

Hundley Chosen To Head Study Of PHS Mission

Dr. James M. Hundley, NIH Special Assistant on International Affairs, has been appointed by Surgeon General Burney to head a committee undertaking a study of the mission and organizational structure of the PHS.

To be accomplished within the first three to four months of 1960, the assignment will include:

- A clearcut and balanced statement of the mission of the Public Health Service as it can be seen now for the 1960 decade.
- A reasonably detailed outline of the organizational structure of the Service, or alternative patterns of organization which would be most conducive to the effective and efficient accomplishment of that mission.
- Documentation necessary to initiate implementation actions.

According to Surgeon General Burney, a number of considerations led to the inauguration of this project. He pointed out that there

(See HUNDLEY, Page 8)

Anecdotes Flow Freely

"Old Timers" Meet, Recall Old Times

Seventy-five "Old Timers" who have worked at NIH for over 12 years met informally for dinner at Agnew's Inn, Rockville, on January 7.

The group, which gathered at the suggestion of Frederick J. Atwell, Laboratory of Pharmacology and Toxicology, NIAMD, and others, included NIH employees who represented a broad cross-section of today's Institutes and Divisions.

Highlighting the dinner was a talk by James B. Davis, Chief, Supply Management Branch, OAM, who was introduced by Champ S. Carter, also of SMB. The impromptu reminiscences by Mr. Davis, who has been with NIH for over 20

years, provoked anecdotes of amusing past incidents from others.

Among those present, James E. Phillips, Laboratory Aids Branch, DRS, was senior in length of service. His 39 years with NIH extend back to the days when the Hygienic Laboratory, forerunner of NIH, was located at 25th and E Streets in Northwest Washington.

Mr. Phillips was among the "pioneers" who came out to the Bethesda site in 1938. At that time, he worked in what was known as the Business Office, located in Building One. With the help of 12 to 15 employees, this office handled all payrolls, property, procurement, vouchering, and shipping for NIH.

Record Office Moves

As this issue went to press the NIH RECORD and NIH CALENDAR OF EVENTS offices were in process of moving from Building T-19 to Building one, Rooms 209-A and 209, respectively.

The telephone extension numbers are the same as before: exts. 2125 and 2126 for the RECORD, and ext. 895 for the CALENDAR.

The CALENDAR, like the RECORD, now carries a list of those designated within the Institutes and Divisions to receive and transmit information for publication prior to the deadline dates.

Israel Joins IRF Program

Israel is the 33rd nation to join the International Research Fellowships program of DRG.

Chairman of the Israel nominating committee which screens applications for NIH fellowships is Dr. Moshe Prywes, assistant dean, Hebrew University-Hadassah Medical School, Jerusalem.

Since January 1959, four nations have become participants in the postdoctoral programs, and Yugoslavia has expressed an interest in participating.

Sangster Named Personnel Chief, Olson CC Information Officer

Francis J. Olson, a veteran in diverse fields of information work, was named Clinical Center Information Officer, effective January 18. He succeeds Judson Hardy, who recently was appointed Public Affairs Officer of the Division of Radiological Health, Bureau of State Services, PHS.

Mr. Olson came to NIH from Chicago, Ill., where he was a writer on the editorial staff of the Pioneer Publishing Company.



Francis J. Olson

Early in his career Mr. Olson was associated with a number of metropolitan newspapers in the Midwest and East, in the advertising departments or as general manager and editor. He was also public relations assistant for the National Youth Administration of Illinois.

While serving in the Army during World War II, Mr. Olson was assigned to various medical installations in this country and Europe as public relations or public information officer.

At the outbreak of the Korean conflict, he served in the Office of the Surgeon General, Department of the Army, and was later as-

(See OLSON, Page 2)

DRG Appoints New Program Analyst

Dr. Marguerite L. Young has been appointed Public Health Research Program Analyst and will function as Executive Secretary to the Psychological Sciences Review Section, Research Fellowships Review Branch, DRG.

Dr. Young came from the National Science Foundation, where she was professional assistant to Dr. H. S. Odbert, Program Director for Psychobiology.

John M. Sangster, a career Civil Service employee with extensive personnel administration experience in federal, state, city, and consulting agencies, has been appointed to the new position of Chief of Personnel, NIH. He entered on duty January 11.

Mr. Sangster came to the NIH from the Department of the Army, where he served as Chief of the



John M. Sangster

Planning and Development Branch, Civilian Personnel Division, Deputy Chief of Staff for Logistics. In this position he was responsible for coordinating and planning program improvements in matters pertaining to the civilian personnel program among the technical services of the Army. He also represented the Logistics Area in program and policy determinations.

His previous experience included positions with both public and consulting agencies, including seven years as Director of Personnel for

(See SANGSTER, Page 2)

Dr. Lindsay Elected To Entomology Board

Dr. Dale R. Lindsay, Assistant Chief, DRG, has been elected to the Governing Board of the Entomology Society of America as a representative of the Medical and Veterinary Section of the Society from 1960 to 1962.

Dr. Lindsay will also serve on the society's Committee on Professional Training Standards and Status.

Listing 4,500 members, the society publishes three regular journals: Annals of ESA, Journal of Economic Entomology, and the Bulletin of the ESA.

the Record

Published bi-weekly at Bethesda, Md., by the Public Information Branch, Office of Research Information, for the information of employees of the National Institutes of Health, principal research center of the Public Health Service, U. S. Department of Health, Education, and Welfare.

Editor.....E. K. Stabler
Associate Editor.....Elizabeth D. Mok

Staff Correspondents

Elaine Johnson, NCI; Robert Hinkel, NHI; Kathryn Mains, NIAID; Lillie Bailey, NIAMD; John Kley, NIDR; Lucille Furman, NIMH; Arlene Martin, NINDB; Elsie Fahrenthold, CC; Arlene Butterly, DBS; Janet Gallagher, DGMS; Phyllis Snyder, DRG; Virginia Lundblad, DRS.

NEWS from PERSONNEL

With this issue, the RECORD inaugurates the "NEWS from PERSONNEL" column to serve NIH employees by publishing selected items of information submitted by the Personnel Management Branch as timely, interesting, and helpful.

LETTER WRITING COURSE OFFERED

Arrangements have been made for the General Services Administration to conduct another of its "Plain Letters" workshops at NIH. Purpose of the course is to acquaint students with the principles necessary for producing more effective and efficient Government letters in plain everyday English.

SURVEY OF WAGE RATES

The annual survey of wage rates paid to Wage Board employees in trades, crafts, and maintenance type positions in the D. C. area is in progress. It is expected that the data collection will be completed and any new rates put into effect with the pay period beginning February 7, 1960.

NEW PLAN FOR PERFORMANCE RATINGS

The reporting and recording of performance ratings will be simplified by relieving supervisors of the necessity for completing separate rating reports for each employee on the anniversary of his employment.

Beginning March 31, 1960, and once yearly thereafter, supervisors will complete a form certifying the performance level of the entire group. Employees will be notified of the rating. Only individual Outstanding and Unsatisfactory performance ratings will require special reports.

This change does not apply to probationary or trial period ratings.

Personnel assistants can provide more information about the new

SANGSTER

(Continued from Page 1)

the Bureau of Yards and Docks. He was also a staff member of a Senate subcommittee studying utilization of personnel, and a member of the U. S. Civil Service Commission program planning staff.

As an electronics officer in the U. S. Navy during World War II, Mr. Sangster served in turn as recruiting officer for electronics personnel, radar officer, and electronics training officer.

Mr. Sangster received a B.S. degree in mechanical engineering from Michigan State College in 1938. His graduate work has been in the field of public administration.

OLSON

(Continued from Page 1)

signed to the Rodriguez Army Hospital at San Juan, Puerto Rico, as administrative and public information officer.

From 1954 to 1958 he served as chief of information activities at Fitzsimons Army Hospital in Denver, Colorado. Mr. Olson is the author of a number of articles on various facets of medicine and surgery.

A native of Chicago, Mr. Olson attended Marquette University at Milwaukee, Wis. He has been accorded special recognition for editorial excellence by the University of Illinois School of Journalism.

program. Detailed guides and procedures can also be found in Department Personnel Guide 4, Chapter P-4, available in administrative offices.

RECRUITMENT AND PLACEMENT ACTIVITIES

Personnel Management Branch has had almost 5,000 inquiries from visitors and by telephone and mail during the past four months. Most of these questions concerned

Dr. C. J. Van Slyke Retires, Will Be a Special Consultant

Dr. C. J. Van Slyke, Deputy Director of NIH, retired December 15 after 30 years' service in the PHS Commissioned Corps. He will continue to serve NIH, however, as Special Consultant to the Director.

Dr. Van Slyke was appointed the first Deputy Director of the Institutes a year ago. He had been Associate Director since 1952.

Dr. Kenneth M. Endicott, presently Associate Director (for training programs) has been given additional responsibilities involving all grants programs and on January 5 he was promoted to the rank of Assistant Surgeon General in the PHS Commissioned Corps.

In announcing Dr. Van Slyke's retirement, Dr. John D. Porterfield, Acting Surgeon General, PHS,

cited him for his many outstanding contributions to the field of public health and to medical research administration.

"His work in the organization and administration of the Public Health Service's programs for support of medical and biological research is particularly outstanding," Dr. Porterfield said. "The success of these programs—as partnership endeavors embracing the interests of both clinical practice and public health—owes much to Dr. Van Slyke's dedicated labors over a long period of time."

First Director of NHI

Dr. Van Slyke entered the PHS Commissioned Corps in 1928, following his graduation with a medical degree from the University of Minnesota. After six years of general hospital work, he served at PHS posts in Windsor, Ontario; Staten Island, N. Y.; and Washington, D. C.

In 1946 he was appointed Chief of the Division of Research Grants and Fellowships at NIH. Upon the establishment of NHI in 1952 he was appointed Director of that Institute and served in this position until 1952, when he was appointed Associate Director of NIH. In 1958 he was made Deputy Director of the Institutes.

Career in PHS

Dr. Endicott, who was graduated with an M.D. degree from the University of Colorado in 1939, has devoted his entire professional career to the PHS.

In 1942, after service as a medical officer in a number of PHS hospitals, he was appointed Assistant Chief of the Division of Pathology, and in 1943 became Chief of the Section on Metabolic Degenerative Diseases.

Prior to his assignment as Associate Director of NIH, he served as Scientific Director, DRG, from 1951-55, and as Chief of the Cancer Chemotherapy National Service Center, NCI, from 1955-58.



Dr. C. J. Van Slyke cuts his cake at the birthday party given him recently at NIH by his friends and associates within DHEW.

employment opportunities with NIH.

A substantial percentage of the inquiries were related to new Civil Service Examinations of particular interest to scientific and technical personnel. These examination announcements cover NIH and other agency positions in the fields of biology, physiology, microbiology, pharmacology, chemistry, physics, and mathematics. Information about these announcements is available through personnel assistants or the Recruitment and Placement Section, PMB, Building 1, Room 18.

Dr. Stadtman Elected Academy Fellow

Dr. Earl R. Stadtman, Laboratory of Cellular Physiology and Metabolism, NHI, was elected to Fellowship in the New York Academy of Sciences at the Academy's annual meeting in December. Dr. Stadtman is presently spending a year in Europe as a visiting scientist at the Max Planck Institute in Munich, and at the Institute de Biologie Physico-Chimique in Paris.

Science Section

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.

Anoxic Method For Cardiac Arrest Superior to Drugs

With the increasing use of "elective" cardiac arrest, heart surgeons have become increasingly concerned about the difficulty of restoring a strong and effective heartbeat after prolonged operations.

Some surgeons have come to question whether the heart should be stopped at all for many intracardiac operations. Others question the chemical methods, and in some quarters interest is focusing on an "anoxic" method of arrest that interrupts blood flow through the heart by intermittently clamping off the aorta.

The Heart Institute Clinic of Surgery has completed animal studies comparing the three major methods of elective cardiac arrest—the original potassium method, the recently adopted "anoxic" method of clamping the aorta, and acetylcholine, another chemical that temporarily stops the heartbeat. Both chemicals caused a severe depression of ventricular function when the period of arrest exceeded ten minutes, but the function of this muscle was virtually unchanged after heart motion was restricted by intermittently clamping off the outflow through the aorta (anoxic arrest) for as long as thirty minutes.

"Although flaccid paralysis of the heart certainly facilitates the repair of many intracardiac anomalies, the hazard of the method is so great as to outweigh this advantage," the NHI group concluded. "A dry and quiet field can be secured by intermittent aortic occlusion alone, and this technique is applicable in virtually all procedures in which aortotomy is not necessary. . . . in the repair of aortic lesions, direct coronary perfusion has been found the technique of choice."

Participating in the studies under the direction of Dr. Andrew G. Morrow, Chief of the Clinic, are Drs. James A. McFarland, John A. Waldhausen, Louis B. Thomas, Nina S. Braunwald, Joseph W. Gilbert, Robert D. Bloodwell, and William P. Cornell. The studies were reported at meetings of the American Heart Association and the American College of Surgeons.

New Metabolite Of Epinephrine

A new metabolite of epinephrine has been discovered by Drs. Julius Axelrod, Irwin Kopin and Jay D. Mann of the National Institute of Mental Health's Laboratory of Clinical Science.

The new metabolite is 3-methoxy-4-hydroxyphenylglycol.

Dr. Axelrod has demonstrated its presence in normal urine and in large amounts in the urine of patients with pheochromocytoma.

Substances which inhibit the enzyme catechol-O-methyl-transferase and potentiate epinephrine *in vivo* were also demonstrated.

The tranquilizing drugs, chlorpromazine and reserpine, were found to speed the destruction of epinephrine *in vivo*, a finding which may be related to the psychopharmacologic action of these agents. This work was reported in *Biochimica Biophysica Acta* and in *Nature*.

Fetus Injection Raises Polyoma Tumor Rate

Further studies have been reported by scientists of the National Cancer Institute and the Division of Biologics Standards on polyoma virus tumors.

Swiss mice inoculated late in fetal life with tissue culture preparations of the virus developed a greater incidence of tumors and died earlier than mice injected shortly after birth. However, no type of tumor was found that had not been previously observed.

Mice inoculated as newborns from mothers exposed to an environment contaminated by the virus has a significantly longer lifespan and lower incidence of salivary-gland tumors than mice inoculated as fetuses in contaminated mothers or as newborns from uncontaminated mothers.

These results were described in a recent issue of the *Journal of the National Cancer Institute* by Dr. Mearl F. Stanton, Laboratory of Pathology, NCI; Dr. Sarah E. Stewart, Laboratory of Biology, NCI; Dr. Bernice E. Eddy, Laboratory of Viral Products, Division of Biologics Standards; and Robert H. Blackwell of the Laboratory of Pathology, NCI.

HIGH-SPEED DENTAL EQUIPMENT EVALUATED



Necrosis resulting from inadequate coolant appears as solidly shaded part of pulp to left of cavity preparation, the clear rectangular area.

High-speed drilling equipment, introduced to the dental profession a few years ago for cavity preparation and other reparative operations, promised a number of advantages over previous types. As it appeared, however, that the safety of this equipment was questionable, National Institute of Dental Research investigators undertook extensive laboratory-clinical studies to determine its possible traumatic effects.

Drs. H. R. Stanley of NIDR, and H. Swerdlow of the Clinical Center, investigated thermal trauma in patients having noncarious, noninfected teeth which were to be extracted for prosthetic and periodontal reasons. Preparations were cut on these teeth, using rotational speeds of from 6,000 to 200,000 RPM's and a variety of coolants and cutting tools. The teeth were filled, and later extracted after intervals ranging from less than one hour to 132 days.

Coolants Necessary at All Speeds

Histopathological comparisons between the various operative techniques demonstrated a greater disturbance to the pulps of teeth in the low-speed categories, but extensive damage occurred at all speeds when coolants did not accompany the grinding procedure.

Displacement of pulpal odonta-

blasts into the dentinal tubules was considerably more pronounced in non-coolant preparations. This displacement, previously ascribed to forceps pressures, has more recently been shown by histopathologic studies of these investigators to result from the build-up of intrapulpal edema, hyperemia and exudation as an inflammatory response in a confined area. Such displacement correlates generally with the degree of inflammation.

Heat May Lead to Abscesses

In the absence of adequate coolants the excessive frictional heat produced burn lesions in teeth which frequently developed into intrapulpal abscess formations. The air-water spray technics employing speeds between 50,000 and 200,000 RPM's produced milder lesions requiring shorter recovery periods despite deeper cavity preparations.

Data from these studies have shown the combination of high speed, controlled temperature, and light pressure to be conducive to minimal pathological alterations in dental pulp. Although clinicians were perhaps justified in their early reluctance to employ high-speed equipment, it is now believed that sufficient information is available to permit its widespread acceptance with resulting advantages both to patients and dentists.

Light from Black Retinal Pigment Found to Affect Electroretinogram

New knowledge concerning the function of the retina is resulting from electroretinographic studies of spectral sensitivity, which may furnish clues to such little known phenomena as the physiology of the photoreceptor cells and the nature of color blindness. A complicating factor of these studies is the discovery that the electroretinogram, or ERG, may be modified in varying degrees by scattered light from the black pigment lining the human eye.

A study of the relation of the ERG scatter component to the amount of black pigmentation in the eye has been conducted by Drs. E. Dodt (formerly of National Institute of Neurological Diseases and Blindness), Richard Copenhaver, and R. D. Gunkel, NINDB Ophthalmology Branch, and was reported in the *AMA Archives of Ophthalmology*.

Investigators have found that the ERG is extremely sensitive to scattered light. When a small fraction of the retina is directly illuminated, the larger fraction is stimulated exclusively by scattered light. In the normal eye, as in the camera, scatter is reduced by a lining of black pigment which prevents fogging of the retinal image. This pigment, which is closely related to dark skin and hair pigment, is dense in dark individuals and races, and absent in albinos, in whom the back of the eye appears

pink from the hemoglobin of the unscrubbed blood vessels.

In determining the effect of pigmentation on the ERG, studies were made of full albinos, light and dark Caucasians, and light and dark Negroes. The ERG was measured with flashes of light of various wave lengths, repeated at a frequency which elicited a response from the retinal cones, while depressing that from the rods. In most experiments, light entered through the pupil; in some, illumination was diascleral.

The results of the experiments place expectations on a more certain quantitative foundation. Since hemoglobin is transparent to orange and red light, albino eyes were found to scatter these rays and a large retinal area was illuminated by a light focused on a small fraction of the retina. Thus, the size of the ERG in the albino registered in the orange part of the spectrum, not because the cones were more sensitive to this wave length, but because the light reached more cones.

In normally pigmented eyes this phenomenon was naturally less prominent, yet even here a factor of 3:1 between the effectiveness of red light and green was elicited by the ERG between light Caucasians and dark Negroes. By diascleral illumination, albinos and normal subjects appeared to have the same spectral sensitivity.

Clues to Congenital Anomalies of Tooth Structure Sought

Defects in tooth development are generally regarded as postnatal in occurrence, but there is an increasing awareness of their pertinence to congenital anomalies.

Prenatally occurring dental defects may be indicative of a widespread fetal response to adverse maternal influences. They may also provide a method for evaluating the nature and mode of maternal-fetal disturbances.

This was reported by Dr. Seymour J. Kreshover, Associate Director, National Institute of Dental Research, at the N. Y. Academy of Sciences Conference on Metabolism of Oral Tissues.

We know that many types of prenatally and postnatally occurring systemic disturbances, including fever and anoxia, may elicit a similar ameloblastic response, he pointed out. For example, in a study of the effects of pyrexia on the course of pregnancy in rats, striking changes occurred in the

developing dentitions of the mothers. These ranged from early ameloblastic injury to complete cellular degeneration and arrest of enamel matrix formation.

Identical enamel defects also occurred in the offspring of pyrexic rats. With such metabolic disturbance as alloxan-induced diabetes, pregnant rats and their young showed similar abnormalities.

Relative to the question of transplacental passage of viral agents, striking abnormalities were observed in the developing teeth of female rabbits inoculated with measured doses of an egg adapted dermal lymph strain of vaccinia virus. A failure to demonstrate any congenital dental defects in caesarean-delivered progeny of these rabbits affords an interesting parallel to the observation that vaccinia infection does not cross the placental barrier.

Dr. Kreshover concluded by suggesting that developmental tooth defects are generally nonspecific in nature and can be related to a wide range of systemic disturbances, any of which, depending upon their severity and the degree of tissue response, might result in defective enamel and dentin.

Analyze Release Rates of Mental Hospital Patients

In an analysis of data on release rates among patients admitted to Saint Elizabeths Hospital for the first time during the period January 1, 1953, through August 31, 1956, Dr. Erwin L. Linn of the National Institute of Mental Health's Laboratory of Socio-Environmental Studies found that the most striking increases in release rates were among unmarried patients from the working class.

Dr. Linn had previously examined these data to determine the difference in release rates following introduction of drug therapy. These results were published in the *AMA Archives of Neurology and Psychiatry*.

The present study, reported in the *American Journal of Sociology*, concentrates on the relationship between socio-economic characteristics of patients and their release rates. Dr. Linn found that there were increases in release rates for patients from all socio-economic groups, but the release rates for working-class patients, which had been quite low, showed the most striking increases. Since the unmarried working-class group had previously constituted the bulk of patients who became chronic, this change in release rates will have a strong influence on the characteristics of hospital populations.

NIAID Scientists Attend Symposium On Encephalitis

Recent outbreaks of Eastern equine encephalitis (EEE) in the New Jersey area (20 deaths, plus complications in non-fatal cases, among 29 diagnosed) heightened interest in the Symposium on Eastern Equine Encephalomyelitis held by the University of Maryland at College Park.

From the Laboratory of Tropical Virology, National Institute of Allergy and Infectious Diseases, Dr. Herbert T. Dalmat, Mr. Joseph Gibbs, Dr. William L. Pond, Mr. Charles R. Rosenberger, and Dr. Paul A. Woke attended, accompanied by Dr. Evert Bruckner of the NIH Employee Health Unit.

Dr. Pond emphasized the relative facility with which EEE may now be studied. Only a few days are now required to isolate the virus in tissue culture or in young chicks and to identify it. This research advantage should be exploited, he said.

The EEE virus is only one of more than 120 arthropod-borne agents sometimes seen during sporadic epidemics in the temperate zones. These agents are continually active and cause many problems in tropical areas. Virus diseases in this group include infections transmitted by mosquitoes (yellow fever, dengue, EEE, for examples) and also by ticks.

Pertussis Antigen Found in Cell Wall

Scientists at National Institute of Allergy and Infectious Diseases' Rocky Mountain Laboratory and the University of Montana find that the antigen of the pertussis agent is concentrated in the cell walls of the organism. Material toxic for mice is found in the protoplasm.

There are a number of biologically active substances in the cells of *Bordetella pertussis*. The most interesting of these are the protective antigen, the histamine-sensitizing factor, and the heat-labile toxin.

Previous studies by other workers had indicated that active materials could be obtained from the cells merely by washing them with saline. These washings were capable of protecting mice and of sensitizing them to histamine. It was suggested that the antigens were located on the surface of the bacteria and that they might be constituents of the cell wall.

By disintegrating *B. pertussis* in a Mickle apparatus, it was possible to separate the cell walls

and protoplasm of the organism and to obtain these fractions in a relatively pure state.

The investigators found that the antigen capable of protecting mice against experimental pertussis was contained in the cell walls and that the histamine-sensitizing factor likewise was present in this fraction.

The material toxic for white mice was contained in the protoplasm rather than in the cell walls. This protoplasmic toxin is highly sensitive to heat, and its toxicity both for mice and for the skin of rabbits is decreased by heating at 60° C. for 10 minutes.

This work is reported by NIAID grantee Dr. J. Munoz, University of Montana, and Drs. E. Ribí and C. L. Larson of the NIAID Rocky Mountain Laboratory, Hamilton, Mont., in the *Journal of Immunology*.

These studies of the cell wall and protoplasm fractions of *B. pertussis* have aroused considerable interest.

Stress Secretions May Raise Blood Cholesterol Level

Stress-induced overactivity of the adrenal glands may be an answer to how the body translates high tension living into excessive amounts of cholesterol in the blood, according to two physician-biochemists at the National Heart Institute.

A potent fat-mobilizing pattern of hormone activity has been found in dog experiments by Dr. Eleazar Shafir, a visiting scientist from Israel, and Dr. Daniel Steinberg, chief of the Metabolism Section, NHI. The pattern involves secretions of the inner core (medulla) and the outer "rind" (cortex) of the adrenal.

Overactivity of both parts of the paired prune-sized gland atop the kidneys has long been known to result from stress. Not noted previously, however, is the combined activity of the gland's "stress" secretions in increasing cholesterol and other fatty substances (lipids) in the blood.

The medullary hormone implicated was adrenalin, long known to be secreted by the inner adrenal during intense emotional excitement and to stimulate the body's mechanisms for coping with threatening situations. The cortical hormone was cortisone, well-known steroid secreted by the adrenal cortex in response to exposure (heat, cold, etc.), inflammatory conditions such as injuries and infection, and other forms of stress.

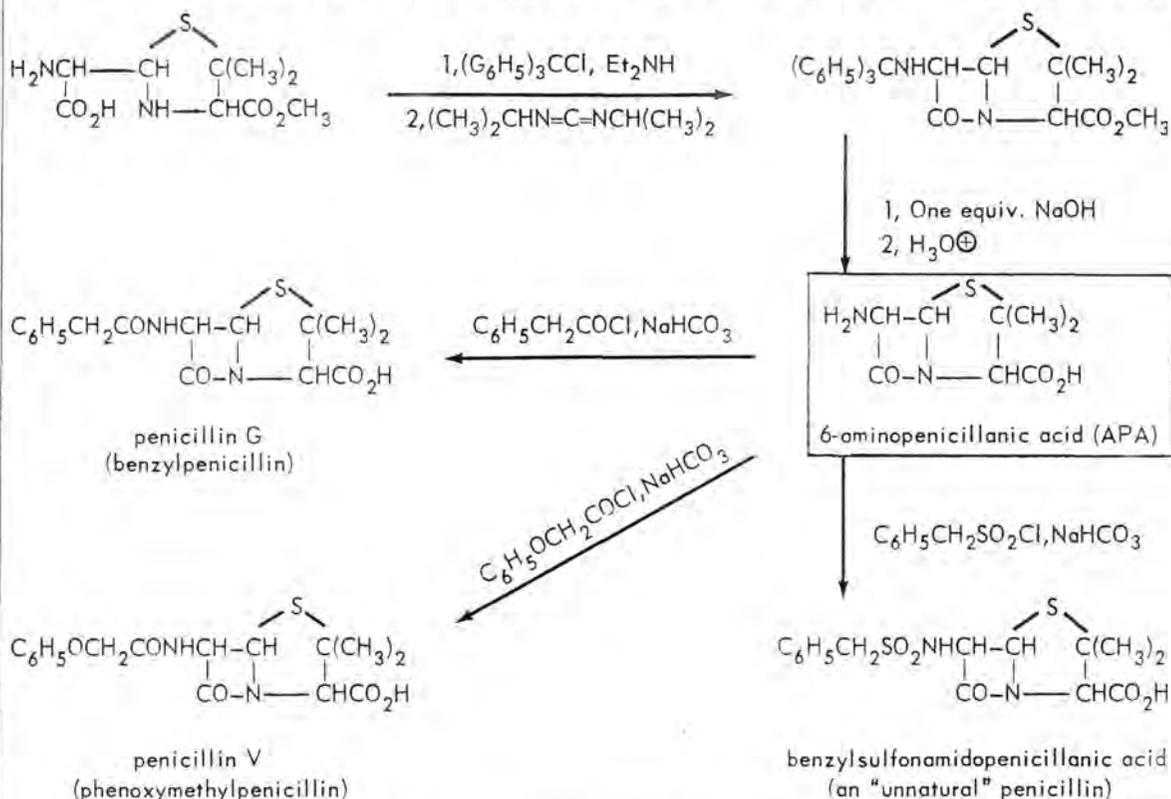
Adrenalin injections alone were found by the NHI workers to be capable of raising the blood cholesterol and other lipids in normal dogs. But when the dogs were deprived of their normal cortical secretions (by removing their adrenal glands) this effect of the adrenalin injections was lost. And when cortisone injections were used to "replace" the missing cortical secretions, the fat-mobilizing potency of the adrenalin was fully restored.

Cause and Effect Relation

The fat-mobilizing action of this combination of adrenal "stress hormones," as seen in dogs, is strong enough to suggest the possibility of a direct cause-and-effect relationship between adrenal overactivity and the rise in blood lipids seen in various studies of men subjected to disturbing emotional experiences or sustained high-level job performance at a forced pace.

The dog studies are now being extended to volunteers at NIH to learn whether the pattern of "stress hormones" that raised the

KEY TO SYNTHESIS OF NATURAL AND UNNATURAL PENICILLINS



The history of penicillin from its initial discovery by Sir Alexander Fleming in 1928 to current means of synthesis was reviewed at a recent National Institute of Arthritis and Metabolic Diseases' seminar by Dr. Kenneth R. Henery-Logan of the Massachusetts Institute of Technology. Dr. Henery-Logan, who worked out means for the general synthesis of the penicillins with Prof. J. C. Sheehan, also of MIT, told of newer "unnatural" forms which have many desirable properties, and which

may be useful against bacteria resistant to natural penicillins now used. He added that two pharmaceutical firms have started production of a penicillin which provides twice the blood levels of the best oral and injected forms now available. The diagram shows how one key compound, 6-aminopenicillanic acid (APA), may be used to produce penicillins either natural or unnatural through a reaction called acylation of the amino group. Unnatural forms cannot be made by direct fermentation.

blood lipids of dogs has a similar effect in man.

The hormone studies in dogs were done in the NHI Metabolism Section, where Dr. Steinberg directs a number of basic research projects concerned with the body's normal mechanisms for transporting fats through the blood. He and Dr. Shafir, who has since returned to Israel, were exploring the possibility that adrenalin, the hormone of the medullary part of the adrenal, might regulate one of these fat-transport mechanisms.

Another scientist in Dr. Steinberg's group, Dr. Robert Gordon, had discovered earlier that stored body fat is discharged into the blood during fasting in the form of a little known lipid called unesterified, or "free," fatty acid. Free fatty acid, Dr. Gordon had found, is the "dissolved" form of body fat that circulates to the organs to provide most of the energy for life processes when calories aren't available from food.

The NHI scientists wanted to find out how fasting and feeding switch on and off the release of this major organic fuel from the fatty tissues. The rise and fall of free fatty acid in the blood is

abrupt, they noted, like that of the sugar released by adrenalin during emotional arousal.

And when Drs. Shafir and Steinberg injected adrenalin into normal dogs they saw that it did produce an abrupt rise in the free fatty acids in their blood to a peak in about ten minutes. But another effect of the adrenalin injections caught the attention of these two investigators.

About a day after its injection—long after the free fatty acid levels had fallen back—there was a slow rise in the blood lipoproteins, the big complex molecules that carry the cholesterol and other lipids that travel in "bound," or esterified states. When the lipoprotein lipids were measured, it was found that the adrenalin injections, if continued for eight days, would raise the blood cholesterol 91 percent, on the average. Other lipoprotein lipids that were measured rose too (the triglycerides and phospholipids), but not as high or as consistently as the cholesterol.

Medulla Implicated

This finding implicated the medulla—the inner adrenalin-secreting part of the adrenal—in the

high blood cholesterol of stress. The role of the outer, cortical, part became apparent when the scientists tried injecting adrenalin into animals from which the adrenal glands had been entirely removed. The injections didn't work on the blood lipids of these animals.

The power of adrenalin to raise the blood lipids was thus seen to depend on something in the adrenal gland besides its medullary hormone, so the scientists looked to the cortical part of the little gland.

Actually the adrenal medulla and cortex are two very different glands, closely related only by the coincidental intimacy of their location, one inside the other (in most mammals) and capping the kidneys. They are controlled differently—the medulla by nerves from the "arousal" centers of the brain, and the cortex by ACTH, another hormone, secreted by the pituitary gland. And the cortical hormones are all steroids made from cholesterol itself (not amines from protein, as the adrenalines are).

Also unlike the medulla, the cortex presented the scientists with three widely differing categories of

(See CHOLESTEROL, Page 6)

Periodontal Disease And Tartar Found In Germfree Life

Tartar deposits on the teeth have usually been associated with the presence of oral bacteria. This concept was recently challenged when dental investigators demonstrated experimentally the formation of tartar-like material and periodontal disease in the absence of bacteria.

A study by Dr. Paul N. Baer, Clinical Investigations Branch, National Institute of Dental Research, and Dr. W. L. Newton, National Institute of Allergy and Infectious Diseases, was made of the jaws



Germ-free animals ready for transport from one sterile area to another in the National Institute of Arthritis and Metabolic Diseases.

and teeth of a total of 38 germ-free Swiss mice, ranging in age from 39 days to more than six months. The mice were maintained in Reyniers Germ-free Units of the 500 Series. They were weaned at the age of 4 weeks and were raised on a slightly modified diet used in the Lobund Institute, University of Notre Dame.

While there was no loss of alveolar bone observed in animals sacrificed at one to one-and-one-half months of age, the onset of periodontal disease was detected in 44 percent of animals examined between the third and fourth month. No sex differences were noted. All animals examined at the age of six months or more had considerable alveolar bone loss which, in some instances, caused exposure of more than one half of the root length. In addition, hard deposits (tartar) were observed on the enamel surfaces of the molar teeth in 30 out of the 38 animals.

These experiments demonstrate that both tartar and periodontal disease can occur in the absence of oral bacteria. Complementing these findings is the knowledge that dental caries is dependent on the presence of at least one strain of oral bacteria. Data from these related studies with germ-free and gnotobiotic animals, continue to provide a firm foundation for totally new concepts in dental research.

Choriocarcinoma Transplanted in Hamsters and Rats

Choriocarcinoma, a rare, highly malignant uterine tumor, which has been under study at the National Cancer Institute, has been successfully transplanted in laboratory animals by Dr. Roy Hertz, Chief of the Endocrinology Branch.

In a recent issue of the *Proceedings of the Society for Experimental Biology and Medicine*, Dr. Hertz reported that three tumor strains have been adapted to serial transplantation in the cheek-pouch of cortisonized hamsters. One of the strains has now been adapted so that it is carried in previously untreated hamsters and in the subcutaneous tissues of cortisonized, irradiated, hypophysectomized (pituitary removed), or intact female rats.

In all three strains, the transplants are similar in structure to the original patient material. The transplanted tumors produce in host animals gonadotropic stimulation characteristic of that produced by human chorionic gonadotropic hormone. Each of the tumor strains presents a reproducible growth pattern and is therefore adaptable to studies of the effect of chemotherapeutic and other inhibitory agents.

CHOLESTEROL

(Continued from Page 5)

hormones to choose from—one influencing sexual development, one regulating salt and water balance, and one that plays a part in the body's responses to stress.

Cortisone, the anti-inflammatory steroid of arthritis fame, represents the cortical hormones that come into play during stress. Besides its ability to suppress inflammatory reactions, cortisone can also influence the carbohydrate and fat reserves of the body.

Cortisone Effect

Injected into the dogs without adrenals, cortisone was found to restore fully the power of adrenalin to raise the blood lipids. In the presence of the cortical substance, either injected or secreted (as in the normal dogs), the blood cholesterol could be raised to about twice its normal level if the adrenalin injections were continued more than a week. As Dr. Steinberg describes it, the role of the cortical hormone was largely "permissive"—it had to be present in normal quantities for the adrenalin to work. But the great blood lipid elevations were responses primari-

Allergic Encephalomyelitis Quantitative Index Developed

A quantitative index correlating the clinical signs and severity of lipemia with histologic lesions has been developed to aid in assaying encephalitogenic activity of brain extracts.

By studying accumulated data on a large number of animals injected with brain or active chemical fractions of nervous tissue, Dr. Ellsworth Alvord, National Institute of Neurological Diseases and Blindness grantee at Baylor University of Medicine and Dr. Marian Kies, Research Branch, National Institute of Mental Health, Bethesda, developed the index. A description of their work appears in the *Journal of Neuropathology and Experimental Neurology*.

Many attempts have been made to demonstrate the activity of various chemical fractions of brain in producing encephalomyelitis when injected parenterally with adjuvants. Although decreasing doses have been used for whole brain, only one similar study has been made with various fractions of brain in a search for the causative factor or factors.

Approximately 1,000 healthy adult male guinea pigs were used for the study. Following an initial observation for 2 weeks, groups of 10 animals were injected intradermally with vaccines containing various amounts of brain or brain-extracts in Freund's adjuvant.

After 30 days, survivors were anesthetized, blood was collected, and the animals were killed by perfusion intracardially. Clinically positive animals were sacrificed when they had developed unquestionable signs of the disease. The brain and spinal cord were removed for neuropathologic examination. Clinical signs, degree of lipemia, and degree of histologic changes were coded according to severity.

It was observed that lipemia practically did not occur except with the combination of severe clinical and histologic changes. Correlations between these three factors were then made, first considering all of the possible subdivisions, and subsequently combining various subdivisions which did not appear to be significantly different from each other.

By plotting the mean numerical index of the severity of the experimental disease against the weight of material injected, a curve was obtained demonstrating the severity of the disease produced by different doses of the particular material. The dose that produced 50 percent of the maximal severity of the disease was termed ED₅₀ (50 percent effective dose) and could be used as a single index of the effectiveness of the particular substance injected.

A close approximation to the ED₅₀ was made by using the dose that produced a disease index of 4; this was chosen because the average maximum disease index was about 8 (on a scale ranging from 0-10). In this way whole guinea pig brain was compared with bovine spinal cord; cord acetone powder; lipid-free residue of cord; and water-soluble, 5-percent-KCL-soluble, and water-insoluble residue of cord as to comparative activities in producing experimental allergic encephalomyelitis in guinea pigs.

Of all these, the 5-percent-KCL was the most active material per unit weight. It was approximately 6 times as active as lyophilized guinea pig brain and 10 times as active as lyophilized bovine spinal cord.

The assay is being used to study the isolation and purification of the compound or compounds in the central nervous system responsible for producing the disease.

ly to excess adrenalin rather than to excess cortisone.

Thus a powerful fat-mobilizing activity was found in a combination of hormones which, though intensively studied individually, had previously been linked only by the fact that they are both secreted by the adrenals during stress.

The obvious implication of all this—that the human adrenal overactivity known to result from psychic stress may actually be responsible for the rise in blood lipids seen in psychic stress—is only a "plausible theory" at present. But this theory can be safely tested, for healthy volunteers can be subjected without danger to the kind

of psychic stresses that raise the blood lipids, while pertinent changes in the hormone patterns as well as the lipids can be measured in blood and urine samples.

Such studies may finally weld a cause-and-effect link at the level of body chemistry between psychic tension and blood cholesterol.

If direct proof can also be obtained for the equally "plausible theory" that the excess of cholesterol in the blood promotes its heart-attacking accumulation in the coronary arteries, medical authorities will have a substantial basis for citing high-tension living as one of the reasons why atherosclerosis is our leading killer.

The NIH Spotlight



Janet W. Gallagher

The laughing smile of a pretty 23-year-old brunette belies the serious nature of Janet Wakefield Gallagher, an information specialist in the Division of General Medical Sciences.

Janet is one of the first graduates of the NIH Central Information Training Program and the first woman to complete the course.

The trim 5-foot-6 young lady was born in Flushing, Long Island, N. Y., but has lived in Chicago, Washington, D. C., Colorado, Oxford, England; and Athens, Greece.

As an 11-year-old, Janet journeyed to Greece, where her father was an administrator for the Point 4 Program. She traveled the Mediterranean area with her family and visited France, Italy, Turkey, and Switzerland before returning to the United States.

Janet received her B.A. degree from Mount Holyoke College with a major in religion. Her junior year was spent in studying 18th Century English literature at Oxford University, England.

After graduating from college in June, 1958, Janet returned to her parents' home in Bethesda and considered employment with the Library of Congress. Then she learned of the NIH Information Training Program and applied for one of its competitive appointments.

As a trainee, Janet was given a year of intensive preparation for becoming an information specialist. This included varying periods spent on a wide range of assignments within selected information areas of NIH and PHS, and non-government organizations as well.

Emphasis, wherever possible, was placed on the learn-by-doing method, with ample opportunity and practice in writing on a variety of subjects for various information purposes and media.

As one of her training assignments, Janet wrote a paper entitled "Radiation: Hazards and Benefits," which is now in general

distribution throughout PHS.

After completing the year's training program, Janet joined DGMS in July, where she is an assistant to Daniel Bailey, Information Officer of the Division.

Janet likes her job at DGMS, and although she had no deep interest in science when she came to NIH, she now looks forward to learning constantly.

Several of her rough drawings of the digestive system of the dog decorate the filing cabinet behind her desk. One of her many duties is to assist in preparation of the weekly report from the Chief of DGMS to the NIH Director.

Although she is fond of sports, reading is Janet's favorite hobby. She hopes some day to find a subject for writing a book of her own.

After 5 p.m., Janet goes home to the Bethesda apartment she shares with one of the present information trainees. Both girls have similar interests in music, art, literature, and (of course) careers.



Helen K. Kerr, Photocopy Preparation Unit, Scientific Reports Branch, DRS, receives her award check from Chris A. Hansen, Chief, DRS.

34 Employees Receive Awards For Performance, Suggestions

In a post-Christmas ceremony held December 29 in Wilson Hall, 34 employees received incentive awards totalling \$2,565.

Harvey Wiener, Administrative Assistant at NIMH's Clinical Neuropharmacology Research Center in St. Elizabeths, received \$180 for his initiative, resourcefulness, and ability to accomplish more than ordinarily difficult administrative objectives, resulting from the additional handicaps of location and communication.

Mrs. Anne Gibson, a secretary at the NIMH Neuropharmacology Research Center, was awarded \$140 for the consistently excellent quality of her work, her patience, understanding, and grasp of the various areas of the program and its goals.

Awards were presented to the three members of the Photocopy Preparation Unit, Scientific Reports Branch, DRS, for their high record of productivity and courteous, unflinching cooperation. Helen Kerr, supervisor, received \$125. Her citation stated that, "She has been almost solely responsible for the remarkable development of this unit." Checks for \$100 each were awarded to Mrs. Kerr's assistants, Jacqueline Drake and Arleen Kennedy.

A group award was made to the 29 members of the Purchase Oper-

ations Unit, Procurement Section, Supply Management Branch, OAM. They were cited for consistently outstanding performance, enthusiastic devotion to duty, and admirable spirit of cooperation. Members of the group are Richard J. Colton, Melvin C. Frye, Virgil M. Kilgore, Dorothy E. Kuster, Dorothy L. Stone, Joseph A. Derbis, Janet R. Coffey, Ada B. Hines, Elva C. Smithies, Elizabeth B. O'Toole, and Evelyn B. Hawley.

Also, Champ S. Carter, Harris C. Spooner, Jr., Marthe B. Higgins, Mary B. Hall, C. Lee Bowen, Margaret Jones, Margaret Traynor, Agnes M. Inglesby, Earl G. Painter, Page S. Manuel, Lynn Pine, Marilyn Miller, Audrey C. Thews, Lenora S. Haines, Ella C. Snyder, George E. Hankerson, Jeanne L. Himmerich, and Louis H. Dixon.



These cash award winners are Jacqueline Drake, DRS (left), and Anne Gibson, NIMH.

Other Awards Given

In an NIAID ceremony, on January 15, Willard Piggott, bacteriologist in the Laboratory of Infectious Diseases, received a check for \$200 for his design of a unique exposure chamber used in studies of experimental pulmonary mycoses in animals. At the same time an award of \$120 was presented to Harold M. Rusten, medical biology technician in the Laboratory of Parasite Chemotherapy, for exceptionally high work output, technical skill, powers of observation, and resourcefulness.

Checks were mailed to two employees at the Rocky Mountain Laboratory, NIAID. William C. Wicht, supervisory research technician, received \$361 for his specific contributions in technical procedures in the fields of tissue culture techniques and safety tests for vaccines. George J. Moore, research technician, was awarded \$50 for his modification in the use of the Mickle disintegrator which resulted in more uniform and stable emulsions of brain antigen.

A check for \$100 was also mailed to Frederick A. Uhrig, medical aid at the Heart Disease Epidemiology Study, NHI, in Framingham, Mass., for the manner in which he carried out his assigned duties and for his initiative in employing preventive maintenance on laboratory equipment.



Members of the Purchase Operations Unit, Procurement Section, Supply Management Branch, OAM, are happy with the award checks presented to them in a recent ceremony. At left end, first row, is James B. Davis, Chief, Supply Management Branch; top row, left end, is Donald R. Watson, Head, Procurement Section. Next to right end, first row, is Richard H. Henschel, NIH Assistant Executive Officer; and right end, first row, is Richard L. Seggel, NIH Executive Officer.

Registration Begins For Spring Semester Of Graduate School

Registration for the spring semester of the NIH-U.S. Department of Agriculture Graduate School will be held in Building 10, Room 2-B-50, on February 8-12, between 11:30 a.m. and 4:30 p.m.; and February 13, between 9:00 a.m. and 4:00 p.m.

The registrar will be available in the same room on January 25-29 and February 1-5, between 2:00 and 4:00 p.m., to answer questions.

Catalogs are available now in Room 2-B-52, Building 10; the CC Library; the CC Reception Desk; and Institute administrative offices. Further information may be obtained by calling Carol Long on ext. 2427.

Classes will begin the week of February 15 and will end the week of May 30.

A new course, chemical kinetics in biological systems will replace the course in special pathology offered on Monday evenings last semester. Also, the course in advanced topics in biochemistry will be held on Tuesday instead of Wednesday evenings.

Other courses offered are scheduled on the following evenings:

Monday—introductory and general bacteriology (second half), medical mycology, physical chemistry (second half), and introduction to the calculus (second half);

Tuesday—modern physics, organic chemistry (second half)—(also Thursday), application of spectroscopy to organic chemistry, molecular structure in biological systems, radioisotopes and their applications in the medical sciences, and advanced German;

Wednesday—introductory virology, introduction to human genetics, enzyme chemistry (second half), introduction to determinants and matrices (second half), and reading scientific and medical Russian;

Thursday—advanced bacteriology—bacterial metabolism (second half), properties of excitable cells (second half), general and comparative physiology, chemistry of biologically important steroids, design of experiments, and ordinary differential equations.

Recruitment Discussed

Dr. Howard Jenerick, Executive Secretary of the Embryology and Development Training Committee and the Physiology Training Committee, DGMS, spoke before the Conference of Deans of Southern Graduate Schools in Louisville, Ky., in November. He discussed recruitment for careers in the basic medical and health-related sciences.

WHAT IS IT?



This worm-like form, magnified approximately 15,000 times, is an electron-micrograph of *Leptospira icterohemorrhagiae*, photographed by John Thiel, Laboratory of Viral Products, DBS. *L. icterohemorrhagiae* causes leptospirosis, or Weil's disease, in man, a febrile illness often accompanied by jaundice and kidney impairment. It is transmitted by domestic animals which, in turn, have been infected by the urine of mice and rats in which the microorganism exists. In one of the classical errors in the history of microbiology, Hideyo Nogushi, noted Japanese bacteriologist of a generation ago, incorrectly concluded that *L. icterohemorrhagiae* was the cause of yellow fever.

Publication Preview

The following manuscripts were received by the SRB Editorial Section between June 29 and July 8.

DBS

Lá, C. P. Experimental variation in mouse virulence of ECHO 9 virus.

DRS

Zarechnak, G. V. Academy of Medical Sciences of the USSR: History and organization (1944-1958).

NCI

Cutler, S. J.; Ederer, F.; Griswold, M. H.; and Greenberg, R. A. Long term survival of breast cancer in patients in Connecticut, 1935-1954.

Dawe, C. J. and Law, L. W. Morphologic changes in salivary gland tissue of the newborn mouse, exposed to parotid tumor agent *in vitro*.

du Buy, H. G. and Woods, M. W. Segregation of cytoplasmic particles in green plants.

Glenner, G. G.; Burstone, M. S.; and Meyer, D. B. The significance of aminopeptidase activity in the stroma of neoplastic tissue; with a comparison of histochemical techniques.

Hertz, R. Growth in the hypophysectomized rat sustained in pituitary grafts.

Moore, E. W.; Thomas, L. B.; Shaw, R. K.; and Freireich, E. J. A postmortem study of the central nervous system in 117 consecutive cases of acute leukemia.

Shack, J. and Hynum, B. S. Determination of the interaction of deoxyribonucleate and magnesium ions by means of a metal ion indicator.

Shaw, R. K.; Moore, E. W.; Freireich, E. J.; and Thomas, L. B. Meningeal leukemia: A syndrome resulting from increased intracranial pressure in patients with acute leukemia.

Shaw, R. K.; Shulman, R. N.; Davidson, J. D.; Rall, D. P.; and Frei, E., III. Studies with the experimental antitumor agent, 4-aminopyrazolo (3,4-d) pyrimidine.

NHI

Cherkes, A. and Gordon, R. S., Jr. The liberation of lipoprotein lipase by heparin from adipose tissue incubated *in vitro*.

Goodman, H. C.; Fahey, J. L.; Malmgren, R. A.; and Brecher, G. Separation of factors in lupus erythematosus serum reacting with components of cell nuclei.

Katz, A. M.; Dreyer, W. J.; and Anfinsen, C. B. Peptide separation by two-dimensional chromatography and electrophoresis (fingerprints).

Kelly, E. R.; Morrow, A. G.; and Braunwald, E. Left heart catheterization: A key to the solution of some perplexing problems in cardiovascular diagnosis and management.

Otken, L. B., Jr. Experimental production of atheromatous embolization.

Schilder, D. P.; Hyatt, R. E.; and Fry, D. L. An improved balloon system for measuring intraesophageal pressure.

NIAID

Brennan, J. M. and White, J. S. New records and descriptions of chiggers on bats in Alabama (Acarina: Trombiculidae).

Emmons, C. W.; Ajello, L.; Benham, R. W.; Conant, N. F.; Johnson, H. G.; Martin, D. S.; and Smith, C. E. Pathogenic fungi.

Kantor, F. S. and Cole, R. M. A fibrinogen precipitating factor (FPF) of group A streptococci.

Lackman, D. B.; Bell, J. F.; Larson, C. L.; and Casey, M. An intradermal sensitivity test for Q fever in man.

Lockart, R. Z., Jr. The role of homologous interference on the production and maintenance of a virus carrier state.

Philip, C. B. Canine rickettsiosis in western United States and comparison with a similar disease in the Old World.

NIAMD

Bates, R. W.; Albert, A.; and Condliffe, P. G. Absence of an exophthalmogenic substance in transplantable thyrotrophin producing tumors of the pituitary of mice.

Bieri, J. G. An effect of selenium and cystine on lipid peroxidation in vitamin E deficient tissues.

Bowen, W. J. and Martin, H. L. The ability of glycerol-treated muscle fibers to do work during ATP-induced contractions and the free energy of ATP.

Dubin, D. T. and Rosenthal, S. M. The acetylation of polyamines in *E. coli*.

Hayaishi, O.; Slaughter, C.; and Jakoby, W. B. 3-Hydroxy bile acid dehydrogenase from *Escherichia freundii*.

HUNDLEY

(Continued from Page 1)

has been a great expansion in the size, scope, and complexity of responsibilities of the Service, and that new and difficult problems are foreseen.

Seven other officers from various parts of the Public Health Service have been appointed to devote full time to the study. They are Margaret Arnstein, Dr. Burnet Davis, Dr. Harald Graning, Dr. Harold Magnuson, Dr. Donald Galagan, Harry Hanson, and Dr. William Stewart.

Joseph S. Murtaugh, Assistant Chief, Office of Research Planning, OAM, will serve as principal staff assistant to the group.

Dr. Michael B. Shimkin, Chief, Biometry Branch, NCI, will be Acting Special Assistant on International Affairs during Dr. Hundley's absence.

Imai, Y. Biosynthesis of myo-inositol in the rat.

Mertz, W. and Schwarz, K. Prevention of respiratory decline in necrotic liver degeneration by antioxidants *in vitro*.

Nirenberg, M. W. A biochemical characteristic of ascites tumor cells.

Park, H. D. and Buck, J. The relation of oxygen consumption to ambient oxygen concentration during metamorphosis of the blowfly, *Phormia regina*.

Tietze, F. Enzymatic release of amino acids from the C-terminal end of native and modified egg-white lysozyme.

Yielding, K. L. and Tomkins, G. M. An effect of enzymic reduction of steroids on triphosphopyridine nucleotide-dependent glucose-6-phosphate oxidation.

NIMH

Bahn, A. K. First report on patients of mental health clinics.

Elkes, J. Some pharmacological correlates.

Feinberg, I. and Mercer, M. Tests of distractibility and associative intrusion in schizophrenia and organic brain disease.

Fraser, H. F. and Isbell, H. Pharmacology and addiction liability of DL- and D propoxyphene.

Locke, B. Z. Kramer, M.; and Pasamanick, B. Immigration and insanity: First admissions to state mental hospitals among native-born population of Ohio at mid-century.

Mudd, S. H.; Jamieson, G. A.; and Cantoni, G. L. Activation of methionine for transmethylation. IV. The failure of 3',5'-cycloadenosine to replace adenosine triphosphate.

Strumwasser, F. and Rosenthal, S. Direct extracellular stimulation of single neurons.

Townsend, A. M., III, and Mirsky, A. F. A comparison of the effects of meprobamate, phenobarbital and *d*-amphetamine on two psychological tests.

NINDB

Friess, S. L.; Whitecomb, E. R.; Durant, R. C. and Reber, L. J. The responses of acetylcholinesterase and conduction in bullfrog sciatic nerve to the stereochemistry of aminoalcohol derivatives. III.

Gerin, P. Microelectrode investigations of the mechanisms of the electrically induced epileptiform seizure ("afterdischarge").

Resnik, R. A.; Wanko, T.; and Gavin, M. A. Observations on the lens proteins alpha and beta crystallin.

Sidman, R. L.; Miale, I. L.; and Feder, N. Autoradiographic studies of cell proliferation and migration in the primitive ependymal zone during neural histogenesis.

Tasaki, I. Afferent impulses in auditory nerve fibers and the mechanism of impulse initiation in the cochlea.