the NIH Record

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PUBLIC HEALTH SERVICE
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Radiation Meeting To Feature Talk By Dr. Flemming

DHEW Secretary Arthur S. Flemming is scheduled to deliver the principal address at the banquet session of the three-day annual meeting and exhibition of the Health Physics Society, to be held at the Statler-Hilton Hotel in Boston, June 29 through July 1.

Secretary Flemming will discuss the responsibilities and activities of the Federal Radiation Council, of which he is chairman.

Of Timely Interest

The program announcement indicates that the symposia and the papers to be presented will be of timely interest to those concerned with radiation safety, nuclear medicine, and the legal and social aspects of atomic energy.

A symposium on "Waste Disposal" will cover tank, ground, deep underground, and ocean disposal methods and problems.

Another important symposium will deal with "The Effect of the NCRP Recommendations on National Life." Experts in the legal, medical, labor, and insurance fields will present their views on this subject.

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Management Stresses Value Of NIH Safety Inspections

INSPECTION UNDER WAY.—Dr. Joseph E. Smadel, NIH Associate Director for Intramural Research (right), reveals top management's interest in the NIH Plant Safety Program by participating in a recent building inspection tour. Dr. Donald B. Tower, NINDB, Chairman of the NIH Safety Committee, calls attention of Dr. Smadel and James B. Black, NIH Safety Officer, to a properly grounded centrifuge in one of NCI's multiple-use laboratories.

Following a series of relatively minor mishaps, some of which were potentially serious, NIH top management recently stressed the importance of the safety inspections of laboratory and other building areas conducted by the Plant Safety Branch, OAM.

These periodic, unannounced inspections are made on a continuing basis in all NIH buildings, under the policy guidance and with the cooperation of the Scientific Directors and the NIH Safety Committee. Their purpose is to determine and eliminate hazardous conditions that endanger life and property.

At a recent meeting of the Scientific Directors, Dr. Joseph E. Smadel, Associate Director for Intramural Research, emphasized the concern of NIH management over the ever-present physical hazards involved in a large medical research establishment such as NIH, and requested the cooperation of

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2,000 to Meet, Exchange Views Regarding Cancer

The Fourth National Cancer Conference, sponsored jointly by the NCI and the American Cancer Society, will be held at the University of Minnesota, Minneapolis, September 13-15. More than 2,000 scientists and physicians from the United States and abroad are expected to attend.

Dr. Michael B. Shimkin, Chief, Biometry Branch, NCI, will deliver the opening address, "Changing Concepts Concerning Cancer." This topic is also the theme of the conference.

Dr. John R. Heller, Director, NCI, will chair a panel, "Cancer in the World Around Us," which will cover such topics as air pollution, industrial carcinogens, food additives and contaminants, radiations, and smoking. Dr. Heller will also serve as chairman of a panel discussion on "Cancer Control."

Other members of the NCI staff who will participate in various events are Dr. Howard B. Andervont, Chief, Laboratory of Biology, who will serve as chairman of a panel on "Cancer Etiology"; Dr. Sarah Stewart, Laboratory of Biology, a member of the "Leukemias and Lymphomas" panel; and Dr. Eugene Van Scott, General Medicine Branch, who will serve as summary session participant for the panel, "Cancer of the Skin."

Other Panels Planned

Dr. Sidney J. Cutler, Biometry Branch, will be treatment-end-results reporter for a panel on "Cancer Therapy."

Other panels of scientists will discuss the state of knowledge of cancer of the breast, lung, gastrointestinal tract, genitourinary system, and head and neck.

The Office of Information and Publications of NCI has charge of all arrangements for exhibits and the showing of films at the conference. This includes the design and construction of the principal exhibit on the conference theme, and a book and journal exhibit.

The Institute itself will contribute two new exhibits.

FRIENDS SAY FAREWELL TO FLETCHER

Nearly 200 of the men and women who have come to know and admire Jack Fletcher during his 10 years at NIH gathered in Wilson Hall on Friday, May 27, to say good-bye and wish him continued success.

He resigned from his position as Chief of the Office of Research Information and Staff Assistant to the Director of NIH, effective June 3, to become Director of Public Relations of the Merck Sharp & Dohme Division of Merck & Co., Inc., at West Point, Pa.

On the preceding evening, Jack and Mrs. Fletcher were also guests of honor at a farewell party and

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Jack Fletcher, ORI Chief (right), is summoned by Dr. Shannon to the rostrum in Wilson Hall to receive a handshake and gifts presented by his co-workers at one of the farewell parties in his honor.

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Visit to NIH Scheduled For Japanese Writers

A group of eight Japanese science writers were scheduled to arrive here yesterday (Monday) for a two-day tour of NIH as part of the itinerary of their visit to the United States under sponsorship of the Asia Foundation and the Japan Newspaper Publishers and Editors Association.

After a welcoming address by Lealon Martin, Deputy Chief, ORI, the writers were to tour the Clinical Center Monday morning and view the new NIH motion picture.

In the afternoon, Dr. R. E. Scantlebury, Chief, Foreign Grants and Awards Branch, DRG, was to preside at a discussion of the international aspects of medical research and the NIH Visiting Scientist Program.

The afternoon was also planned to include a visit to the germ-free Animal Laboratory, NIAMD, and a visit to the animal facilities.

On Tuesday the writers were to inspect the various laboratories in which Japanese scientists are working under the Visiting Scientist Program and were scheduled to have lunch with members of the NIH Information staff.

The tour of NIH was arranged at the request of John Foster of the Graduate School of Journalism, Columbia University.

RADIATION

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Additional papers and discussions will treat of topics such as atmospheric pollution and air cleaning problems, environmental hazards, internal radiation hazards, and dosimetry.

Field trips are also planned to the various atomic energy installations in the Boston and Cambridge areas.

Attendance at the meeting is expected to far exceed last year's record of 600.

SAFETY

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all personnel in working toward their elimination.

"It is especially essential," he said, "that those responsible for the laboratories remain alert to their need to protect personnel and property against acts of negligence."

At the same time he pointed out that the inspections are essential in all buildings and areas of NIH.

Following up his recommendations, Dr. Smadel accompanied the inspectors on their next tour which included all laboratory areas of the Clinical Center and required portions of three consecutive days for completion.

Alert for Hazards

The inspection tours are conducted by the NIH Safety Officer, James B. Black, or other staff members of the Plant Safety Branch; the appropriate Scientific Director or his representative, and the Chairman of the NIH Safety Committee, Dr. Donald Tower, who is Chief of the Neurochemistry Section, NINDB.

The inspectors take note of existing hazards, which they discuss with personnel, and then submit recommendations for their elimination. Follow-up inspections are conducted to make sure that the recommendations are observed.

The inspectors have an eagle eye —which is constantly getting keener—for such things as methods of storage and handling of flammable and toxic liquids and chemicals, proper location and safeguarding of machines and equipment, general housekeeping practices, and adherence to common-sense safety procedures.

Similar unannounced inspections are conducted by Fire Marshall Kenneth W. Gettings who looks for fire hazards such as faulty electrical connections, blockage of aisles, corridors, and escape hatches, and defective or inadequate fire-fighting equipment.

Drama Is Order of the Day For Quick-Thinking 'AODs'

By Margaret O'Brien

One night last January, the Administrative Officer of the Day at the Clinical Center made this entry in his log book:

"10:50 p.m. . . . Received call from Detective Sergeant King, Montgomery County Police, asking us to notify immediately the Bethesda sub-station if two men appear at the CC requesting treatment for gunshot wounds. It is possible these men may be the fugitives who were wounded in a gun fight tonight after shooting and killing a policeman in downtown Washington."

Duties Are Varied

Not all entries in the log book of the Clinical Center AOD are quite as dramatic as this one, but neither is this sample as offbeat as it may seem to be, as far as his "routine" duties go.

The AOD, an employee of the Office of the Executive Officer, serves as representative of the administrative branch of the hospital outside of regular working hours. He goes on duty at the Clinical Center's reception desk after the daytime staff has gone home for the night or weekend, and what will happen on his 8-hour tour of duty is anybody's guess.

Specifically, it is his job to ". . . relieve the Medical Officer of the Day and other physicians of matters which are administrative in nature." What this will entail may include anything from routine dispatching of an ambulance to finding the answer to a telephone inquiry from Railway Express on what to do about a shipment of sick monkeys.

Attending to the administrative admission and discharge of patients, arranging transportation for patients and staff, assisting families with funeral arrangements, handling a vast miscellany of telephone calls, preliminary handling of "walk-in" patients, and being immediately available for any and all emergencies are some of the major duties that keep the AOD busy throughout the night or over the weekend.

Points With Pride

Before the AOD Program was instituted in 1956, the Medical OD and Nursing Supervisors somehow had to find time to do all these things in addition to handling the more complex and urgent problems involving patient care.

"I wonder how on earth we ever got along without AODs in the early days of the Center," muses Margaret Badger, Acting Executive Officer.

Miss Badger speaks with pride of these young men—Don Stein, 22; Harold Miles, 25; and John Patterson, 26—who so effectively represent the CC Executive Officer during other than regular work-

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MAN OF MANY ROLES—On weekend duty as Administrative Officer of the Day at the Clinical Center, Don Stein assumes the role of ambulance dispatcher. Here he instructs driver James Robinson to pick up an invalid patient who has just arrived at National Airport. When the ambulance returns with the patient, Mr. Stein will take on the roles of admissions clerk, baggage handler, checker of valuables, and all-round trouble-shooter.

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.

The True Nature of a Book

An Allegory

By Seymour S. Kety, M.D.

Chief, Laboratory of Clinical Science, National Institute of Mental Health

The following is an excerpt from the National Institutes of Health Lecture delivered by Dr. Kety on May 18:

If our assumption of the mechanistic nature of life and of behavior is correct, and man is nothing more than the most magnificant physicochemical engine which has ever been constructed, but an engine nevertheless, is it not obvious, then, that he or at least his behavior ought someday to be explained completely by physics and chemistry? If we believe that, and many of us do, then do not physics and chemistry and their sister biological sciences become the *real* sciences of behavior, and disciplines or bodies of knowledge and techniques like psychology, sociology and psychoanalysis, are merely empirical, descriptive and derivative, to be tolerated as a sort of first aid manual—what to do until the biophysicist or the biochemist comes?

I should like to answer this question in the form of an allegory; it is entitled "The True Nature of a Book."

Let us imagine a community of high intelligence and quite civilized except that they have never seen a book—they have developed other means for the transmission of knowledge. One day a million books appear in their midst which arouses so much curiosity and consternation that they decide to set up a scientific institute to study them. They set up this institute by scientific disciplines and being much more directive than we, they establish a policy that each scientist can examine these objects only with the tools and techniques and concepts which are characteristic of his discipline.

The first laboratory to be organized is the laboratory of anatomy. They study these strange objects for a while and their conclusion reads like this:

"The specimen is a roughly rectangular block of tissue covered ventrally and dorsally with two coarse, fibrous, encapsulated laminae approximately 3 mm. thick. Between these lie several hundred white laminae a fraction of a millimeter thick, all fastened at one end and mobile at the other. On closer inspection of a few of these, they are found to contain a large number of black surface markings arranged in linear groupings in a highly complex manner."

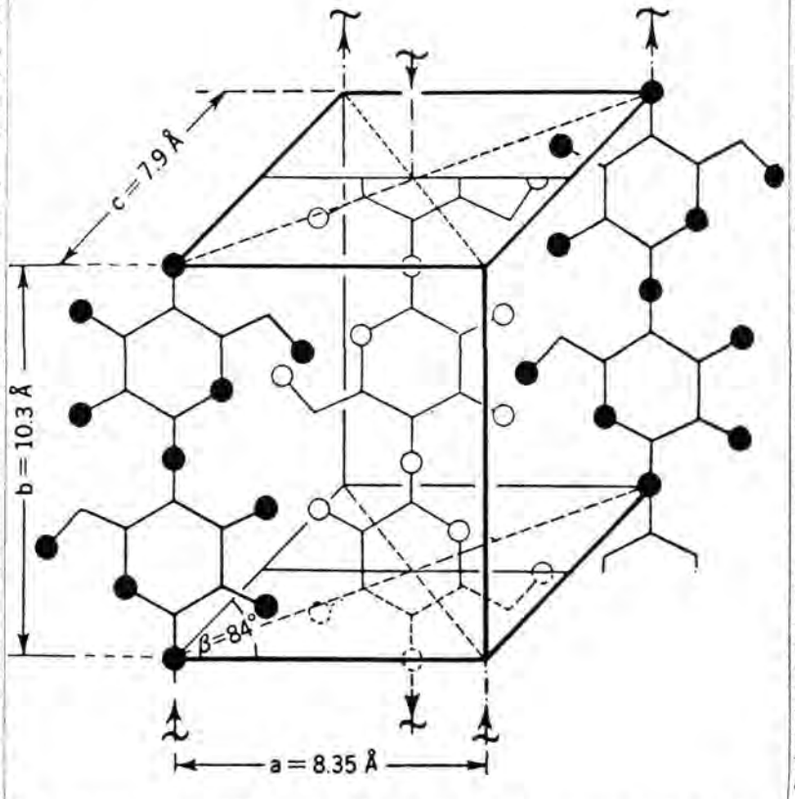
By that time the chemists have appeared on the scene. The first chemist to get hold of a specimen burns it and satisfies himself that it obeys the law of the conservation of matter and is therefore in his province; he may even compute its energy release per gram on complete oxidation. Next comes the analytical chemist, who discovers first its elementary composition—he also reports traces of elementary carbon which are probably impurities.

Before I forget to mention it, one day a chemist accidentally drops a colored compound on one of the pages and by serendipity discovers paper chromatography, which lies around for 25 years before someone figures out what to do with it.

Then there are the biochemists who slice the book and mince it and, best of all, homogenize it (because on the slices and the mince they can still see those black contaminants and the homogenate can be centrifuged to remove them, permitting them to work with a pure system). But all of these chemists have an uncomfortable feeling that though what they are doing is important, the real answers will come from the fellow down the hall who has just arrived and is still polishing his bright and expensive equipment—the molecular biologist.

Molecular Biology Applied

With the self-confidence which comes from the adulation of the less fundamental sciences, he is anxious to begin work on the copy he has selected because someone has told him that this book is a biased and distorted treatment of its subject. Having hung a sign over his door which reads "No twisted book without a twisted molecule," he proceeds to search for it. By repeated extraction, centrifugation and sometimes ultracentrifugation, electrophoresis, disintegration and repolymerization, he finally isolates a pure substance, free of the carbon particles, and what is even better, a macromolecule, and a twisted one at that.



The molecular biologist's version of the fundamental nature of the book, a "twisted macromolecule" which "many will recognize as the current hypothesis of the structure of cellulose."

Simultaneously, the physiologists have been attacking the subject. Unlike the biochemists, they have read the report from the anatomists and proceed to study and speculate upon why and how the pages are attached on one side. They study the movement of the pages as the book is riffled and how the pages are organized into chapters.

Then a biophysicist discovers that in an appropriate electrostatic field, the graphite markings produce discontinuities in potential. Fine microelectrodes are developed to pick these up and amplifiers and oscilloscopes to display them. They discover by sticking these electrodes into the book in various places that those which do not break off will pick up signals some of which are reproducible. They develop thousands of tracings of these signals and call in the cybernetic ist to help them uncode them. The signals are recorded on miles of magnetic tape and fed into huge computers.

Biophysics Almost Triumphs

Excitement mounts when in a particular region extending over a few millimeters in a certain book, one of them discovers on a particular day that for a few minutes before he damaged the source of the signals a tremendously complex pattern appeared which was reproducible but incomprehensible. But this gets fed into the data reducers and the computers which can test thousands of hypotheses per minute. Finally, the electric typewriter begins to print — a meaning has been found in that complex pattern—it reads "THE."

By this time the behavioral scientists have been admitted to the institute and begin to study the problem. They are a strange lot. Some of them have read the reports of the anatomists, the chemists and the physiologists, but many of them don't seem to care. Most will admit, if pressed, that the book is material in nature, obeys material laws, that it and its contents are nothing more than a highly specialized arrangement of chemical substances. But they don't slice the book, and they don't purify the chemical substances—in fact, they seem to feel that it is improper to do so. Instead, they ask questions peculiar to their discipline and look in the book for the answers.

The first one likes to count so he counts the number of letters

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WHAT'S NEW IN AGING?

By Daniel Bailey

Information Officer, Division of General Medical Sciences

NIH first established a laboratory for the study of gerontology at the Baltimore City Hospitals in 1940, with initial support from the Josiah Macy, Jr., Foundation.

In 1941 the full support of the work was assumed by the National Institutes of Health, and in 1948, with the establishment of the National Heart Institute, the laboratory became the Gerontology Branch of NHI. The city of Baltimore continues to provide space for the laboratory in the Baltimore City Hospitals. Some of the staff are also members of the Johns Hopkins University there.

Following the establishment of the Gerontology Branch, the next major development came in 1953 when the Mental Health Institute set up its Section on Aging under Dr. James E. Birren.

By 1955, the public at large had become very conscious of what is referred to as the problem of aging. There was talk in many circles, including Congress, of a national institute on aging of some sort. Also during 1955, the Advisory Councils began to recognize that aging deserved more direct attention in research, and they all passed resolutions to that effect. The Councils were particularly interested in increasing the amount of attention given the field of aging in the NIH extramural research and training grant programs. The result, after deliberations in the Office of the Director, NIH, was the Center for Aging Research.

The obvious point about such a center was that an institute for research in aging probably would not be necessary if we had a mechanism which could tell us fully what NIH already was doing, in aging, in the extramural and intramural programs.

The charter of CAR was written to say that this group would be the focal point for research in aging—in terms of program planning and coordination. CAR would serve as the principal source of information on the status of research in aging, in the NIH intramural and extramural programs, and also would serve to foster and encourage additional research programs in aging by the nation's scientists.

Areas Defined

In the beginning, however, CAR had to decide the big question: "What *is* research in aging?" Many people—even mature scientists in other fields—often think of it as research among old persons. There is research, of course, among older people, but this is only a fraction of the total.

In a modification of the classification used by Dr. Shock in his book "Trends in Gerontology," CAR developed a classification guide which is used to determine whether a particular bit of research falls into the field of aging or not. This guide includes the structural, physiological, biochemical, psychological and social aspects of aging, certain identifiable disease processes, and special training. Thus, in the NIH sense, research in aging involves just about every known medical and biological discipline and all the basic and applied sciences. It is the role of CAR not only to encourage more intramural and extramural research in aging, but also to review every research and training grant made by NIH to determine its direct or indirect applicability to aging and to record it and follow it through. CAR became a part of the Division of General Medical Sciences when this Division was established in 1958. At the same time Dr. G. Halsey Hunt, who had been Director of CAR, became Chief of DGMS.

Responsibilities Outlined

The other responsibilities of DGMS are directing the NIH grant programs for research in the sciences basic to medicine and biology, in environmental and public health, and in certain clinical sciences not covered by the Institutes. In addition, the Division also administers the grant programs for training investigators in the basic biomedical sciences and provides fellowships at five levels for general research training.

The greater emphasis in research in aging is not on the clinical sciences and it is not on older people. The greater emphasis is on the basic biological processes of aging and most of this research necessarily is not carried out on human subjects. This is not to say that there is not a great deal of research on those disease processes identified with aging, and research also in problems such as the rehabilitation of older persons. But most of the scientists being supported in the field by NIH are concerned with the basic processes.

There are three main reasons for this:

The first grows out of what might be called a pure biological interest in a remarkable phenomenon of life which is the tendency and fate of all living organisms to weaken under the stress of just existing and finally to die. The scientists want to know how and perhaps why.

The second reason for the intense interest in the basic biological processes of aging is part of an effort to disentangle disease processes from what might be called normal aging processes. There are a few scientists who believe that aging is a result of disease, but this is distinctly a minority opinion. The majority feel that aging is a separate process, yet one that can be and is affected by disease. When scientists have learned to distinguish clearly between the two, then they will have taken a great stride in combating disease at the most fundamental and perhaps the most crucial level.

The third reason for study emphasis on the basic processes of aging is that they *might* be able, in some manner, to affect this process, that is, delay it, so as to prolong human life. This is, of course, part of the same age-old search for the fountain of youth. Most serious investigators laugh at the idea, for they are convinced that man is destined to live, at best, about 100 years and no longer. There is no sound evidence thus far to support any other thought, although two European investigators are claiming "cures" for aging. More people are living to an older age level than before, but the average life expectancy has risen only slightly. Nonetheless, there are some rather curious findings which the scientists are pondering.

The electroencephalograph, which records electrical activity of the brain, is a key tool for learning more about what happens to the brain in old age. Dr. Ewald W. Busse, standing, principal investigator at the Duke University Regional Center for the Study of Aging, is shown with medical psychologist Dr. Walter D. Obrist as they study the brain wave patterns of an elderly subject.

Photo courtesy of Duke University

Some of these findings relate to the juvenile hormone, which is known to control the growth of insects. In Dr. Shock's laboratory, it has been found that this hormone *can* actually prolong the overall life of certain insects by prolonging the juvenile period thereof. The insect, in other words, remains a boy for a longer-than-normal period, though his adult period of life remains the same. Dr. Shock's people also have found that this hormone can enable the insect, under some circumstances, to grow another leg when one has been cut off.

Juvenile Hormone Found

Of equal interest is the work of Dr. Carroll Williams at Harvard who has found the juvenile hormone in human tissue. This could be nothing more than a biological curiosity, or it might be one of the most significant findings of this century. The humorists point out that if the hormone means to humans the same as it does to some insects, then we all might be able to remain boys and girls until the age, say, of 30.

One field that promises some exciting work if not the fountain-of-youth answer is radiation, which, it has been found, can produce effects similar to aging. This poses the question, of course, of whether, if there is a natural basic process of aging, this process is not caused by natural radiation from outer space.

Older People Helped

Now to go to the other end of the spectrum and mention a couple of items on research among older people themselves.

In the rehabilitation of older persons, particularly among those suffering from senility, it has been known that intensive rehabilitation techniques could help them learn to take better care of themselves. There has been a need, however, for good quantitative measures of the percentages of older people who can be helped. A New York group is coming close to providing these measures. They are using teams to treat some patients in nursing homes; and other patients are transferred to rehabilitation hospitals for comparative tests of different methods. Assuming they can come up with substantive data, the information will be of great value to all individuals and groups charged with caring for old persons.

EEG Pattern Studied

A last item pertains to hypertension and electroencephalogram patterns. Among older persons generally, the EEG pattern is more irregular than among younger persons. But Duke University scientists have found that an appreciably more regular EEG pattern is present among older per-

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ALLEGORY

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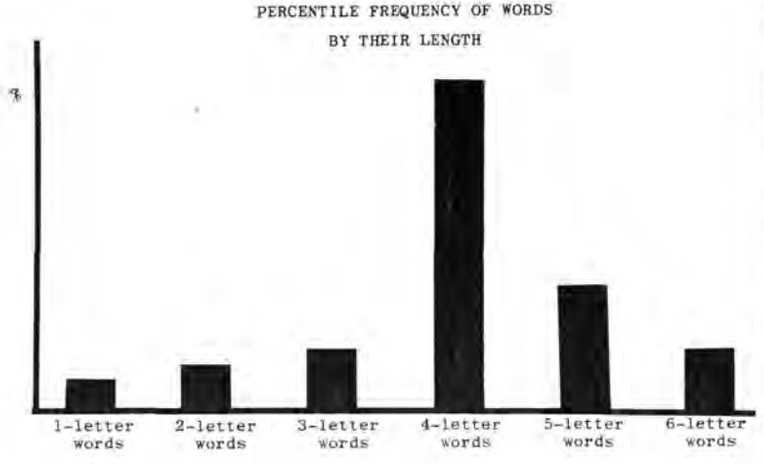
in the words and comes up with a frequency distribution of the words by their length. He finds a preponderance of 4-letter words and forms a hypothesis that the book is a modern novel and ventures a prediction that it will be a best seller and also banned by the Postmaster General. Then he looks for particular words and counts them and confirms the hypothesis.

His colleagues join him, asking other general questions and finding their answers in the content of the book. They learn a great deal about classes of books, how they differ from one another and of their effects on the community. Although he has learned much about the nature of books, infinitely more, in certain areas, than the physical scientist, his techniques falter in the area of the individual book, its characteristics and his ability to make entirely reliable predictions about it. If it is important to learn something about the individual book, then there is need for a technique which can read it completely. Such a technique has not yet appeared but some progress has been made in its development.



We finally bring the book in desperation to the psychoanalyst in the hope that he will be able to read it. Well, actually he doesn't, but he asks the author to select portions and read them while he listens. Of course, the author is biased and he reads what he wants to read or, if there is "good transference," those passages which he thinks the analyst would like to hear. And the analyst himself doesn't always hear with equal acuity but depending on his school or on his preconceived notions, is deaf to greater or lesser portions of the data.

Nonetheless, this anecdotal, biased, and unverified patchwork may be the closest approximation which we have to the rich and almost inexhaustible fund of information which reposes in the individual human brain and to a significant extent, determines his behavior—and like all scientific methodologies was not born perfect and complete—and there are increasing numbers of analysts who recognize that.

Selection Necessary

Even some of the unavoidable biases in the data may not be all bad. To deal with all of the stored information would be impossible. Some selection is clearly necessary and there is some chance that the selection which the subject employs may have some relationship to the actual weightings of the data in his affect and behavior. Furthermore, psychoanalysis has been largely employed as a therapeutic technique and clinical therapy in other branches of medicine has not always been characterized by the strictest adherence to scientific methodologies. The increasing recognition of its unique values and limitations as an instrument of research and its critical use in that connection by trained and qualified observers is a worthwhile goal.

If it be felt that I have attached increasing values to the disciplines as I have enumerated them, I have done so only to counteract a hierarchical tendency in the opposite direction which I fear exists today.

There are no better or worse disciplines except with respect to their relevance to particular problems. In the case of the brain, the biological disciplines have made and will continue to make remarkable progress toward understanding its structure, its metabolism, its functional interrelationships and the mechanisms which underlie behavior and have solved or will solve those mental disorders which are the result of disturbances there.

But in the area of information, content and experience, stored as it is in the complex interrelationships of 13 billion neurons, biology is most pretentious if it thinks that it can unravel them by means of its tools. There may some day be a biochemistry or a biophysics of memory—but not of memories.

Liver Triglycerides Increased By Consumption of Alcohol

National Heart Institute scientists have found that large single doses of alcohol in rats interfere with pituitary control over the fat transport system. As a result, excessive amounts of triglycerides (neutral fat) are mobilized from adipose tissue as free fatty acids and carried by the plasma to the liver, where they are recombined with glycerol and deposited in this organ.

This derangment of fat transport may be important in the development of the cirrhosis often found in alcoholics, in which the chronic deposition of excessive fat in the liver is thought to lead eventually to necrosis.

Increases Measured

Single orally administered doses of 4.8 grams of alcohol per kilogram of body weight (equivalent in humans to about six double martinis) resulted 18 hours later in a threefold increase in liver triglycerides in female rats. Larger doses increased liver triglycerides almost fivefold.

That these effects following a single large dose were due in the main to the mobilization of fatty acids from adipose tissue rather than to an increased synthesis of fatty acids by the liver was shown by the linoleic acid content of the deposited fat. This unsaturated fatty acid cannot be synthesized by the rat, but is of dietary origin.

When assayed by gas chromatography, the liver fat deposited by action of the alcohol was found to have virtually the same linoleic content as adipose tissue. Similar results were obtained when the oleic acid content was assayed.

Since the concentration of both fatty acids in liver reflects that in adipose tissue, little if any of the fat deposited as a result of the alcohol could have come from fatty acids synthesized by the liver.

Mechanism Not Known

The finding that alcohol did not produce these effects in rats whose pituitaries had been removed suggested that the effects in alcohol on fat transport were mediated through hormones from this master gland. Investigation of the effects of alcohol on the pituitary-adrenal axis indicated that alcohol causes the pituitary to release ACTH and perhaps other hormones important in fat mobilization. However, the mechanism by which alcohol does so is not known.

Catechol Amines Involved

The scientists found that pretreating rats with certain adrenergic blocking agents prevented the alcohol-induced fat deposition in liver, suggesting that the catechol amines may also be involved in the process. It is not yet clear whether the protection conferred by these agents is due to their blocking the action of amines at nerve endings which innervate fat cells or to their blocking the release of pituitary hormones.

The experiments were conducted by Drs. B. B. Brodie, H. M. Maling, W. M. Butler, Jr., and R. P. Maickel, of the Laboratory of Chemical Pharmacology, and by Dr. M. G. Horning, of the Laboratory of Cellular Physiology and Metabolism. Their findings were reported at the Symposium on Neurological and Hepatic Complications of Alcoholism held in New York.

In different types of experiments, Dr. C. S. Lieber and colleagues of Boston, grantees of the National Institute of Arthritis and Metabolic Diseases, have results which indicate that alcohol stimulates the synthesis of fatty acids in the liver. It remains to be seen which process is predominant in the genesis of chronic fatty liver produced by alcohol in animals.

AGING

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sons if they have high blood pressure. If, in future work, the EEG patterns can be correlated with brain function, the conclusion may be that a degree of hypertension is sometimes a protective mechanism for older persons rather than being wholly bad.

In conclusion I will mention the growth of scientific interest in aging, particularly as evinced by NIH programs. Calendar year 1958 was the first year in which CAR felt it had an accurate measure of NIH extramural research in aging. That year there were 274 projects costing about $4.5 million. In 1959 there were 404 projects at a value of about $7.7 million. This year, as of January 31, there were 582 projects costing about $12.5 million. At this rate of increase, 1961 will total about 700 projects with a value of about $20 million.

Antitumor Agent Action Mechanism Studied at NCI

Studies of the mechanism of action of the antitumor agent, 6-mercaptopurine (6-MP), are important to an understanding of resistance to the drug and to development of more effective derivatives.

Results of one such study, summarizing data on the effects of 6-MP upon nucleic acid metabolism of mouse leukemia L1210 cells *in vitro*, have been reported by Dr. Jack D. Davidson of National Cancer Institute's Clinical Pharmacology and Experimental Therapeutics Service.

Drug-sensitive and drug-resistant leukemic cells were compared with respect to utilization of radioisotopic precursors for the formation of nucleic acid purines. Both lines showed similar rates of nucleic acid synthesis, but the details of the metabolism were different.

Metabolism Traced

The sensitive line showed much greater utilization of labeled hypoxanthine (purine precursor); utilization for adenine formation was greater than for guanine formation. Resistant cells utilized labeled glycine (amino acid precursor) to a greater extent than the sensitive ones, and the utilization for guanine formation was greater than for adenine.

6-MP, which is similar to hypoxanthine except for the substitution of a mercapto (SH) group for a hydroxyl (OH) group, inhibited the incorporation of hypoxanthine and glycine into the adenine nucleotides (moieties of nucleic acid) in the sensitive cells, but had no effect on the guanine nucleotides.

Hypothesis Upheld

These findings support the hypothesis that 6-MP is metabolized to its nucleotide, and this produces a metabolic block in the conversion of inosinic acid (hypoxanthine nucleotide) to adenylic acid (adenine nucleotide). The common pathway for these two precursors lies between inosinic acid and adenylic acid.

In the resistant cells, 6-MP inhibited profoundly the incorporation of hypoxanthine into both the adenine and guanine moieties; utilization of glycine was unaffected.

These results suggest that the 6-MP block in the resistant cells is located on the pathway from free hypoxanthine to inosinic acid. This pathway is of limited capacity in the resistant cells and is incapable of producing sufficient 6-MP nucleotide to inhibit the conversion of inosinic acid to adenylic acid.

Resistance is, therefore, correlated with the cell's loss of the capacity to convert free 6-MP to its nucleotide derivative, which appears to be the form responsible for antitumor activity.

The work is reported in a recent issue of *Cancer Research*.

Rare Disease Affects Oral, Ocular Tissue In Carolina Families

A rare hereditary disease of the oral and ocular tissues was recently described by Dr. Carl J. Witkop, Jr., Chief, Human Genetics Section, Clinical Investigations Branch, National Institute of Dental Research.

Speaking before a joint meeting of the International Academy of Pathology and the American Association of Pathologists and Bacteriologists, Dr. Witkop reported that the genetic syndrome occurred principally among a collection of family groups in North Carolina and that it appeared to be similar to, and perhaps identical with, the white sponge nevus described by Dr. A. B. Cannon in 1935.

The Cannon type normally involves the vaginal and anal mucosa; however, these sites were not affected in the group surveyed by Dr. Witkop with Dr. John B. Graham and Clemm R. Shankle of the Department of Pathology, University of North Carolina Medical School, and other investigators from the Ophthalmology Branch of the National Institute of Neurological Diseases and Blindness.

Termed as Hereditary Intraepithelial Dyskeratosis, the disease was characterized by lesions on the buccal mucosa, floor of the mouth, side of the tongue, as well as the bulbar conjunctival.

Belief Supported

History, physical findings, histological appearance and histochemical reactions supported the belief that both oral and ocular symptoms were local manifestations of the same disease process.

There were some indications that the syndrome was subject to seasonal exacerbations. Careful examination, however, failed to reveal any evidence that it was due to a local geographic factor such as an allergen or occupational hazard.

Other data also tended to eliminate viruses, vitamin deficiencies and microbial infections as the responsible factors.

Three Swedish Scientists Describe Perinatal Studies

By Pat MacPherson

Information Office, NINDB

Perinatal research studies in Sweden were recently described to staff members of National Institute of Neurological Diseases and Blindness' Collaborative Project by three visiting scientists, Drs. Lars Engstrom and Petter Karlberg, Karolinska Hospital, Stockholm, and Dr. Gosta Rooth, of the University Hospital, Lund. The lecture culminated a three-week visit to NIH by the investigators, who also visited several of the collaborating institutions.

In opening remarks, Dr. Engstrom described a pilot study of labor and delivery, including 120 mothers, which was initiated last January in the Obstetric Clinic, Karolinska Hospital. Psychological studies of mothers during and after pregnancy are included in the project.

"Comparisons of our results with those of the NINDB study will be of great interest," he said, "particularly in view of the differences in delivery techniques and anesthesia usage. In Sweden, the forceps delivery rate is only 7 percent, as compared to about 70 percent in the U.S., and some 40 percent of mothers have no anesthesia during delivery."

A related study of respiratory adaptation in newborns is also underway at the Clinic. Results of this work indicate that such adaptation is most crucial during delivery and the first seconds of life. Long-term studies of drug-induced labor were described which suggest that rates of complications and injuries in these cases are considerably higher than in normal labor. The hormonal aspects of labor and delivery are also being investigated.

For the past five years, the Pediatric Clinic of Karolinska Hospital has been cooperating in an international study of children's development, coordinated by the International Child Center, Paris. Results of physical and psychological examinations of 209 children followed from birth, as well as results of ancillary studies, were outlined by Dr. Karlberg. Data from the Stockholm study will be compared with findings of similar groups in nine major cities at a conference next October.

Oxygen Levels Studied

Dr. Rooth, who is associate professor of internal medicine at the University Hospital, Lund, summarized his studies of oxygen and carbon dioxide metabolism in mothers and newborn babies. His findings show that fetal oxygen tension levels are lower than maternal, and that oxygen levels in amniotic fluid are identical to those in the tissues of the infant.

The investigators unanimously agreed that the opportunity to observe the Collaborative Study in operation will be of great value in conducting their own studies. Befor their return to Sweden, Drs. Rooth and Engstrom visited collaborating institutions in Providence, Minneapolis, and Portland, Oregon. The group had previously seen studies in progress at Boston and Philadelphia.

The scientists who described Swedish perinatal research studies are (left to right): Dr. Gosta Rooth, Dr. Petter Karlberg, and Dr. Lars Engstrom.

NHI Conducts Course For 160 Physicians

NHI was the scene last month of a week-long course entitled "Current Research in Cardiovascular Disease," given by the staff of the Heart Institute under sponsorship of the American College of Physicians.

A part of the ACP's schedule of seven post-graduate courses for the spring of 1960, the session was attended by 160 physicians from all parts of the United States, as well as three from Canada and two from Puerto Rico.

Nine physicians from the PHS Division of Hospitals attended as guests of the Heart Institute.

Dr. Luther L. Terry, Assistant Director, NHI, directed the course, and 42 NHI staff members participated.

Focused around the research program of the Heart Institute, the course was aimed at acquainting internists with some of the many facets of cardiovascular disease currently under investigation.

The faculty discussed the research most applicable to clinical medicine, and supplemented this material with background information and reports on related work in other institutions.

OBITUARIES

Amy L. Nifong, Chief of the Audit Unit, Accounting and Auditing Section, Financial Management Branch, died May 11 in the Clinical Center after a long illness.

A native of Piney Point, Md., Mrs. Nifong came to NIH in 1940 as a clerk-stenographer. She had received several "excellent" efficiency ratings and would have received a 20-year service pin at the next awards ceremony. She is survived by three brothers.

* * *

Helen D. Henderson, a statistical clerk in the Epidemiology Section, Field Investigations and Demonstrations Branch, NCI, died May 17 in the Clinical Center after a long illness.

Mrs. Henderson had been associated with NIH since 1956. Prior to that time she was with the President's Commission on Veteran's Pensions.

A resident of Kensington, Md., Mrs. Henderson is survived by her husband, Harry.

* * *

Saxton Y. Howard, a physical science technician in the Section on Primate Neurology, Surgical Neurology Branch, NINDB, died May 23 in the Clinical Center. He had been in ill health for several years.

Mr. Howard came to NIH in 1956 from the Government Printing Office where he had been a bindery operator. He is survived by his wife, Bessie.

NEW APA PRESIDENT VISITS EXHIBIT

Dr. Robert H. Felix, Director of NIMH (center), and Mrs. Felix talk with Dr. Anthony Hordern, an NIMH Visiting Scientist, at the recent meeting of the American Psychiatric Association in Atlantic City prior to Dr. Felix's induction as president of the Association. The exhibit in the background depicts the project on clinical research methodology recently completed at the NIMH-Saint Elizabeths Clinical Neuropharmacology Research Center by Dr. Hordern and Dr. John G. Lofft, a resident psychiatrist at St. Elizabeths. The exhibit, produced in collaboration with the Medical Arts Section, DRS, is now on display in the CC lobby and will remain until June 15.

DRAMA

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ing hours.

It is interesting, too, that Edward Zadai, Miss Badger's Administrative Assistant, was the Clinical Center's first AOD, and that he still works closely with the three who have taken over.

Some of the problems they encounter call for the wisdom of a present-day Solomon.

One night a patient arrived at the CC from a rural section of Alabama. Unable to read or write, he had been escorted to Bethesda by his 17-year-old son who helped the AOD fill out the papers necessary for admission.

Problem Solved

When that was accomplished the son was free to leave, and that's when the problem arose. The youth had no money for his trip back home. What to do?

The AOD decided he needed advice. He phoned the Senior Administrative Staff Officer, who is on 24-hour call, and was told to take care of the young man out of the Patient Fund supplied by the Recreation and Welfare Association of NIH.

There was not enough cash on hand, however, to pay for meals and transportation to Alabama, so the AOD gave the lad enough to pay for an overnight stay in a local rooming house and told him to return in the morning.

At that time the Social Service Department took over, bought the young man a bus ticket, supplied him with eating money for his trip, and sent him home to Alabama.

Although senior staff members are available to give advice, it is the AOD who must be on the alert for knowing when and where action must be taken.

An example of this type of alertness is the "detective" work he does at admission time. He must be certain that all information given him by the patient is absolutely accurate. If it is not, an avalanche of troubles could descend upon the Clinical Center.

Accuracy Essential

For instance, the information given by the patient regarding his next of kin must be correct. This is important because the next of kin must be notified in the event of the death of the patient.

Often a woman will state that she is separated from her husband and name a sister-in-law or someone else far removed, as next of kin. She neglects to mention that she is not *legally* separated from her husband. In such a case, of course, her husband still is in fact her next of kin.

Trouble Averted

Were the husband not notified of her death, a long string of legal suits could ensue for the Clinical Center. The quick-witted AOD stops this trouble before it starts by first spotting something amiss and then constantly prodding for complete information.

Detective, troubleshooter, interviewer, information clerk, counselor, the AOD moves efficiently from job to job, giving help wherever he can, and smoothing the operation of the Clinical Center all through the night.

NIH Director Receives Honorary D.Sc. Degree At Catholic University

Dr. James A. Shannon, Director of NIH, was one of two men who received honorary degrees from the Catholic University of America at its 71st annual commencement exercises on Sunday, June 5.

The Doctor of Science degree, conferred upon Mr. Shannon by Archbishop Patrick A. O'Boyle, Chancellor of the University and presiding officer at the ceremonies, was in recognition of his outstanding accomplishments in the field of medical research.

Dr. Shannon has also received honorary degrees from the College of Holy Cross, the University of Notre Dame, Duke University, Providence College, and Loyola University.

He was also awarded the Medal of Merit, one of the highest awards for civilian service in government, for his malaria research activities with the National Research Council during World War II, and his service as a consultant on tropical diseases to the Secretary of War.

John A. McCone, Chairman of the Atomic Energy Commission, received the honorary degree of Doctor of Laws at Sunday's commencement exercises.

New Pediatric Branch Created in NIAMD

The creation of a Pediatric Metabolism Branch within NIAMD was approved recently by the Surgeon General, PHS.

This branch, headed by Dr. Paul A. di Sant' Agnese, who joined the NIAMD staff last January, is considered one of the most eminent investigators of the diseases of childhood.

Dr. di S. Agnese

In addition to many other pioneer findings in cystic fibrosis, his discovery that children with this disease manifest their condition through an increased salt content of their perspiration resulted in a "sweat test" which is widely used in diagnosis.

He also participated in the early work on immunization of infants against diphtheria, whooping cough, and tetanus.

Dr. William O. Jones, recently of the Arthritis and Rheumatism Branch, NIAMD, will assist Dr. di Sant' Agnese in the clinical investigations related to cystic fibrosis and other childhood diseases.

Aging Problems Topic Of Dr. Mohler's Talk

Dr. Stanley R. Mohler, Medical Officer of the Center for Aging Research, DGMS, spoke on the problems of gerontology in the United States at a meeting of the Section on Geriatrics and Gerontology of the Pan American Medical Association recently in Mexico City.

Dr. Mohler discussed the problems of health, income, retirement, and housing which face the aged, and current research on the process of aging.

The Pan American Medical Association promotes closer relations among the members of the medical and dental professions in the 22 nations of the Western Hemisphere, grants post-graduate scholarships, and seeks generally to further scientific knowledge.

Lab Refresher Courses Offered at CD Center

A series of laboratory refresher training courses, varying in length from one to four weeks, will be presented by the Laboratory Branch of the Communicable Disease Center in Atlanta, Ga., during the period of October 10, 1960, through April 7, 1961.

The courses, which are open to members of the Commissioned Officers Corps at NIH, will deal primarily with laboratory methods in the study and diagnosis of various infectious diseases. A few unscheduled courses will be given by special arrangement.

Interested personnel may obtain information and application forms from the Training Officer, Communicable Disease Center Laboratory Branch, USPHS, 50 Seventh St., N.E., Atlanta, Ga.

Singing Capital Chorus To Present Program

The annual NIH program of barbershop harmony by the Singing Capital Chorus will be presented Monday, June 13, at 8 p.m. in the CC 14th floor auditorium.

The chorus is the D.C. Chapter of the Society for the Preservation and Encouragement of Barbershop Quartet Singing in America, Inc.

The chapter's smaller 25-man chorus and several quartets will also appear on the program which is being produced by Robert L. Campbell, Publications and Reports Branch, NIMH. The master of ceremonies will be William G. Baylis, Executive Officer, NIAMD.

Employees of NIH, CC patients, and their families and friends are invited to attend the concert free of charge.

WIELDS A BIG STICK, SPEAKS SOFTLY

Moments after thanking his colleagues for the matched set of golf clubs presented to him at the party in his honor in Wilson Hall, Jack Fletcher tries out the driver with the full approval of Mrs. Fletcher—Ed. Note: who is doubtless the most admiring caddy he has ever had.

FLETCHER

(Continued from Page 1)

buffet supper in the Terrace Room of the Officers' Club at the Naval Medical Center, attended by 90 Information staff members from NIH, PHS, and other Governmental agencies, members of their families, and friends.

At both gatherings, Mr. Fletcher was presented with gifts from his friends and colleagues. The presentations were made by Dr. Shannon.

Fletcher Replies

In his reply of appreciation and farewell at the Friday afternoon party, Mr. Fletcher spoke briefly but feelingly of his decade of association with NIH. He said in part:

"I feel I have not had a job or a position at NIH. I have had a place. The place one has in any human endeavor can be measured in only two ways: whether the work to be done is important, and whether the people one works with are good people. By both of these criteria, my place at NIH has been rewarding."

Guests at the Wilson Hall party, where Mr. and Mrs. Fletcher received from 4 o'clock on, included friends from all levels of NIH, PHS, DHEW, other branches of the PHS "family," and former associates who have since retired or transferred.

Gifts presented to Mr. Fletcher included a matched set of golf clubs and golf bag, a framed testimonial scroll signed by Dr. Shannon and members of his staff, and a leather-bound scrapbook containing the signatures of his Information Officer associates and photographs depicting events during various stages of his career at NIH.

Committee Established For Data Processing

The NIH Computation and Data Processing Committee was established recently to advise the Division of Research Services on long-range program needs for electronic data processing.

The committee will serve as a policy-making and consultative body on the research role of computer services available through the DRS Computation and Data Processing Branch.

Chris A. Hansen, DRS Director, is executive secretary. Dr. Frederick S. Brackett, Chief, Section on Physiology, Laboratory of Physical Biology, NIAMD, was elected chairman at the first meeting, May 20.

Other members are John A. Beglin, Management Analysis Branch, OAM; Dr. Harold F. Dorn, Chief, Biometrics Research Branch, NHI; and Dr. John Z. Hearon, Chief, Office of Mathematical Research, NIAMD.

Also: Dr. Fay M. Hemphill, Assistant Chief for Training Grants, DRG; Dr. Seymour S. Kety, Chief, Laboratory of Clinical Science, NIMH; Joseph S. Murtaugh, Assistant Chief, Office of Research Planning, OD; and Dr. George Z. Williams, Chief, Clinical Pathology Department, CC.

10 Work Groups To Discuss All Aging Problems

The 2,800 delegates who will attend next January's White House Conference on Aging will meet in 10 major work groups to prepare recommendations on problems and opportunities of the nation's older citizens, according to a recent DHEW announcement.

The 10 groups will cover 20 broad subject areas embracing virtually all problems involving older people.

This was one of the actions taken at a meeting in Washington, D. C., on May 12 and 13 by the 150-member National Advisory Committee. The meeting was attended by 116 members from 47 States and three Territories.

Governors of the 53 States and Territories will be asked to appoint national conference delegates by August 1 or within 10 days after each State conference, whichever is later.

Six State meetings have been held, and others are scheduled prior to October. These will develop State recommendations to be presented at the National conference next January 9-12.

Two New Pamphlets Issued by DGMS

Two new information pamphlets were issued recently by DGMS.

Highlights of Research Progress in General Medical Sciences 1959, PHS Publication No. 739, is a selection of items of interest on research studies supported by the Division of General Medical Sciences during 1959. The different areas of program activity are grouped as follows: The Chemistry of Life Processes; Fundamental Genetics, Cell Biology, and Human Development; Clinical Research; and Research in Public and Environmental Health.

Summary of NIH Research Programs in Aging 1959, PHS Publication No. 740, is a brief report on research in aging carried out or supported by the NIH during the calendar year 1959, prepared by the NIH Center for Aging Research for non-government groups interested in the problems of aging.

Single copies of these pamphlets may be obtained without charge from the Information Office, DGMS.

CORRECTION

In the preceding issue of the *Record*, in the story on Federal Employee Health Benefits Program, the number of the HEW form, "Certification of Incapacity," was erroneously printed as 572. The correct number is 372.