple University on May 16-17.

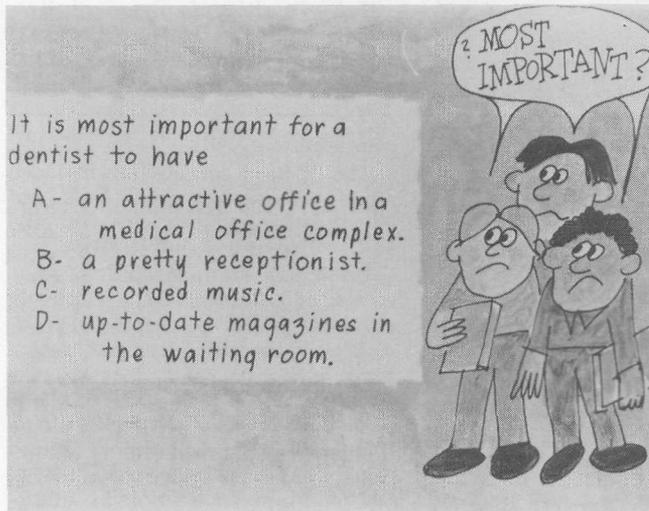
Inquiries may be addressed to Dr. Robert J. Lucas, chief, Training Program, Division of Dental Health, Dental Health Center, 14th Avenue and Lake Street, San Francisco, Calif. 94118.



Dr. Lucas is setting up the slide/tape series for a demonstration workshop.



This multiple choice question really offers only two choices instead of four. The intelligent student immediately eliminates choices A and C, because common sense tells him that the answer should be an even number.



Trivial questions are not a true test of knowledge—dental educators should avoid them when constructing examinations.



A good multiple choice question forces the student to select the best alternative from a field of plausible choices which differ in only one respect.

### Dr. Frank Putnam Is Named Chairman of Etiology Group

Dr. Frank W. Putnam, professor of Biology and director of the Division of Biological Sciences at Indiana University, will become chairman of the National Cancer Institute Etiology Program Advisory Committee (EPAC) for a 2-year term beginning July 1.

The Committee, composed of eight non-NCI scientists engaged in a study of the causes and prevention of cancer, helps to shape program policies and priorities of the Etiology area.

Dr. Putnam is a biochemist known for his research in the field of plasma proteins, protein synthesis, and viral reproduction. He has been a member of EPAC since July 1970.

He will replace Dr. Richard P. Mason, senior vice president for research of the American Cancer Society, Inc., whose term on the Committee expires June 30.

### MEDICAL AWARD PRESENTED TO DR. MURAYAMA

(Continued from Page 1)

yama, sickle cell anemia has become one of the first diseases with a thoroughly understood molecular basis for pathogenesis, diagnosis and, hopefully, treatment of acute attacks.

Sickle cell disease, which strikes Negroes almost exclusively, is the result of a chemically abnormal hemoglobin, the oxygen-carrying pigment in red blood cells.

Insight into the sickling mechanism of the disease came primarily from studies using the three-dimensional scale model of the human hemoglobin molecule designed by Dr. Murayama, who is in NIAMD's Laboratory of Physical Biology.

Culminating over 6 years of research, Dr. Murayama demonstrated that abnormal chemical bonding occurs in key positions between certain hemoglobin chains of abnormal composition in red blood cells under conditions of lowered

oxygen tension.

Such abnormally structured hemoglobin molecules aggregate in the form of deforming, elongated rods which deform the erythrocyte (red blood cell). The cell membrane simply conforms to this elongated "sickled" shape.

Applying these molecular concepts of sickling, a research team in Michigan recently devised a new treatment for the disease, utilizing administration of urea in invert sugar.

The presence of urea in the blood appears to reverse sickling and may block further sickling of susceptible red blood cells by interfering with the formation of the abnormal bonds.

Preliminary clinical trials thus far have been successful in a considerable proportion, but further long-term studies are needed to confirm these observations.

Dr. Murayama received his Ph.D.

### Miller Wins Speech Contest Held by Toastmasters Club

Kenneth Miller, a member of NIH Toastmasters Club No. 3421, is a co-winner of the club's Divisional Serious Speech contest held at the Bethesda Naval Officers' Club for his speech, Stop, Look, and Listen.

Selected out of 825 participants from 37 clubs, Mr. Miller will enter the Toastmasters' district contest, which will include finalists from three divisions of District 36.

Before entering the divisional contest, he won both the NIH and Area Serious Speech competitions.

Mr. Miller, a printing specialist in the Printing Section, OAS, has been a member of the Toastmasters for 2 years.

from the University of Michigan, and did postdoctoral work at the California Institute of Technology, where he was a student of Dr. Linus Pauling, Nobel Prize winner.

## Stronger EEO Commitment May Result In 'Mutually Beneficial' Relationship



Mr. Laster (second from right) is complimented on the success of the conference which he coordinated by (l to r): Dr. C. Gordon Zubrod, scientific director for Chemotherapy, NCI; Dr. Baker, and Dr. Anthony M. Bruno, NCI assistant director.—Photos by Ed Hubbard.

As part of the NIH effort to strengthen its commitment to equal employment opportunity and upward mobility, students and faculty from minority colleges and other schools with a high percentage of minority students met here last month under the sponsorship of the National Cancer Institute.

The meetings opened avenues for strengthening bonds between minority schools and NIH and provided NCI leaders with a chance to describe professional opportunities within their Institute.

Opening the discussion, NIH Director Dr. Robert Q. Marston summarized the agency's role in U.S. medical research, emphasizing the possibilities for scientific exploration through NIH assistance.

"This is a vital and dynamic area, with important political and social implication," Dr. Marston observed.

"We must build on knowledge already gained in order to solve other problems within and beyond the health field," he added.

Dr. Carl G. Baker, former NCI Director and now Special Assistant to the NIH Director, described the Institute's accomplishments and



Dr. Doris Mitchell, associate professor of Pathology, Columbia University College of Physicians and Surgeons, discusses effects of the minority conference with Dr. Baker and Dr. Roger Estep, DRS Director.

plans to expand its cancer research program.

Dr. Baker contended that professional participation by minority groups will enhance the prospects

## NIH Visiting Scientists Program Participants

4/27—Dr. Masayuki Mitsunaga, Japan, Laboratory of Biomedical Sciences. Sponsor: Dr. Walter H. Glinsmann, NICHHD, Naval Medical Center, Rm. 35.

5/1—Dr. Ole Henriksen, Denmark, Laboratory of Molecular Biology. Sponsor: Dr. Elizabeth Maxwell, NIAMD, Bldg. 2, Rm. 207.

5/1—Dr. Gerald Stranzinger, Germany, Pharmacology and Toxicology Branch. Sponsor: Dr. Robert E. Staples, NIEHS, Research Triangle Park, N.C.

5/3—Dr. Robert A. R. Pearce, United Kingdom, Laboratory of Physical Biology. Sponsor: Dr. Edwin D. Becker, NIAMD, Bldg. 2, Rm. B202C.

5/5—Dr. Nicolae Popescu, Romania, Cytogenetics and Cytology Section. Sponsor: Dr. Joseph A. DiPaolo, NCI, Bldg. 37, Rm. 2A13.

5/5—Dr. Ricardo Brentani, Brazil, Chemistry Branch. Sponsor: Dr. Harry V. Gelboin, NCI, Bldg. 37, Rm. 3E24.

of scientific growth.

The 3-day conference included 53 representatives from NIH and 43 students and teachers from 23 U.S. colleges and universities.

Principals from McKinley, Anacostia, and Roosevelt High Schools also attended.

Administrators, educators, scientists, students, and teachers, exchanged views on future relationships with NIH and NCI.

Matters of grants and fellowships, employment opportunities, and possible assistance to placement directors were discussed.

O. H. Laster, NCI Training Officer and Conference Coordinator, said, "This is not just NCI looking at students and others from minority colleges and universities, but rather our forming a meaningful relationship that will be mutually beneficial to both NCI and minority institutions."

## Experts Meet to Plan International Data Bank On Cancer Research

International leaders in the fields of information transfer, library science, and systems processing are meeting with scientists at Airline House in Warrenton, Va., to develop plans for an International Cancer Research Data Bank.

The meetings, sponsored by the National Cancer Institute, started yesterday (May 22), and will continue until tomorrow (May 24).

### Agreements Discussed

Among the subjects discussed were the international agreements that may be necessary for participating in the collection, storage and dissemination of cancer research information.

Dr. Michael B. Shimkin is the general chairman of the sessions. Dr. Shimkin is coordinator, Regional Medical Program, University of California School of Medicine, San Diego.

Dr. Arnold W. Pratt, Director, Division of Computer Research and Technology, is among the session chairmen. Dr. Pratt heads the information processors group.

Other NIH scientists attending the conference are Dr. Gregory T. O'Connor, NCI, and Dr. Joseph Leiter, National Library of Medicine.

## DANA AWARDEES

(Continued from Page 1)

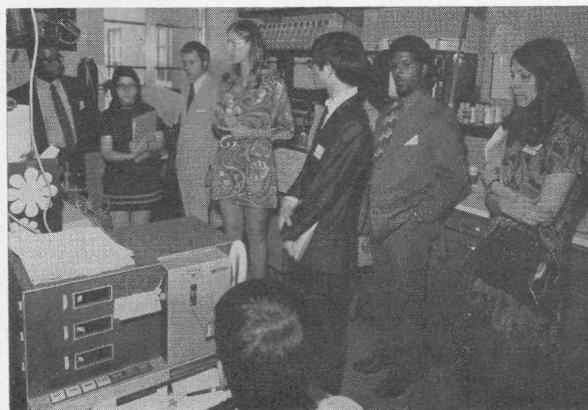
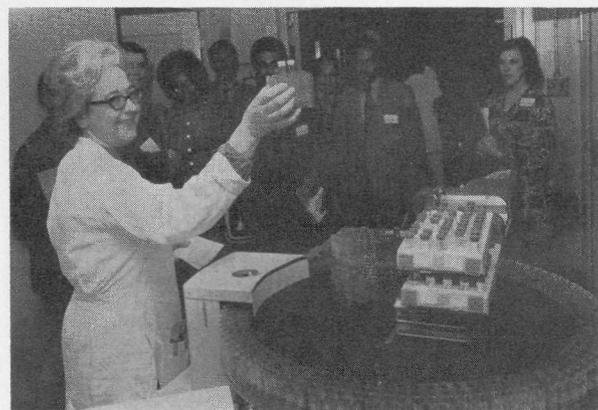
tension, strokes and certain other cardiovascular diseases, the study has helped to establish a firm basis for preventive measures directed against certain risk factors and thus, to delay or prevent the onset of such catastrophic cardiovascular events as a heart attack or stroke.

Largely as a result of the study, elevated blood cholesterol, high blood pressure, cigarette smoking, obesity, and diabetes are now firmly accepted as being associated with increased risk of heart attack and sudden death.

The American Health Foundation, a national voluntary health agency founded in 1968, is focusing on three areas: health research, health education, and health maintenance.

Its newly opened institute is a public service facility which includes four follow-up clinics designed to help individuals stop smoking, reduce weight and control high blood fat levels, control high blood pressure, and promote general physical fitness.

These clinics, in turn, support the Health Maintenance Center, a highly automated multiphasic testing facility operated jointly by the American Health Foundation and the American Health Corporation.



Medical technologists in two chemistry laboratories of the CC Clinical Pathology Department explain their work to participants in a 3-day, NCI-sponsored conference, who took time out for a tour. Miriam Bowman (left) holds up binary coded carriers which will be placed in the accessioner to her right—part of a patient identification system—and Carol Huber (right center) explains how the blood-gas analyzer is used.

## Pipette to Measure Small Amounts of Body Fluid Developed by Biochemist

A new instrument that will permit automated chemical analyses of the small amounts of body fluids available from children has been developed by a Clinical Center investigator.

The device, an automated pipette, was developed by H. Harold Nishi, a biochemist in the CC Clinical Pathology Department's Clinical Chemistry Service.

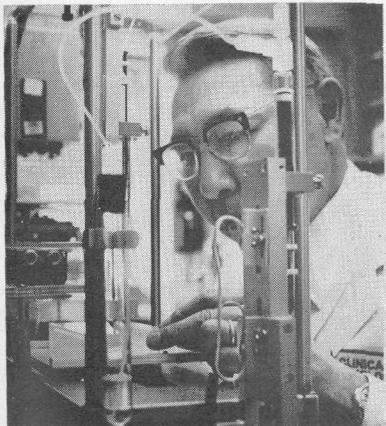
Automated laboratory equipment now in use require larger samples of body fluid (100 microliters) than are usually available from children. Consequently, most tests on pediatric samples must be performed manually by technicians.

A new pipette, which is being patented, will be used in the CC for most of the common tests that are currently requested almost as often for children as for adult patients.

When the new CC pediatric wing that is being planned for the National Institute of Child Health and Human Development is completed, CC officials anticipate the demand for such tests will be even greater.

To perform tests, the pipette automatically draws 1 to 5 microliters of fluid from a well in a specially designed sample tray and adds reagent.

The two are then deposited into another sample tray and mixed



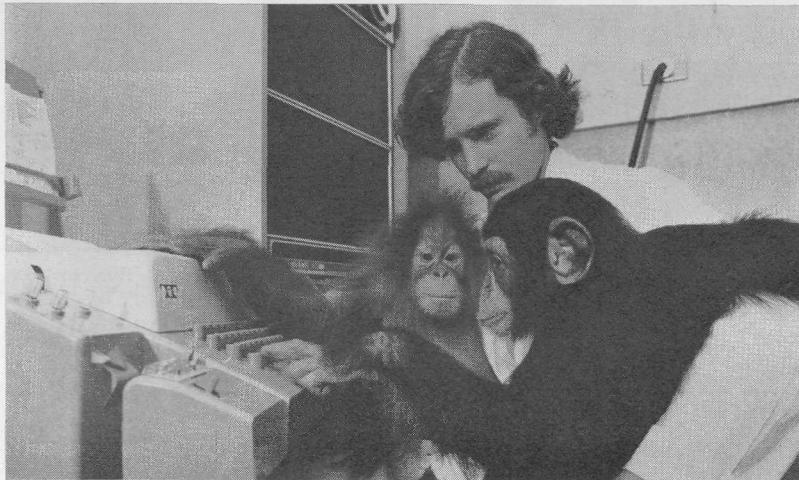
Mr. Nishi places sample tray into position under the pipette. The tray is one inch high, 5 inches long, and less than 1/2 inch wide and contains wells for 12 fluid samples. Automated pipettes now being used are not capable of accurately measuring small amounts of fluids.

by a tiny vibrating motion of the pipette tip. Next, the tray is transferred to another instrument that reads and records the results.

The pipette is capable of measuring 1 microliter (1/50 of a drop) from the total fluid sample and mixing it with a small volume of reagent.

The automated pipettes now

## Go Ape—Speak 'Yerkish'—It Is Not Easy, But Primates (Non-Human) Are Learning



Biji and Lana may soon be "chattering" in Yerkish. Under the watchful eye of chief animal trainer, Tim Gill, the babies operate computer keys. When they push the right key they earn a cookie, or something equally rewarding.

By Ginny Fleming

Two apes and a computer may soon "talk" to each other in "Yerkish" at the Yerkes Regional Primate Center of Emory University.

The Yerkes Center is supported by the Division of Research Resources. The National Institute of Child Health and Human Development is funding the experiment.

Biji, a young orangutan, and Lana, a chimp, are the star subjects in a 4-year study of primate, non-vocal language skills.

Chief investigator, Dr. Duane Rumbaugh, a psychologist with Georgia State University and an expert on ape intelligence, hopes to develop a technology for testing and studying the animals' language-related behaviors and the conditions which control the development of language.

E. C. von Glasersfeld and Pier P. Pisani of the University of Georgia, and Professor Harold Warner of the Yerkes center are co-investigators.

The project involves interaction between a PDP8 computer and the two apes, beginning at a very simple level and gradually becoming more complex.

The computer is equipped with a keyboard; each key has a symbol on it representing, in "Yerkish," such things as candy, companions, and water.

available are not capable of accurately measuring these small amounts of fluids.

At present, the pipette is part of a prototype system and has been applied to 15 of the more commonly requested tests. However, it could perform chemical tests and eventually may replace the currently automated systems.

Now it takes a technician as long as 2 minutes to perform similar tests manually. Automated techniques now used for larger samples perform at the rate of one test every minute.

Initially, the little apes are taught to push keys and to associate a specific symbol with a specific object. Through a separate vending machine the apes are rewarded with a cookie if they push the cookie button, etc.

Periodically, the key arrangements are changed to make sure that the animals are not merely learning the placement.

At first, just as a small child demands "cookie" from his mother, Biji and Lana will press one key to ask for a cookie. This key's symbol contains all of the symbols for "Give me a cookie."

Later, the apes will have to recognize the symbol broken down into two, three, and finally four sections, or words, in the correct syntactical sequence, to get a cookie from the computer.

The computer will "talk back" to the apes using the same symbols on five, in-line projectors.

Every time the apes are challenged and respond correctly, they will be appropriately rewarded with objects or events, such as trips outdoors.

Coupled with the direct reward will be a pulsating light and a soft-tone sound. After an incomplete response or no response, the system shuts down for a "time-out" minute with no reinforcement.

The proposed language-learning program, to be given daily, is very similar to that of a young child learning to communicate. In 6 months, when the project's main thrust is planned, Biji and Lana will be 2 years old, their age corresponding approximately to a 3-year-old child with maximum learning capability.

## Swedish Medical Faculty Honors Dr. Ichiji Tasaki

The Medical Faculty of the University of Uppsala in Sweden has awarded an honorary doctorate to Dr. Ichiji Tasaki, National Institute of Mental Health.

Dr. Tasaki, who is in the Laboratory of Neurobiology, will accept the title of Doctor *Honoris Causa* at the University's annual "Promotion Day," on June 2.

The Swedish University also presents a diploma, a special hat, and a gold ring with symbols of Esculapius to the prestigious scientists who have received this honor.

### Pioneers in Many Fields

Dr. Tasaki has pioneered in many fields of neurobiology. He is noted for his experimental work which has contributed to the development of neurophysiology.

In 1970-71, Dr. Tasaki worked with Professor Torsten Teorell, professor of Physiology at Uppsala, and a former FIC scholar who resided at Stone House during his tenure here.

Both scientists conducted joint research in Dr. Tasaki's laboratory on the campus, and also collaborated on several papers which were published in professional journals.

### NIEHS ROLE

(Continued from Page 1)

noxious agents or factors.

"Operationally, we seek first to identify those agents or factors which are potentially hazardous and then to assess the degree of their hazard to man," he concluded.

The specific concerns of NIEHS include pesticides, carcinogenesis, microwaves, teratogenesis, noise, radiation, occupational hazards, and mutagenesis.

Planned tests for future years include a study of abstract comprehension. For example, after watching a movie, the apes will be questioned.

Their responses will be studied statistically by the computer for evidence of syntactic understanding, and language capabilities.

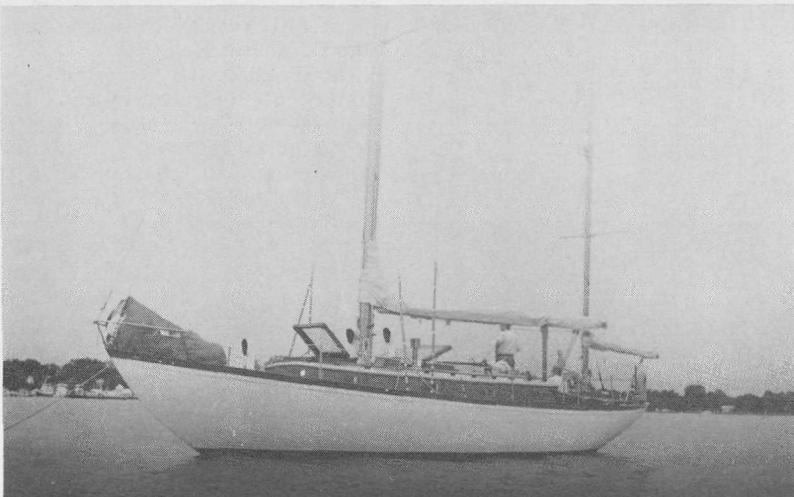
Dr. Rumbaugh is convinced that apes do have some capacity for non-vocal, language-related behaviors.

"Even if we find that apes cannot master syntax, we will have a system of studying language formation that might eventually be used to work with mentally retarded children," said Dr. Rumbaugh.

"The ape and the mentally retarded child both suffer from circumscribed language abilities. Knowledge of precise conditions necessary for language growth and of ways to enhance expression of limited language may uniquely equip us to teach the mentally retarded," the researcher explained.

## COMMUNICATIONS TEST TOO

### After 10 Years in the Planning Stages, Dr. Karl Frank Will Sail Atlantic Ocean



The "Via Mara" is a 42' 9" yawl designed by Spark & Stevens and built by Abeling and Rasmussen. The forward mainmast is 55' high with a 25' antenna attached to it. The boat is 11' 3" on the beam with an external lead keel and a bronze center board—4' 4" draft up and 8' 4" down. The yawl contains a 36-horsepower Mercedes diesel engine, weighs 3½ tons, and sleeps six.

After 10 years in the planning stages, Dr. Karl Frank, his wife, and four others, are embarking May 27 on a 30-day sailing voyage across the Atlantic Ocean from Whitehall Creek in Annapolis to Gibraltar.

During the vacation cruise, the NIH Radio Amateur Club—call letters K3YGG—will attempt to contact the "Via Mara" as part of a test of the emergency communications system on the campus.

Each day, between 12:20 and 12:40 p.m., EDT, Dr. Frank will try to get through to the radio club and give his position, sea and weather conditions, and information regarding the crew's health.

In case of emergency, the radio operators at NIH will monitor the boat's frequencies continually.

If needed, Dr. John Lynch, head of the Employee Health Service, will be available to give instruction by radio on treatment of any injuries.

#### First Stop Bermuda

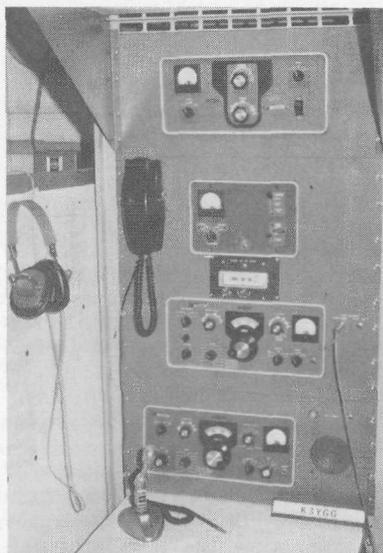
The first leg of the cruise will be past Norfolk, Va., across the Gulf Stream, to Bermuda which should take 4 to 5 days.

From Bermuda, they will pick up the eastern trades—prevailing winds—on a great circle route to the Azores, which will take 2 to 3 weeks if the winds are fair.

San Miguel, Az., will be a short stopover before the final 10-day voyage to Gibraltar.

Dr. Frank will travel with his wife, Peg, son Eric, and his wife Jane, and Hank Leroy, an FAA employee, and his wife Brickie, who is with the Laboratory of Neurophysiology, NIMH.

Canned food will be the main staple for the voyage. Due to the corrosive salty atmosphere, all labels have been removed from the cans and the containers have been re-marked and dipped in varnish



K3YGG—the call sign of NIHRAC—will monitor Dr. Frank on this transmitter/receiver in the basement of Bldg. 10. They will broadcast over CW 7.073 MHz (megahertz) until the boat reaches Bermuda. The frequency will then be changed to 14.033 MHz for the remainder of the trip to Spain.

to prevent rusting.

Electrical power will be a major problem for the cruise, Dr. Frank said, because with six people on board there isn't much room left to carry anything but essentials for such a long trip.

These include a radio direction finder, compasses, sextants, a self-inflatable rubber life raft, and 15 different sails to be kept on board.

A Honda generator and 10 gal-

## Malignancies Discussed At Annual PHS Meeting

A number of NIH scientists as well as other experts in the public health field, particularly health manpower and drug abuse, will discuss malignancies at the next PHS professional meeting in New York City, May 30-June 2.

Some 200 research papers to be presented at the seventh joint annual meeting of the U.S. Public Health Service Clinical Society and Commissioned Officers Association, will cover virtually every discipline.

Dr. John G. Veneman, HEW Under Secretary, will deliver the banquet address.

Four National Cancer Institute scientists will participate in the Opening General Session on Cancer. Dr. Peter Wiernik, head, Medical Oncology, Baltimore Cancer Research Center, Baltimore PHS Hospital, will speak on Adult Leukemia.

Supportive Care will be the topic of Dr. Stephen Schimpff, acting assistant head of Medical Oncology.

Dr. Paul Carbone, associate scientific director for Clinical Trials, will speak about Carcinoma of the Breast, while Carcinoma of the Lung will be discussed by Dr. Oleg Selawry, head of the NCI-VA Medical Oncology Service.

Other NIH scientists will speak at the Specialty Sessions.

A highlight of the meeting will be the J. D. Lane Award Competition. The winner receives a plaque and \$200 honorarium for the best scientific paper presented by a junior scientist.

Four NIH scientists are among this year's finalists.

lons of gasoline will provide enough power to operate the radio for one hour each day, but a make-shift hand-driven generator will be taken to provide electrical power in case of emergency.

The boat's 36-horsepower engine and enough fuel to operate for 35 hours will be used mainly for entering and leaving ports.

But the crew allowed themselves one luxury. "We purchased a cassette tape recorder to provide music during the cruise. Each family had the recorder for one week to tape their favorite music because we all have our own tastes in music and they definitely differ," Dr. Frank commented.

Dr. Frank will return to his position as chief of the Laboratory of Neural Control, National Institute of Neurological Diseases and Stroke, by the end of July.

He will leave the "Via Mara" in Spain. It will be sailed back by Dr. M. G. F. Fuortes, chief of the Lab of Neurophysiology, NINDS, Richard Newell, NIMH, and others leaving the Mediterranean for the U. S. around July 15.

## Dr. Fox Named NINDS Collaborative and Field Research Asso. Director

Dr. Leo Fox has been named associate director for Collaborative and Field Research, National Institute of Neurological Diseases and Stroke.

Formerly with the National Aeronautics and Space Administration, Dr. Fox was Director of the Aeronautical Life Sciences Division and, previously, deputy director of the Biotechnology and Human Research Division.

#### Background Given

At NASA, he planned and directed research programs involving aeromedicine, man-machine interactions, and life-support systems which gave him experience in managing in-house research, as well as contracts and grants with private industry, educational institutions, and Government agencies.

Dr. Fox has served as executive secretary to the NASA Advisory Committee on Human Research and Biotechnology and as the chief liaison officer with the National Academy of Sciences Space Medicine Committee.

#### New Position Described

In these positions, he served on ad hoc panel studies including cardiovascular and respiratory physiology, infectious diseases, and radio-biology.

At NINDS, Dr. Fox will head collaborative perinatal research (correlating factors in pregnancy and early life causing cerebral palsy, mental retardation, and other neurological disorders); epidemiological research, and special projects including studies in epilepsy, head and spinal cord injury, stroke, and cerebral death.

In addition, he will help formulate policies relating to the Institute's research program.

In 1966, Dr. Fox received his Ph.D. from Boston University in Biology and Physiology.



Dr. Edward F. MacNichol, Jr. (r), NINDS Director, welcomes Dr. Fox to his new office.