

Incentive Awards Are Presented To 29 Employees

Twenty-nine NIH employees received meritorious service, incentive, or longevity awards at recent ceremonies held here and at DHEW.

Five of these were participants in the 10th Annual DHEW Honor Awards Ceremony on April 11 in the HEW Departmental auditorium. The others were honored at ceremonies held here within the past month in Institute and Division offices.

Wins Top Award

Dr. Howard B. Andervont, who retired as Chief of the Laboratory of Biology, NCI, last January to remain at NIH as an active staff member of the laboratory which he headed for 15 years, was awarded the DHEW top honor, the Distinguished Service Award.

He was cited for "outstanding contributions to research, writing, and counseling in cancer biology and for leadership in establishing the National Cancer Institute's Laboratory of Biology." He also re-

(See AWARDS, Page 8)

DRG Publishes Report On Health Research Facilities Program

A listing of the 756 grants, totaling \$148,988,787, awarded by the Health Research Facilities Branch, DRG, appears in the recently issued Fifth Annual Report on the Health Research Facilities Program.

The report outlines developments to date, and lists approved grants, pending requests, notices of intent to apply, and completed projects from the inception of the program (July 30, 1956) through December 31, 1960.

Progress Shown

An additional 78 grants, in the sum of \$22,112,444, have been recommended for approval when funds are available.

According to a recent summary, "The past year has shown considerable progress in construction, completion, and utilization of new, remodeled, and renovated facilities. There are now 246 completed construction projects with a Federal investment \$33,550,513. This figure has more than doubled in the past year, indicating that many of the larger research facilities, which have been under construction for several years, are now completed."

Atlantic Ocean Provides 'Lab' For Radioactive Waste Study

By Carl Hausman

From a research "laboratory" 6,000 feet below the surface of the Atlantic Ocean has come some valuable information which could affect the welfare of generations to come.

For twenty-six days last summer an orange and white-striped buoy, bearing the letters "N-I-H," maintained constant vigil over the spot, 80 miles east of Cape Henry, Va.



Crew of the Coast Guard cutter Cherokee carefully lower one of the sealed vaults containing NIH radioactive waste onto the deck preparatory to disposal at sea.

It marked the place where the U.S. Coast Guard, in cooperation with the National Institutes of Health, had deposited strange cargo—a 55-gallon steel drum and a reinforced concrete box, each containing such seemingly worthless items as waste paper, animal cage cleanings, and black dye solutions in paint cans and earthenware crocks.

Linked by Chain

From May 25 to June 20 these containers and their unusual contents rested on the bottom mud, linked together by a 130-foot chain. Connected to the chain and trailing upward more than a mile to the buoy was the "lifeline"—8,000 feet of unspliced nylon rope.

Equally curious and significant, however, is the fact that the two containers at the deep end of the line were not alone. Instead, they rested in a veritable graveyard of identical drums and concrete boxes, some of which had been on the bottom for more than 10 years.

Mixed With Concrete

Sealed within these other containers were radioactive waste materials—the useless yet potentially harmful by-products of laboratory and clinical research conducted here at NIH.

These radioactive wastes, bound in a thin concrete mix inside the huge drums and vaults, had been hauled by truck convoys to Norfolk, transferred to the Coast Guard cutter Cherokee, and taken to the designated burial ground at sea.

This method of disposal is used to insure that no significant amounts of radioactivity are added to the levels already present in the environment—from natural sources, nuclear weapons testing, and nuclear reactor plants.

(See OCEAN LAB, Page 7)

Time-Saving Electric Door Lock System Is Boon to After-Hours NIH Workers

An electric door lock system, suggested by Dr. Hugh R. Hayward of the Section on Enzymes, Laboratory of Cellular Physiology and Metabolism, NHI, has been installed in Buildings 2 through 9 and soon will be installed in Buildings 29 and 30.

The new system is a time-saver both to employees and members of the NIH Guard Force. It provides prompt after-hours access to the buildings by authorized personnel while maintaining security control, according to John R. Leach, Assistant Chief, Plant Safety Branch, OD.

To gain entrance to any building in which the system is installed, the employee merely telephones the Building 1 Guard Office from the phone located at the building entrance, giving his name and per-

sonnel number. The guard then operates an electromagnet release mechanism in the Guard Office to open the door.

Previously, in order to enter a building after hours (with the exception of Buildings 1 and 10, which are never closed) the employee had to go to the Guard Office and be escorted to his building by a guard who unlocked the door. Later, when the outside telephones were installed, the employee still had to await the guard's arrival in response to his call.

Under the new electrically operated system, which will be extended to other buildings, the employee is still obliged, as in the past, to sign the log book inside the building entrance, giving his personnel number and time of arrival and depart-

Instrument Symposium To Open Here Oct. 9

The 11th Annual Instrument Symposium and Research Equipment Exhibit will be held here October 9 through 12.

The symposium will cover recent developments in research methods and instrumentation. Primary topics for discussion will include applied gas chromatography, factors influencing interpretation of spectra, electron magnetic resonance, thermogravimetric analysis, electron probe analysis, application of physiological instrumentation to clinical problems, and optical rotatory dispersion.

Dr. Julius Sendroy, Jr., Naval Medical Research Institute, is Chairman of the symposium, and James D. Davis, Chief, Supply Management Branch, OD, is Executive Secretary.

Chairman of the research equipment exhibit is Louis Heiss, American Instrument Co., and James B. Davis is Exhibit Manager.

the NIH Record

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DBS Cites Need, Issues Final Appeal For Members of Typed Donors Panel

The Division of Biologics Standards today issued the following statement and appeal to NIH employees.

"The NIH Panel of Typed Donors needs members.

"Both common and rare blood types are required for testing procedures conducted by the Division of Biologics Standards in the control of diagnostic reagents.

"Have you made an appointment with this Panel to donate a sample of blood on Friday, April 28, or May 5? These donations will be

received in the Employee Health Unit, Bldg. 10, Rm. B2-A-06, between 11 a.m. and 1 p.m. Your cooperation in keeping this date will insure the success of the program.

"There is still time to become a member of the Panel if you were unable to do so earlier. Fill out the form which has been distributed to all NIH employees and return to: Laboratory of Blood and Blood Products, Division of Biologics Standards, Bldg. 29, Rm. 114.

"If you have misplaced your reply form or need additional information, call Ext. 4731."



Miss Ella Miyashiro, Laboratory of Blood and Blood Products, DBS, examines an apparatus for possible use in dispensing and diluting serums for potency tests. Approximately 1,100 lots of blood diagnostic reagents are submitted to DBS each year for testing. Since blood is required for these tests, DBS maintains the NIH Panel of Typed Donors to supply the need.

Dr. Schwarz, NIAMD, Receives Borden Award

Dr. Klaus Schwarz, Chief of the Section on Experimental Liver Diseases, LNE-NIAMD, received the 1961 Borden Award at the annual meeting of the American Institute of Nutrition in Atlantic City, N.J., April 12.



Dr. Schwarz

The award, consisting of a gold medal and \$1,000, is given annually for outstanding research work in nutrition as it relates to milk or its constituents.

Dr. Schwarz was honored for his discovery of the nutritional importance of selenium. He found that fatal deficiency diseases in a number of species can be prevented by very small amounts of biologically potent selenium compounds.

These diseases involve degeneration of the liver, heart, kidney, muscles, and pancreas. Thus selenium, previously known only for its toxic effects, has been identified as a physiological, essential factor present and effective in the diet and the organism.

Active compounds of the trace element often have a pronounced growth-promoting effect. However, the significance of selenium for the human has yet to be determined.

After receiving his M.D. degree from the University of Heidelberg, Germany, Dr. Schwarz became a member of the Max Plank Institute for Medical Research, where he began his work on the isolation of new vitamins and growth-promoting factors. He joined the NIAMD staff in 1949.

Strings and Piano Play Concert Here April 27

Five stringed instruments and a piano, playing in various combinations, will feature the sixth R&W concert of the current season on April 27 at 8:30 p.m. in the Clinical Center auditorium.

The pianist of the group, Dr. Charles P. Hutterer, is Assistant Chief of the Grants and Training Branch, NHL.

The other performers include Mark Ellsworth, violin, who is concertmaster of the National Gallery Orchestra and Director of the NIH Orchestra, and his wife Nancy, violin; Ray Montoni, viola, who was heard here in a recital last November; Jean Robbins, cello, who is the wife of Dr. Jacob Robbins, NIAMD; and Joseph Willens, string bass, a member of the National Gallery Orchestra.

There will be no tickets or admission charge for the concert.

Dr. Peterson Appointed Division Chief in Office Of Surgeon General

Dr. Paul Q. Peterson, Assistant Director of NIAID since July 1958, was appointed Chief of the Division of Public Health Methods in the Office of the Surgeon General, PHS, effective April 23.



Dr. Peterson

A PHS Commissioned Officer since 1942, Dr. Peterson was Chief of the Chronic Disease Program of PHS before he came to NIH.

He has worked in the Ohio and Kentucky State Health Departments and had a tour of duty in the Far East as Chief of the Health Division of the Mutual Security Mission in China, Cambodia, Laos, and Vietnam.

Visits South America

On April 20 Dr. Peterson returned from South America where he served at the request of the Pan American Health Organization on a Zoonoses Technical Advisory Group with Dr. Donald J. Dean of the New York State Department of Health and Dr. Richard E. Shope of the Rockefeller Institute.

They visited briefly in Rio de Janeiro, Sao Paulo, and Buenos Aires, en route to Azul, Argentina, site of the Pan American Zoonoses Center where the Group analyzed the Center program and will make recommendations for the future.

On his homeward trip Dr. Peterson stopped in Cali, Colombia, at the Universidad del Valle, overseas affiliate of Tulane University. An international center for medical research and training is being established there as part of the ICMRT program (See *NIH Record* 4/11/61, p. 8). He also visited NIAID's Middle America Research Unit in Panama.

Mental Health Week To Begin April 30

The week of April 30 through May 7 has been designated Mental Health Week.

Sponsored jointly by NIMH and the National Association for Mental Health, it serves to focus interest and attention on one of the nation's most pressing health problems, mental illness.

This year attention will be concentrated on mental health careers. Young people are being informed about opportunities in mental health professions and encouraged to prepare themselves for careers in psychiatry, psychology, psychiatric social work, and psychiatric nursing.

Science Section

'71 Break-Through Predicted in War On Arthritic and Metabolic Diseases

Excerpts from address by A. Baird Hastings, Ph.D., Sc.D., member of Scripps Clinic and Research Foundation, and Hamilton Kuhn Professor of Biological Chemistry, Emeritus, Harvard University, at the Tenth Anniversary celebration of the National Institute of Arthritis and Metabolic Diseases.

Coming out in a taxicab the other day, I learned that my driver was by trade a bricklayer who suffers from arthritis—and as a result can only lay bricks in the summer time. But as we entered the NIH grounds, he pointed to the Center with great personal pride and said: "Do you see that northeast wing of the Clinical Center? Those are my bricks."

This is my theme this evening. "These are our bricks." The big question is what are we going to do with them?

During World War II, when I was on the Committee on Medical Research of OSRD, I had a rule of thumb that it cost about \$12,000 to get a new chemical compound—or a new idea.

I am sure that the price has now gone up, but whatever it is today, I am equally sure that the increase in healthy man days that have resulted from increased medical research since the war has well justified whatever expenditures have been made, and I can assure you that both as a taxpayer and a working scientist, Senator Hill's remarks this afternoon were both thrilling and welcome.

Cost Is Inflationary

Looked at another way, however, I am dubious about talking of the research that has already been reported to you. This afternoon, our 5 speakers had a total of 60 minutes to report on 10 years' expenditures, totaling about \$150 million, or \$2½ million per minute. Tonight, the price seems to have gone up to \$7½ million a minute. That, I submit, is highly inflationary.

Be that as it may, I am delighted to add my congratulations to all those who have participated—in the Public Health Service and without—in making this decade of progress against arthritis and metabolic diseases possible and productive.

Now, in spite of the fact that the National Institute of Arthritis and Metabolic Diseases is officially only 10 years old, its origin really dates from 1887 when the first Laboratory of Hygiene was set up in one room of the Marine Hospital on Staten Island by Dr. Joseph Kinyoun, to study cholera, small pox, etc. And since that time, the U. S. Public Health Service has never been without a strong and active research program operating

as a functional arm of the Service.

The Hygienic Laboratory was named and authorized as an official entity in 1891, and 10 years later (in 1901), had Divisions of Chemistry, Bacteriology, Pathology, Zoology and Pharmacology, with a total appropriation of \$35,000!

I am proud to say that I was attached to this laboratory from 1917 to 1921 as Assistant Sanitary Chemist.

Life was tougher in those simple days. Well, in 1930 the Hygienic Laboratory became the National Institute of Health, comprised of the Divisions of Chemistry, Physiology, Pathology and Industrial Hygiene. These divisions became the Experimental Biology and Medicine Institute in 1947, and formed the basis for the intramural activities of our present Institute of Arthritis and Metabolic Diseases in 1950. In other words, we, together with our sister Institutes, have a long and distinguished lineage.

Partnership Exists

To my mind, the important difference between our present Public Health Service activities and those of our early days is the far-reaching partnership which now exists between our Institutes and our medical colleagues in universities and research institutions throughout the nation. We have become a continuum of workers in the medical sciences, and a continuum of medical research, not pre-clinical and clinical, not basic and applied, but rather a continuum of interests, of concepts and of results. There is as much feedback from clinical investigation into the so-called basic medical sciences as there is in the other direction. And this afternoon, we got an inkling of some of the sectors of research in this continuum which are of special significance today and pregnant with the medical advances of tomorrow.

Now, since you all heard our distinguished speakers this afternoon, it would be silly for me to report on their reports. So, in spite

This four-page section, devoted chiefly to summaries of research findings that have been reported by scientists of the National Institutes of Health, is prepared with the cooperation of the Information Offices of the Institutes and Divisions of the National Institutes of Health.



Dr. Baird Hastings (right) talks with Dr. Joseph J. Bunim, Clinical Director, NIAMD, about diagnostic tests for arthritis during the recent 10th Anniversary ceremonies of the Institute.

of my instructions from Dr. Daft, I have decided not to discuss the papers that you have heard, but rather to take up the discussion where they left off, and give you a brief digest of what you will hear from these gentlemen—or their successors—on March 9, 1971. For the moment, then, consider yourselves 10 years older than you are today.

Importance Stressed

First on arthritis—you will remember that Dr. McEwen stressed the importance of the research that was being carried on on the rheumatoid factor (or factors). The problem of auto-sensitization and auto-immunity in relation to collagen diseases has at last been unraveled, and we are well on the way to slowing up this process and thus delaying the development of full-blown rheumatoid arthritis. This has been possible through a combination of biochemical break-throughs that permit us to control both collagen and mucopolysaccharide metabolism, coupled with new knowledge about calcification and how to inhibit it selectively.

These biochemical break-throughs did not come until we were able to influence in a predictable way the synthesis of specific enzymes. The beautiful work on nucleic acid synthesis by Dr. Kornberg and Dr. Ochoa of 10 years ago laid the groundwork for such controlled syntheses.

That steroids of various kinds were influential in modifying metabolic activity, particularly that of proteins, has long been known, but even as recently as 1961 the exact role they played in metabolism was still a mystery. This has

now been resolved.

For example, we have realized for the last 5 years that the steroids play their specific parts through the influence that they have on surfaces—not just surfaces of cells—but the myriad surfaces of the intracellular organelles, and indeed all intracellular enzymes. Some now think that all intracellular enzymes are present in an organized arrangement, and that lipids and steroids are essential constituents of these organized intracellular structures.

These break-throughs came shortly after we solved the way by which the energy made available by metabolic activity was utilized for synthesis of new protein molecules, and can be attributed largely to the emphasis placed on research in biological chemistry and biophysical chemistry in the intervening years.

Diabetes Discussed

Second, diabetes: One of the developments in recent years, that was only beginning to be worked on clinically in 1961, has been the use of chelating agents to modify metal activities—substances specifically tailored to work with steroids in controlling enzymes that require metals for the expression of their activities. Much remains to be done in this area, but it is not inconceivable that in a few years, a quantitative disturbance in the enzymes, substrates, co-factors and environment—be it extracellular or intracellular—will be capable of diagnosis and correction.

When this is achieved, the problems which we formerly diagnosed as endocrine disorders, such as Addison, Cushing, etc., will be ca-

(See BREAKTHROUGH, Page 6)

Antibody Presence Seen in Patients With Hepatitis

The presence of antibody in hepatitis patients against a newly isolated virus was reported at the Federation of American Societies for Experimental Biology meeting by Dr. J. P. O'Malley, Division of Biologics Standards.

The virus, referred to as the A-1 agent, was recovered by Dr. O'Malley from rabbit kidney tissue cultures inoculated with material from the NIH heterogenic human plasma pool. The pool, established in 1951, is known to have induced homologous serum jaundice in human subjects, although attempts to recover a viral agent from laboratory hosts inoculated with this material have not been successful. The A-1 agent has been recovered only on one occasion, despite numerous attempts by Dr. O'Malley to reisolate it. Moreover, it has not been recovered from other known heterogenic materials.

Propagates Readily

The A-1 agent propagates readily in a number of primary and continuous cultures, including monkey, rabbit, chick, and human cells. Moreover, it produces cytopathic effects in all of these cultures except in primary monkey kidney cells. To date, however, it has failed to cause disease or gross lesions in mice, guinea pigs, rabbits, embryonated eggs, rhesus monkeys, suckling mice, or suckling hamsters inoculated by various routes.

Tests for viral antibodies against the A-1 agent in stored sera taken some years ago from human volunteers infected with material from the NIH heterogenic pool indicate that such antibodies were not present prior to inoculation, but were regularly found during convalescence. These findings were obtained not only with volunteers infected with the most extensively studied heterogenic pool, but also in those who developed jaundice following inoculation with five other heterogenic materials.

Question Raised

Stored sera from a group of volunteers presumed to have been infected with infectious hepatitis rather than with serum hepatitis virus had antibodies against the A-1 agent. However, reexamination of the clinical records revealed a disease with a long incubation period, raising a question as to whether this group might not originally have had serum rather than infectious hepatitis.

In a series of cases of infectious hepatitis contracted in the Far

American Doctors Impressed by Soviet Program of Mother and Child Care

By Harold Wolfe

A team of six American scientists who visited the Soviet Union for 30 days last fall told reporters at a press conference in Washington last week that they came away favorably impressed by the program of medical care for Russian mothers and children.

The NINDB-sponsored group toured 30 hospitals and institutes in Moscow, Leningrad, Kiev, and Tbilisi, as well as several small towns and a collective farm. What they saw and heard convinced them that Russia has—

- A "wonderful" system of child care in which doctors keep a close check on every youngster's health continuously through adolescence.

- Prenatal care available for every expectant mother.

- A child-centered society where the pediatrician holds a position of eminence.

- A "superb" attitude toward children, including those with neurological disorders such as mental retardation.

Chairman and chief spokesman of the mission was Dr. Stewart H. Clifford, head of infant care at Boston Lying-in Hospital and director of the NINDB collaborative mother and child health study there. He made the trip with Dr. Allan C. Barnes, Chief of the Department of Obstetrics and Gynecology, Johns Hopkins University Medical School, Baltimore; Dr. Katherine Bain, Deputy Chief, Children's Bureau, DHEW; Dr. Bernard G. Greenberg, Professor and Head of the Department of Biostatistics, University of North Carolina School of Public Health, Chapel Hill.

Also, Dr. Edith L. Potter, pathologist at Chicago Lying-in Hospital and Professor of Pathology in the Department of Obstetrics and

East and in the United States by military personnel, there was no demonstrable rise in A-1 antibodies, although in a few instances A-1 antibodies were present at the same level in the early and late sera. On the other hand, in one outbreak of disease diagnosed as infectious hepatitis which occurred in the Mediterranean area, two-thirds of the convalescent sera tested contained A-1 antibodies; early sera has not yet been tested.

The current work by Dr. O'Malley with the A-1 agent is still in a preliminary phase. It is one of many efforts by investigators throughout the world to transmit the agent of homologous serum jaundice in tissue culture systems and laboratory animals as the first step toward eliminating the contamination of blood products with this form of viral hepatitis.

Gynecology, University of Chicago; and Dr. Fred S. Rosen, Research Fellow in Medicine, Children's Hospital, Boston, and Research Fellow in Pediatrics, Harvard Medical School.

Among their findings and observations:

- The infant death rate in the U. S. S. R. has been cut from 225 for every 1,000 live births (22.5 percent) in 1917 to 40 in every 1,000 (4 percent) in 1960.

- There is one pediatrician for every 800-1,000 children. Russian medical schools are graduating 3,000 pediatricians a year. They are not, however, as highly trained as American pediatricians.

Comparisons Difficult

- A Russian child may not be diagnosed as mentally retarded until he has spent one year in a regular school—and only on the certification of a board of pediatricians and neurologists. Such a child is then sent to a special school where he is trained to lead as full and useful a life as possible.

- Comparisons with the United States are difficult to make because of a difference in definitions. For example, American doctors classify as a live birth any infant with a detectable heartbeat. Soviet doctors, on the other hand, do not classify as a live birth an infant that did not breathe, even if it had a heartbeat, or an infant weighing less than 1,000 grams (2 pounds, 2 ounces) that died even after living for several days.

- Russian mothers rarely give birth without having had prenatal care. About 85 percent see a doctor by the fifth month.

- Pregnant women who work get a planned vacation of 112 days—half before and half after delivery—with full pay.

- Pain relief is achieved, without drugs or discomfort, in 86 percent of all births through a method of "psychoprophylaxis." Expectant mothers must attend classes where they are taught the mechanics of pregnancy, labor, and delivery and are trained to relax and distract themselves when the uterus contracts in childbirth.

- All uncomplicated births are aided by midwives. These women are trained in all the techniques of labor and delivery, including resuscitation of the newborn.

- The emphasis in the field of mother and child care is an application rather than research.

A detailed report on the mission,

Mouse Tumor Is Model For Protein Studies Of Human Myeloma

Presented at the 45th Annual Meeting of the Federation of American Societies for Experimental Biology, April 1961.

Dr. John L. Fahey of the National Cancer Institute's General Medicine Branch has reported that mouse plasma-cell tumors form proteins similar to those formed by malignant plasma cells in multiple myeloma, a form of human cancer that invades the bone marrow and other tissues. This observation provides a basis for using the mouse tumor as a model for studies of human myeloma.

A few years ago, scientists at the National Cancer Institute showed that mouse plasma-cell tumors produce excessive amounts of protein, which can be detected in the blood. A similar excess of protein in the blood has long been recognized as a characteristic of human myeloma.

To clarify the relationship between the diseases in mice and man, the blood proteins of mice bearing plasma-cell tumors and patients with myeloma were compared by a number of physicochemical and immunochemical techniques that have come into use in recent years.

Structure Is Similar

The results, according to Dr. Fahey, indicate that proteins formed in excessive amounts by the mouse tumors and by human myeloma are similar with respect to physical structure, shape, and the range of size and electrical charge. The excessive protein is either gamma or beta-2A globulin, never both.

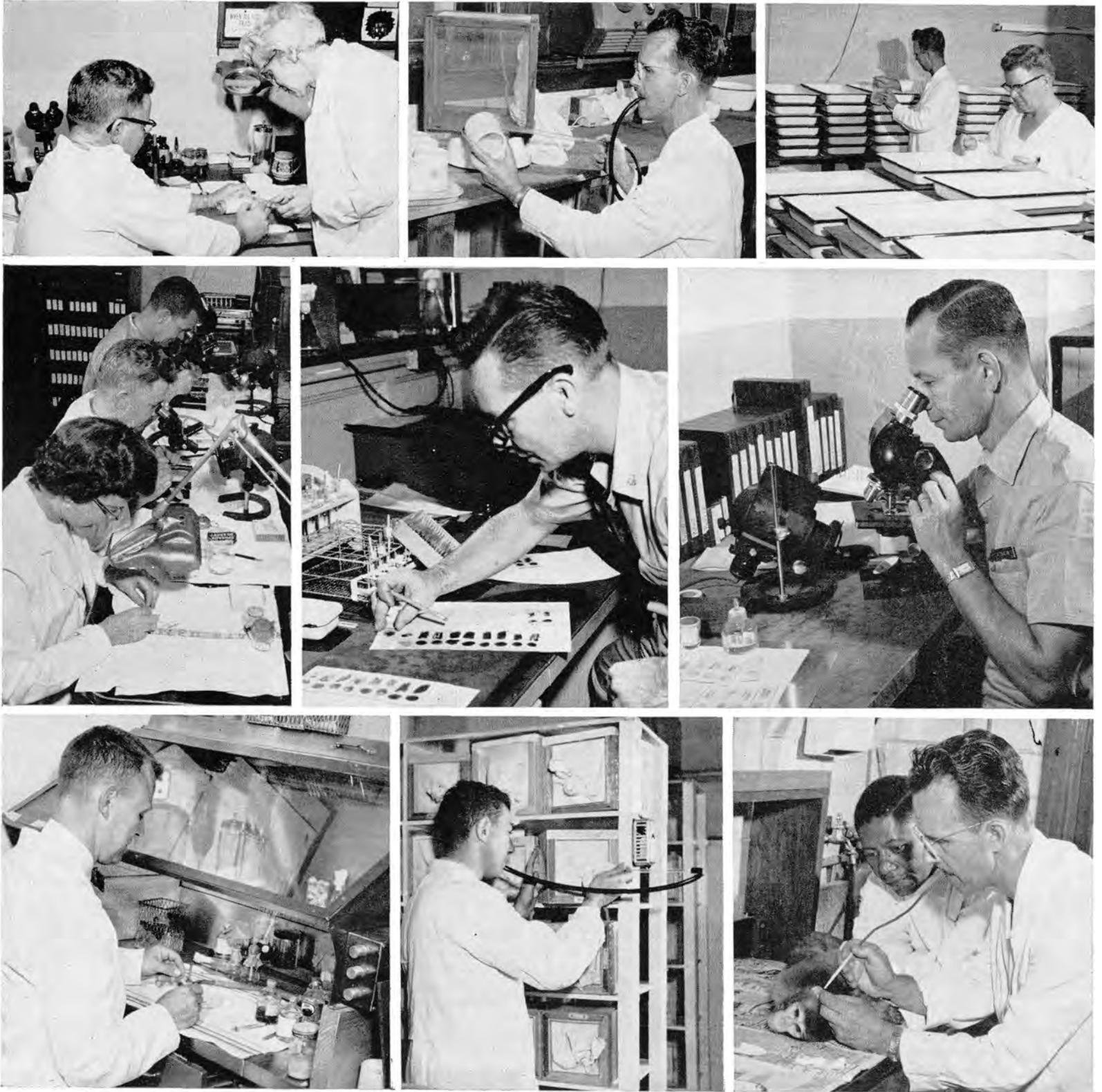
(The small amounts of these proteins formed by normal plasma cells provide antibodies against infection, but antibody activity has not been demonstrated for the protein products of malignant plasma cells.)

Dr. Fahey also reported that the globulins produced by one mouse plasma-cell tumor have not changed during a period of four years, in which the tumor was transplanted 35 times. This finding indicates that the genetic mechanism controlling production of globulins may remain stable in malignant cells.

These findings, reported to the American Association for Cancer Research, indicate the value of studying the protein products of malignant cells as sources of basic information about the nature of these cells.

including recommendations, is being prepared for future publication by the NINDB Information Office.

NIAID Laboratory in Chamblee, Ga., Studies Malaria



This second in the series of picture stories on NIH field stations shows the work of the Section on Cytology, Laboratory of Parasite Chemotherapy, NIAID. Recently moved from Memphis, Tenn., to Chamblee, Ga., the Section coordinates its malaria studies with those of the Section on Epidemiology at Columbia, S. C., and with the laboratories here. Since the spring of 1960, when two of the Section's staff members were infected with monkey malaria through the bite of an infected mosquito, a full-scale

study of human infections has been undertaken with the help of prisoner volunteers from the nearby Atlanta Penitentiary. Left to right, top row: lab workers inoculate a chick, transfer mosquitoes to containers, and feed and care for mosquito larvae in pans. Middle row: technicians dissect mosquitoes, label blood smears from volunteers, and examine blood smears. Bottom row: doctors prepare tissue culture, remove mosquitoes from a holding cage, and technicians take a blood sample from a monkey's ear.

BREAKTHROUGH

(Continued from Page 3)

pable of better clinical control, and diagnoses now made by proper names will be made by place and kind and degree of chemical disturbance.

Third, gastro-intestinal diseases: I remember that 10 years ago Dr. Ingelfinger emphasized the great need for concentrated research on the diseases of the gastro-intestinal tract. It is strange that it should have been neglected for so many years, particularly since it is through digestion and absorption of foodstuffs that we owe our lives in the first instance, and that next to cardiovascular disease, diseases of the gastro-intestinal tract take the greatest toll of healthy man days.

Since 1961, there has been great concentration on G. I. diseases, and, as a result, we know how to correct many kinds of malabsorption, we know how the intrinsic factor works, and we can assist the organism in controlling cholesterol and other sterol concentrations in body fluids through sound nutrition.

Liver Studied

Furthermore, since, as Dr. Ingelfinger so properly and stoutly claimed, the liver stands at the crossroads of metabolism in the body, monitoring the materials that are admitted, and preparing them for efficient use by peripheral tissues such as the brain, heart and muscles, the last decade has seen a great concentration of effort on understanding its manifold chemical responsibilities. I would go even further than Dr. Ingelfinger and say that the G. I. tract serves the liver.

Drugs have been designed to assist it in these activities, and it is of interest that the fine control of concentrations of the two simple end products of metabolism, ammonia and carbon dioxide, has proven to be the key development in the fine control of enzymatic activities.

Of all the organs in the body, the liver seems to remain the one with the most to do, and the least capable of replacement, even temporarily, by mechanical substitutes, as are the heart, kidney and lungs.

Finally, I remember that ten years ago Dr. Stetten and Dr. Kornberg left me quite exhausted by their dramatic accounts of biochemical sleuthing at the molecular level. They opened up vistas of metabolic control—not just in existing organisms, but in succeeding generations of organisms, that were breathtaking in their implications.

Technology had reached the point where a difference of one amino acid in a hemoglobin molecule could be detected, and that

Antibiotic Is Effective Against Eaton Agent Pneumonia

Effective antibiotic treatment of primary atypical pneumonia associated with the Eaton agent is reported by a group of Navy and National Institute of Allergy and Infectious Diseases scientists.

Results of the study are summarized in the April 15 issue of the *Journal of the American Medical Association*. The authors are Dr. J. R. Kingston, Dr. M. A. Mufson, L. P. Hellman, Dr. M. A. Manko, Dr. J. Boyers of the Department of Navy Bureau of Medicine and Surgery; and Dr. R. M. Chanock, W. D. James and H. H. Fox of the National Institute of Allergy and Infectious Diseases, National Institutes of Health.

The group conducted a controlled, double-blind study on 290 Marine recruits with non-bacteriologic pneumonia to evaluate the

efficacy of demethylchlortetracycline on primary atypical pneumonia associated with the Eaton agent. This agent (taxonomic status still undetermined) was first recovered in 1944 by Dr. Monroe D. Eaton and his colleagues from patients with atypical pneumonia. The antibiotic was developed by scientists at Lederle Laboratories.

Of the 290 patients, Eaton agent pneumonia was diagnosed in 109. The scientists administered demethylchlortetracycline to approximately half of the Eaton-positive patients daily for six days and the remainder were given a placebo. In the treated group, symptoms such as fever, cough, rales and malaise vanished and lung infiltration cleared far more rapidly than

in the control group. Furthermore, fever did not return after the termination of treatment, although some 40 percent of the untreated cases were still febrile at that time. These latter results—lung clearance plus permanently banished symptoms—suggest direct drug action on the disease process itself rather than the mere antipyretic effect contended by others.

Among 35 patients whose illness was associated with known respiratory viruses other than Eaton, antibiotic administration had little effect. In 122 patients with unidentifiable pneumonia, symptom duration was reduced. However, the chemotherapeutic effect was found to be significantly less, statistically speaking, in this group than in the Eaton-positive group.

Virus Growth Inhibited by Interferon Action

Investigations, reported in *Lancet* by Dr. Alick Isaacs, National Institute for Medical Research, London, and Dr. Samuel Baron, National Institutes of Health Division of Biologics Standards, indicate that interferon may be formed in the body as a protective response to virus infection.

Interferon, a substance produced by living cells under the stimulus of viral infection, was so named by its discoverer, Dr. Isaacs, because it interferes with the propagation of viruses. It has been shown to protect the cells *in vitro* against a wide range of virus infections.

The hypothesis is that interferon acts by causing an uncoupling action on oxidative phosphorylation, thus limiting the amount of adeno-

sine triphosphate (ATP) available for viral synthesis. The decreased antiviral action of interferon in cancer cells would seem to correlate with Warburg's evidence (1956) that cancer cells can form by anaerobic processes all the ATP they require for growth.

Since embryonic cells also show a high rate of anaerobic glycolysis, Drs. Isaacs and Baron have postulated that the cells should also show a similar resistance to the antiviral action of interferon during an early stage of their development and, later, assume the behavior characteristic of cells from adult tissues. To investigate this possibility, they tested the antiviral action of interferon on the growth of influenza virus in chick and mouse embryo tissue at different stages of embryonic development. The 11-day-old tissues produced twice as much virus but 20 times as much interferon as the six-day-old cells.

The authors suggest that if this is true of the young human embryo, it might explain why maternal infection with rubella virus during the first three months of pregnancy often leads to congenital malformations, whereas infection after the third month rarely does. Their assumption is that if the embryo is infected during the first trimester, it produces very little interferon. At a later stage of development, interferon is produced and the viral infection is more effectively limited.

The authors further speculate that the antiviral action of interferon has developed in the course of evolution as an adaptive response to superficial virus infection. The original functions may have been to control cellular division by controlling the supply of ATP. The cancer cell would, then, be one that has escaped from the control of interferon.

such a difference could be inherited and traceable to a gene. Other inherited abnormalities could be traced to abnormal enzyme patterns, or, at times, to the absence of an enzyme altogether.

Such inherited molecular diseases have multiplied, in their recognition, with the passage of time. Although we can control the symptoms of many of them now, correction of the genetic abnormality, though conceivable, is still quite beyond us. This is an area of great promise and current scientific activity. Would that I could be here in 1981 and hear how man's genes have been improved by man—or will they?

Return to Present

Let it not then be said (as did Robert Burns), that "man's inhumanity to man . . . makes countless thousands mourn."

And so it went in 1971. Well, let's return to 1961 and now.

I have measured what I have heard today in the perspective of a person who measured his first pHs in 1915—and who has seen proteins change from indeterminate, colloidal particles into definable chemical molecules, and enzymes change from articles of faith to protein molecules in test tubes, and who has seen the concepts of metabolism revolutionized through our ability to mark and trace molecules in the body with isotopes. Function and form at the molecular level have become indistinguishable attributes. The biochemist, the physiologist, the clinician have become indistinguishable medical investigators.

What more can we look forward to? Of course, there will be more information of biological systems at the molecular level. But, more than that, will come quantitative understanding of how the biological unit—the cell and its necessary and sufficient extracellular environment—behaves, alone and

in company with the society of cells with which each biological unit lives. Specificity of form and function will be inevitable, instead of mysterious.

Were we to achieve this understanding, and indeed, were we to conquer arthritis and metabolic diseases as we now know them, the problem of wear and tear and gradual metabolic attrition would still be with us. Health—with aging—will still be our goal.

When this day comes, I trust that our successors will still approach their problems of that day with the same enthusiasm, the humility, the dedication and the wisdom with which those in the Congress, in the Public Health Service, in the foundations, and in our universities and other research institutions have joined forces thus far to make this a healthier and happier world to live in.

Ladies and gentlemen, "These are our bricks." May we be equally proud of the way we have laid them—10 years hence.

Dr. V. E. Price Heads DGMS Training Unit

Dr. Vincent E. Price became Executive Secretary of the Medical Student Research Training Program of DGMS on March 1. He was previously Head of the Enzymes and Metabolism Section of the Laboratory of Biochemistry, NCI.

He was commissioned in the Public Health Service in 1946 and served as a research biochemist in the Laboratory of Biochemistry until 1950. From then until 1951 he was on a Public Health Service research assignment to the Institut for Cytofysiologi, Universitetets, Copenhagen, Denmark, where he worked with Prof. Herman Kalekar. He became Head of the Laboratory of Biochemistry in 1951.

Born in Battle Creek, Mich., in 1920, Dr. Price received his A.B. degree from Oberlin College and his M.D. degree from the University of Michigan.

Included among the more than 40 papers he has published are research studies on the enzymatic resolution of amino acids, studies on liver catalase in tumor-bearing animals, the kinetics of catalase synthesis and destruction *in vivo*, and anemia in cancer.

DANCERS POSE



Tina Imhoof (left) and Renata Kuh, posing as pupil and instructor, have leading roles in the Modern Dance Symposium to be presented here May 12 at 8:30 p.m. in the CC auditorium. The performance, in which the growth of creative dance theatre is described through original dances and music, is being produced by the R&W Association's Dance Class with the assistance of Mrs. Kuh's dance repertory group and professional dancers and musicians of the Washington area.—Jerry Hecht photo.

Dr. Shannon to Receive Villanova Mendel Medal

Dr. Shannon has been chosen by Villanova University to receive its Mendel Medal Award at ceremonies to be held May 4 at the university, in Villanova, Pa.

The award, instituted in 1928 in memory of Gregor Mendel, 19th Century Austrian abbot of the Order of St. Augustine and founder of the science of genetics, has been presented to 18 outstanding Catholic scientists since 1929.

According to the Catholic Almanac, Dr. Shannon will be the first to receive the award since 1955.

Nationwide CD Alert Scheduled for Friday

NIH is scheduled for limited participation in the nation-wide Operation Alert "Opal," the Office of Civil Defense and Mobilization exercise planned for Friday of this week.

The "alert" and "take cover" signals will be sounded here between 4 and 5 p.m. on that day, but employee action will not be required, according to George P. Morse, NIH Civil Defense Officer, because of the large number of construction jobs currently underway here.

The "alert" signal is a steady three- to five-minute blast. The "take cover" is a wailing tone or a three-minute series of short blasts.

The signals will be heard on the outdoor sirens, which are part of a national attack warning system, and on indoor horns which are activated by the NIH Emergency Communication Center. In the Clinical Center the signals will be announced over the PA system.



The 800-pound experimental drum and 1,500-pound concrete vault rest on the deck of the Coast Guard cutter Cherokee, following recovery from the sea on June 20, 1960. Depressions in drum, due to high pressure differential, indicate places where waste materials are not completely mixed with concrete. Vault is enclosed in loose-fitting cage of expanded metal designed to hold all but small pieces in case of disintegration under pressure.

NIAID Scientists Visit Virus Labs In Soviet Union

Three NIAID scientists are participating in the 1961 United States Infectious Diseases and Microbiology Exchange Mission to the USSR as part of a six-member Delegation on Virus Diseases which is receiving financial support from NIAID.

Dr. Robert J. Huebner, Chief of the Laboratory of Infectious Diseases; Dr. Alexis Shelokov, Chief of the Laboratory of Tropical Virology and Director of the Middle America Research Unit in Panama; and Dr. Robert M. Chanock, Head of the Respiratory Virus Unit of LID, will spend a month in Russia, from April 24 to May 22.

They will visit scientific institutions in Moscow, Tashkent, Sukhumi, Kharkov, Kiev, and Leningrad.

Huebner Is Chairman

Dr. Huebner is chairman of the delegation which includes Dr. Fred M. Davenport, Professor of Epidemiology, School of Public Health, University of Michigan; Dr. W. McD. Hammon, Head of the Department of Epidemiology and Microbiology, Graduate School of Public Health, University of Pittsburgh; and Dr. Edwin H. Lennette, Chief of the Viral and Rickettsial Disease Laboratory, California State Department of Public Health.

After the visit to Russia Drs. Huebner and Chanock will go to Czechoslovakia to attend the Congress on Respiratory Virus Diseases in Prague where each will present a paper. In Bratislava they will see Dr. D. Blaskovic, Director of the Institute of Virology.

Dr. Huebner will go on to Austria, Germany, Switzerland and Italy. In Perugia, Italy, he will present a paper at the International Symposium on Morphological Precursors of Cancer. He will also confer with colleagues in France and England before his return to the States.

From Czechoslovakia Dr. Chanock will travel to England, visiting the National Institute for Medical Research in London en route home.

Art Entries Due May 4

Entries for the Third NIH Art Exhibit sponsored by R&W are due Thursday, May 4. The exhibit committee requests that they be delivered to the CC auditorium between 4 p.m. and 7 p.m. on that day.

The exhibit will include original paintings, graphic art, and sculpture by NIH employees and their immediate families. Entries are limited to three per person.

OCEAN LAB

(Continued from Page 1)

Two basic principles underlying the nature of radiation make it imperative that safe methods of waste disposal be used: (1) that radiation, unlike other forms of energy, can be expended only through the process of natural decay, in which time alone can reduce the millions of highly unstable atoms of radioactive matter to stable form, and (2) that even small exposure to radiation may result in permanent biological damage.

The events of May 25 to June 20, 1960, in which the two "laboratory" containers were lowered and subsequently raised by NIH and the Coast Guard, were part of a simulated waste disposal experiment. Its



Using a Geiger-Mueller counter, John Howley of the Radiation Safety Office, PSB, monitors vaults of radioactive waste at NIH, prior to transportation to Norfolk, Va.

purpose was to determine what effect, if any, the high hydrostatic pressure at the ocean's floor has upon the waste containers of the type deposited there over the past 10 years.

Admittedly, any release of radioactivity to the sea water, due to breakage, cracking or similar deterioration of the containers, could lead to contamination of fish and other marine life which provide a source of food for man.

Remains Intact

Radioactivity thus transmitted through the food chain would constitute a potential threat not only to this generation but, through its possible genetic effects, to generations yet unborn.

According to Dr. Howard L. Andrews, Radiation Safety Officer of the Plant Safety Branch here, the evidence provided by this experiment justifies the conclusion that the regular concrete-filled containers being used for waste disposal remain essentially intact under high pressures at ocean depths.

However, Dr. Andrews points out that just as the use of radioactive materials in medicine and related research is ever-expanding, so too is consideration of safety factors underlying systems of waste disposal.

This is part of the continuing task of the Public Health Service and other responsible agencies in insuring a clean and healthful environment for all.



Twenty-five of the NIH employees who recently received meritorious service or incentive awards are pictured here with some of those who participated in the several ceremonies. Top, from left: DHEW Superior Service Award winners Dr. Harold F. Dorn, Chief of the Biometrics Research Branch, NHI, and Clarence A. Lowe, Chief of the Grants Management Branch, DRG; Dr. Howard B. Andervont, of the Laboratory of Biology, NCI, receives the Distinguished Service Award from DHEW Secretary Ribicoff; members of the editorial staff of the *Journal of the National Cancer Institute* pose after receiving a group award. Standing, from left: Evelyn E. Parker, Vivian Heston, Marie K. Murphy, Emilene L. Murray, Mercedes LaCharity, Linda M. Whiting, and Joan W. Burnett. Seated: Joan O'Brien, Alice Lee, Dr. Kenneth M. Endicott, NCI Director; and Doris Chaney. Next: Paul Schenk, Property and Supply Section, SMB, shows his incentive award check to his supervisor, Thomas V. White; and William B. Hill of the Laboratory of Infectious Diseases, NIAID, receives his award

from his supervisor, Dr. Chester W. Emmons. Bottom row, from left: Lloyd Sundquist (right), of the Procurement Section, SMB, is congratulated by SMB Chief, James B. Davis; Virginia Turner (second from left) and Alberta Driver, medical biology technicians in the Laboratory of Viral Immunology, DBS, pose with Dr. George A. Hottle (left), LVI Chief, and Dr. B. William Uhlendorf, Chief of the LVI Section on Serology, after a DBS award ceremony. Recipients of a group award to the CCNSC Chemical and Drug Distribution Unit are, from left, standing: Robert Ing, Alphonso Jackson, Leonard Kedda, and Samuel Takashi. Seated: Edith Sheffield and Violet Larkin with NCI Director, Dr. Kenneth M. Endicott, who made the presentation. Raymond S. Catlett, Laboratory of Histology and Pathology, NIDR (second from right), is shown with Drs. David B. Scott, Chief of the Laboratory (left), Francis A. Arnold, Jr., Director of NIDR, and Paul N. Keyes, Mr. Catlett's supervisor.

AWARDS

(Continued from Page 1)

ceived a gold medal.

Receiving the DHEW Superior Service Award were Dr. Harold F. Dorn, Chief of the Biometrics Research Branch, NHI, and Clarence A. Lowe, Chief of the Grants Management Branch, DRG.

Dr. Dorn was honored in recognition of his "notable contribution to the fight against disease on a worldwide front through the development and use of increasingly effective biometric and epidemiology techniques," and Mr. Lowe for "leadership in directing the Grants Management Program of the National Institutes of Health and in establishing and preserving excellent relationships with grantees."

3 Serve 40 Years

At the same ceremony two NIH employees received 40-year service pins. They were Dorothy M. Smith, a statistical clerk in the Field Investigations and Demonstrations Branch, NCI; and Harry L. Thompson, a guard with the Plant Safety Branch.

Scheduled to receive a 40-year service pin but unable to attend was John T. Sipes, a technician in the Laboratory of Chemistry, NIAMD. He will receive his pin at an individual ceremony to be held

at NIH next month.

Two units of the National Cancer Institute staff were cited for superior performances by Dr. Kenneth M. Endicott, NCI Director, on April 11 in Building T-19. Associate Directors Drs. Michael B. Shimkin and Stuart M. Sessoms assisted in making the presentations.

Staff Praised

Doris M. Chaney, Managing Editor of the *Journal of the National Cancer Institute*, received a cash award of \$250, and a group award of \$705 was presented to members of the *Journal's* editorial staff.

In making the award to Mrs. Chaney and the JNCI staff, Dr. Endicott said that they were "largely responsible for the consistently high quality of the *Journal* and the regard with which it is held in the scientific community."

Participants Listed

Participating in the group award were Evelyn E. Parker, Vivian Heston, Marie K. Murphy, Mercedes B. LaCharity, Emilene L. Murray, Joan O'Brien, Linda M. Whiting, Alice Lee, and Joan W. Barnett.

A second group award of \$625 was presented to the following members of the Cancer Chemotherapy National Service Center's Chemical and Drug Distribution Unit: Robert Ing, Samuel Takashi, Leonard Kedda, Edith Shef-

field, Violet Larkin, and Alphonso Jackson.

Dr. Endicott paid tribute to this group for their ability, despite crowded quarters and ever-increasing workload, to process the many thousands of synthetic chemicals submitted for CCNSC evaluation.

Checks for \$125 each were presented to two medical biology technicians in the Laboratory of Viral Immunology, DBS, at a ceremony in the DBS assembly room on April 6.

Technicians Cited

In presenting the awards for outstanding work on complicated metabolic inhibition tests, Dr. George A. Hottle, LVI Chief, cited Alberta Driver for her "continued interest and dedicated approach to her duties," and Virginia Turner for "sustained high level of work performance."

For suggesting a stainless steel tray for cages housing hamster colonies, and for a new design for housing beetle colonies, Raymond Catlett, a medical biology technician in the Laboratory of Histology and Pathology, NIDR, received an award of \$225 at a ceremony held March 31 in the office of Dr. Francis A. Arnold, Jr., NIDR Director. Mr. Catlett was also cited for general excellence in performance.

Awards of \$150 and \$175.50 re-

spectively were made to Lloyd Sundquist and Paul Schenk in the office of James B. Davis, Chief of the Supply Management Branch, OD, on April 7.

SMB Men Commended

Mr. Sundquist, a specifications analyst in the Procurement Section, was commended for devising an improved system of publication of specifications, and Mr. Schenk, a property officer in the Property and Supply Section, was cited for his effective development of the NIH property utilization program.

In an April 5 ceremony in the office of Dr. Justin M. Andrews, NIAID Director, William B. Hill, a medical biotechnician in the Laboratory of Infectious Diseases, received an award of \$50 for the design of an improved stopper for test tubes.

Others Named

In addition, Kenneth Eschinger, an engineering draftsman in the Office of Administrative Management, OSB, was awarded \$30 for devising a work progress board which makes information readily available, and Wayne Burd, a medical biology technician in NIAID's Rocky Mountain Laboratory, received \$50 for a device which increases the capacity of the reservoir for hydraulic filtration through small pore membranes.