

the NIH Record

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

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NATIONAL INSTITUTES OF HEALTH

Rat Killer Helps Uncover Facts on How Vitamin K Enables Blood to Clot

Warfarin, a powerful rat killer, has helped uncover new facts about how vitamin K gives blood the ability to clot.

Through the use of warfarin, Dr. John W. Suttie and a team of University of Wisconsin biochemists have identified a site in the body where vitamin K may exert its vital influence. Their work was supported by a grant from the National Institute of Arthritis and Metabolic Diseases.

Vitamin K's effectiveness in preventing hemorrhages was discovered 35 years ago. Much progress has been made in identifying active forms of the vitamin and in establishing dietary requirements, but how and where it works in the body has remained a mystery.

Warfarin, which inhibits blood clotting, has helped to partially solve this mystery. In large doses,

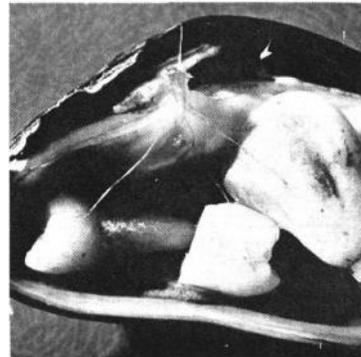
(See VITAMIN K, Page 8)

Natural Glues in Sea Creatures May Aid Search for Useful Dental Bio-Adhesives

By Hedy Shpritz

"Cockles and mussels," barnacles, and lobsters—no, not for sale on the streets of Dublin, but as subjects in the search for bio-adhesives.

Because natural glues made by some of these animals stick so tenaciously in the rough seas, the National Institute of Dental Research is supporting studies to see if either natural adhesives or synthetic ones designed like them could be used for dental fillings or to attach braces or dentures to teeth.



A mussel has attached to human and cow teeth placed in a tank. Propylene phenoxylol relaxed this specimen so the animal and its attachment threads can be seen.

Dr. Michael Cook from the University of Newcastle upon Tyne, England, visited the United States recently to compare notes with NIDR-supported scientists and consultants.

Describing his studies of water-dwelling, adhesive-secreting animals, Dr. Cook told an NIDR seminar that some, such as the snail, secrete a temporary adhesive that helps them move about while others, including the barnacle and the mussel, make a more permanent glue to cling to a tide-swept home.

Perhaps the temporary glues (most of which are mucopolysaccharides) could be adapted for holding full or partial dentures on to teeth.

The permanent adhesives, which appear to be protein, might one

(See BIO-ADHESIVE, Page 7)

Instrument Symposium And Equipment Exhibit To Be Held October 6-9

Plans have been completed for the 19th Annual Instrument Symposium and Research Equipment Exhibit to be held at NIH Oct. 6-9.

Some 40 scientists will discuss recent developments in research methods and instrumentation in the symposium. They will participate in daily afternoon and evening sessions.

The exhibit will feature the latest products of 73 of the nation's leading manufacturers of research equipment.

Most of the research instrumentation will be grouped for exhibition according to function. This will afford the visitor a ready basis for comparison of equipment items.

Complementing the exhibit, technically qualified representatives will head special instrumentation sessions twice daily throughout the meeting.

Dr. Kupfer Named First Director of Nat'l Eye Institute

Appointment of Dr. Carl Kupfer as the first Director of the new National Eye Institute was announced by Dr. Robert Q. Marston, NIH Director.

Dr. Kupfer presently is professor and chairman of the Department of Ophthalmology at the University of Washington Medical School in Seattle.

The National Eye Institute was authorized by Congress on Aug. 16, 1968. Since that time, Dr. Edward F. MacNichol, Jr., Director of the National Institute of Neurological Diseases and Stroke, has served also as Acting Director of the Eye Institute.

As the NEI's first Director, Dr. Kupfer will administer intramural



Dr. Kupfer's "special scientific and administrative qualifications" and his background in ophthalmic research were cited when his appointment as NEI Director was announced.

and extramural research programs on the causes, prevention, diagnosis, and treatment of blinding eye and visual disorders.

In announcing the appointment, Dr. Marston said, "Dr. Kupfer's special scientific and administrative qualifications and his broad background in several different areas of ophthalmic research will be important in establishing the programs and directing the growth of the new Institute."

(See DR. KUPFER, Page 7)

NIH Scientists Design Glass Neck-Breathing Device

A glass retainer used to maintain a surgical opening in the neck for breathing has been developed by investigators of the National Institute of Dental Research and National Cancer Institute.

The device, developed by Drs. Alfred S. Ketcham and Jean B. deKernion, NCI, and Dr. Herbert Swerdlow, NIDR, may replace those currently made of plastic or metal.

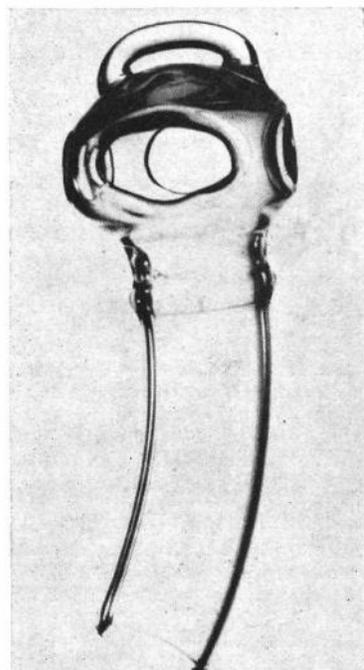
The retainer enables patients to breath through an opened windpipe in cases of accidental obstruction or removal of a cancerous larynx, by preventing the opening from contracting.

Others Cause Reaction

Currently, many of the 25,000 cancer patients are using plastic and metal retainers. But these often cause allergic reactions and irritation leading to abscesses and respiratory infections.

These reactions have not occurred in the 100 patients using the glass retainer, however. In addition, the tube is easy to clean, does not tarnish or become discolored; and is considered to be more comfortable than the plastic or metal types.

(See BREATHING DEVICE, Page 6)



This side view of a glass retainer shows the cover cap, designed so air escapes from each side.

the NIH Record

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Dr. Seymour Perry, associate director for Clinical Trials, National Cancer Institute, has been named associate editor of "Blood," the Journal of Hematology. Dr. Perry joined NCI in 1961, and was named to his present position in 1968.

Dr. Marshall Is Named NIH Grants Associate

Dr. John E. Marshall recently joined the NIH Grants Associates Program. This program, administered by the Division of Research Grants, provides a year of training in science administration.

Dr. Marshall came to NIH from Rensselaer Polytechnic Institute where he had been an assistant professor in the Psychology Department since 1967. His work there included instruction of undergraduate and graduate classes in physiological psychology, psychology of sensation and perception, and sensory and perceptual processes.

He also directed their Psychology Laboratory and Animal Colony.

Dr. Marshall graduated from Muhlenberg College with a B.A.

NIH Television, Radio Program Schedule

Television

NIH REPORTS

WRC, Channel 4
Sundays—4:55 p.m.

August 10

Dr. Ralph E. Johnson,
chief, Radiation Branch,
NCI

Subject: Radiation Treatment of Cancer (Part 1)

August 17

Dr. Ralph E. Johnson
Subject: Radiation Treatment of Cancer (Part 2)

Radio

DISCUSSION: NIH

WGMS, AM-570—FM Stereo
103.5—Friday evenings—
About 9:15 p.m.

August 8

Dr. John C. Bailar III,
head, Demography Section,
NCI

Subject: Third National Cancer Survey

August 15

Dr. W. French Anderson,
head, Section on Human
Biochemistry, NHI

Subject: Genetic Surgery:
Possible Correction for
Genetic Defects

Both interviews take place during intermission, Marlboro Festival Concerts.

degree in psychology in 1957. He received an M.A. degree in general psychology from Temple University in 1959, and a Ph.D. degree in general-experimental psychology from the same university in 1963.

Hazel Carr's Success in Public Speaking Proves Women's Legendary 'Talk-Ability'

By Thomas Bowers

Through the ages, the ability of women to talk has been legend. If the tales are true, it follows that when a woman is thrust into a competitive speaking situation—other than a social occasion or issuing verbal instructions to a husband—she should excel.

Hazel Carr, clinical nurse, CC Nursing Department's Heart Nursing Service, was in several speaking situations recently and she did excel.

On April 20, she won first prize (a gold trophy) in the Dale Carnegie Alumnae Association annual public speaking competition in Washington, D. C.

Back in April? That's not current news! Right! But the winner of that competition earned the right to go on to bigger and better speaking engagements in May—which Hazel did.

Using the same 5-minute speech, describing "her first ride on a camel" while traveling in Egypt in 1963, she entered regional competition in East Brunswick, N. J. This time she competed with speakers from Washington, D. C., Maryland, Virginia, New York, Delaware, and New Jersey.

Hazel won first prize again—another gold trophy.

Her victory resulted in an invitation to compete in the third and final competition of the year early in July. It was held in Pittsburgh, and for 2 days contestants from all around the country spoke. Hazel emerged among the five finalists.

That camel that she had spoken of had taken her a long way, but apparently it finally tired, for Hazel came in fifth. Actually, this was quite an accomplishment considering that she competed against some of the best public speakers



Hazel Carr addresses an audience of physicians, nurses, and other medical personnel at a Clinical Nursing Conference at the CC.

in the country. For this honor she received another gold trophy.

Miss Carr first became interested in public speaking following her graduation from Johns Hopkins University in 1960. She foresaw the skill as being useful to her in her nursing career.

Several years later, she joined the Dale Carnegie Institute of Public Speaking. Following graduation, she maintained an active membership in its Alumnae Association.

In 1968, at the first of the three Annual Convention speaking competitions, Miss Carr managed to reach third place before she was eliminated. The improvement this year is obvious.

Hazel Carr feels that public speaking has been enormously beneficial in her nursing work. She has been a featured speaker in Clinical Nursing Conferences presented as part of the educational program of the CC Nursing Department.

She believes her speaking experience has helped improve her ability to communicate with others, not only in public speaking situations, but in her day-to-day communication with patients.

She plans to continue her hobby and hopes to enter the 10-minute category of competition next year—that is, if the camel will agree.



Edith A. Jones has been named chairwoman of the International Committee of Dietetic Associations. Miss Jones, chief, CC Nutrition Department, is a member of the American Dietetic Association which will act as host for the 5th International Congress of Dietetics to be held in Washington Sept. 8-12.—Bradford Bachrach Photo.

Richard Pierson, DRS, Elected Officer in AALAS Area Branch

Richard Pierson, Division of Research Services, was recently elected secretary-treasurer of the National Capital Area Branch of the American Association of Laboratory Animal Sciences.

Mr. Pierson is a unit head in the rodent and rabbit production section, Laboratory Aids Branch,

OES Awards Contract For Research Facilities At NIH Animal Center

Award of a contract for construction of three buildings at the NIH Animal Center in Poolesville, Md. has been announced by the Office of Engineering Services.

A primate building, totalling approximately 20,000 gross square feet will provide for about 1500 large Rhesus monkeys.

This building is planned as a holding facility, but will contain rooms large enough for family cage units to be placed inside so that it can also serve as a breeding facility.

It will be constructed so that it can be easily converted for housing baboons, chimpanzees, and large monkeys.

Construction of two structures, totalling about 8000 gross square feet, are also included in the contract. These two buildings, on 40 acres of land, will provide space for comparative brain and behavioral studies for the National Institute of Mental Health.

Studies of fundamental behavior that cannot be accounted for by present understanding of brain mechanisms will be undertaken.

Natural Settings Planned

A major gap in knowledge is related to complex learning and adaptive processes in social behavior. One reason for this lack of knowledge is that, heretofore, animals have been largely studied in laboratory settings where only limited behavior can be expressed. Experimentation under more natural field conditions may alleviate this situation.

Principal experimental techniques call for manipulation of solitary animals and social groups with and without brain lesions; the use of implanted electrodes for remote stimulation and telemetering during ongoing behavior, and observation on the effects of neuropharmacological agents and hormones.

The \$1,475,700 contract was awarded to the E. Jay Smith Construction Company, McLean, Va.

Concert by U.S. Navy Band Scheduled at CC August 12

A concert for Clinical Center patients will be presented Tuesday, Aug. 12, at 7:30 p.m., by the U.S. Navy Band on the patio east of the Jack Masur Auditorium.

In case of rain, the concert will be held in the auditorium.

NIH employees, their families and friends, are cordially invited, but patients will have priority in seating.

Arrangements for the concert were made by the CC Patient Activities Section.

Summer Aids Sometimes Stump Experts At Seminars With Volunteer Scientists



SUMMER AIDS AT SCIENCE SYMPOSIUM listen intently to Dr. Laurence H. Miller discuss the Dermatology Program in NIAMD which he directs. Dr. Anthony M. Bruno (center), NHI, is symposium coordinator. Mel Bolster, OPM, initiated the idea of aids meeting scientists.

At NIH there is a group of high-school students and college freshmen, some of them dropouts, who sometimes stump the experts.

They meet with volunteer scientist administrators 4 days a week at 8:30 a.m. at a Science Symposium, and their alert questions and answers surprise, delight, and, on occasion, leave the scientists groping for an adequate answer.

The scientists who are acting as "faculty" (there are many eminent names on the roster) discuss subjects that would not at all be amiss at medical meetings. Heart transplants, medical costs, and nutrition are just a few of the topics that have been, or will be, covered during the morning sessions.

These young people all chose to attend this symposium instead of other classes held at NIH for summer aids who are working on the reservation in labs, doing clerical jobs, or taking care of animals.

Some of the questions hurled at the scientists during the seminar are rather dynamic, in fact dynamic.

Questions Are Topical

They are concerned with such topical questions as: "Instead of heart transplants why don't you cure sick hearts? Why do doctors charge so much? Why don't hospitals care about poor people?"

The questions are patiently answered in understandable terms. At the end of each seminar all part friends.

The conference room is attractive, the chairs are comfortable, the table is large, there is a carafe of water and cups, and the entire effect gives the appearance of a high-level council meeting. But these sessions of Washington area boys and girls, most from the inner city, are probably much more relaxed and infinitely friendlier.

Mel H. Bolster, staff assistant in the Office of Personnel Management, conceived the plan of summer aids meeting NIH scientists. Dr. Anthony M. Bruno, who is

with the Artificial Heart Program of the National Heart Institute, is symposium coordinator. Mr. Bolster and Dr. Bruno also double as "faculty."

Other "faculty" consist of scientist-administrators who participated in the October 1968 session of the NIH Seminar in Science and Public Policy.

One result of the seminar, sponsored by the Committee on Staff

(See *SUMMER AIDS*, Page 6)

Clinical Studies of Drug, Urokinase, Centers on Anticoagulant Therapy

A series of clinical studies to establish the effectiveness of the clot-dissolving agent urokinase against clots obstructing blood vessels in the lungs (pulmonary embolism) is being supported by the National Heart Institute's National Blood Resource Program.

The Program has awarded 10 new contracts and extended 8 others for this research.

Current treatment has centered on general supportive measures plus anticoagulant therapy. Anticoagulants do not attack existing clots, but they help prevent fresh embolism or growth or extension of existing clots.

This provides a respite that usually enables the body's clot-dissolving mechanisms to clear the pulmonary obstructions and restore normal bloodflow.

The development of safe and effective drugs that attack clots by activating the normal clot-dissolving mechanisms of the body may prove to be a major advance against

Dr. Johnson, Biochemist, Heads Bd. of Trustees Of Community College

Dr. David F. Johnson, research biochemist in the Laboratory of Chemistry, National Institute of Arthritis and Metabolic Diseases, was recently appointed for a 6-year term on the first board of trustees for Prince George's County Community College in Largo.

This new board replaces the County Board of Education as supervisors of the 150-acre campus.

The college opened in 1958 with 185 students enrolled. Last fall the student body numbered 4300, and this September nearly 5800 are expected. About 10 to 15 percent of the 2-year college's students are of the black race.

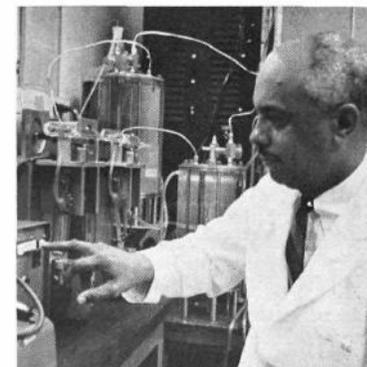
Chosen to be chairman by the 7-member board of trustees, Dr. Johnson is believed to be the first Negro to head a predominantly white college in Maryland. He is the only Negro on the board of trustees.

Coming to the Laboratory of Chemistry in 1952, Dr. Johnson continued his studies and received his Ph.D. degree from Georgetown University in 1957.

He conducts and helps direct research in steroid metabolism in the laboratory.

Dr. Johnson is a member of numerous scientific organizations and is also a member of the panel of DHEW Grievance Review Officers and DHEW Equal Employment Opportunity Hearing Officer Panel.

He was recently elected Vice President of the Board of Directors of the NIH Federal Credit Union.



Dr. David F. Johnson, NIAMD biochemist and new chairman of the board of trustees of a Maryland community college, has had long-standing interest in steroid metabolism.

clotting complications that are so often directly responsible for the disabling or lethal consequences of heart and blood vessel diseases.

The major purpose of the present series of studies is demonstration of the therapeutic value of these drugs—collectively called fibrinolytic agents—in carefully controlled trials.

NCI Contractors to Seek New Ways for Detecting Early Lung Cancer Cases

Improved methods of early detection of lung cancer will be developed by investigators at the Johns Hopkins University working under a National Cancer Institute contract.

Dr. Nathaniel I. Berlin, Scientific Director for General Laboratories and Clinics, is Institute project officer for the contract.

Need Is Urgent

New methods of discovering lung cancer during its early stages are urgently needed. Since standard chest X-rays cannot detect tumors smaller than 1 centimeter in diameter, lung cancer often goes undiscovered until the disease is well advanced, as reflected in the present low survival rates.

The investigators plan to develop improved methods of detecting cancer cells present in sputum specimens. This technique, which offers the best potential for the discovery of very early lung cancers, could be used for the mass screening of high-risk individuals.

It is based on the same principle as the highly successful "Pap" test, used to detect early cervical cancer. Methods and instruments for collecting, processing, and examining sputum specimens will be developed and evaluated.

Source to Be Pinpointed

The investigators will also work on improved techniques to pinpoint the exact source of malignant cells once they have been detected in the sputum.

They plan to develop a new, flexible bronchoscope (an instrument enabling a doctor to see inside the lung) that can extend into now-inaccessible areas of the lung to locate small tumors. This would double the present capacity to diagnose lung cancer. Special equipment will be developed to use with the bronchoscope in obtaining cell specimens from suspicious areas.

Along with this, Project scientists will attempt to improve X-ray diagnosis. Polytomography, a series of X-rays taken at 5 millimeter intervals, may prove useful in the detection of small tumors.

Will Test Tantalum Dust

Tantalum dust, a possible contrast agent for lung X-rays, will be tested. Preliminary studies indicate that it excels barium and iodine in its opaque qualities and should produce more detailed outlines of lung structures.

The Project will be carried out in two phases. A pilot phase of 18-24 months will be used for technique development, with extensive screening of approximately 1,500 "high-risk" individuals, such as

Family Medicine Survey May Help Develop Realistic Training Programs for G. P.'s

Doctors in general practice did not necessarily enter this branch of medicine because it appealed to them.

This is one finding in a study of family medicine as practiced in upstate New York, sponsored in part by a General Research Support grant from the Division of Research Resources, Bureau of Health Professions Education and Manpower Training.

Two University of Rochester medical students, surveying and visiting 103 urban and rural physicians during the summer of 1966, found that over one-third had entered general practice because of "unfortunate circumstances," mostly financial.

Nearly one-quarter cited "impatience" as a major reason for their choice. Of those who entered general medicine by choice, variety

male cigarette smokers.

The second phase, estimated to run for more than 5 years, will involve more definitive population screening. Indicated individuals will be studied and treated for detected lung tumors, and follow-up and evaluation will be carried out.

The work will be directed by Dr. John K. Frost, associate professor of Pathology at the Johns Hopkins University School of Medicine and Director of the Cytopathology Laboratory.

Dr. Wilmot C. Ball, Jr., Director of the Pulmonary Diseases Division of the Department of Medicine, is co-principal investigator.

The Project is expected to continue for an estimated 5 to 10 years.



Raymond L. Steinberg (left), a lab photographer in the Viral Biology Branch, NCI, receives a certificate for a Special Act or Service Award and \$225 from Dr. Albert J. Dalton, Branch chief. The award was presented for improvements in photo developing procedures used in electron microscopic visualization of viruses and other biologic structures. Mr. Steinberg's innovations improve the quality of negatives and final photo reproduction, also permit faster, more efficient processing of tissue specimens.

was the most prevalent reason cited.

Despite initial reluctance to become GP's, the overwhelming number of physicians were quite satisfied with their practices at the time of the survey.

However, only about half planned to continue as they were. A third wanted to slow down; others planned to retire soon, move to a new location, or go into specialty practice.

These and other findings of the survey will be useful in developing realistic training programs for the family doctor of tomorrow.

The number of general practitioners is declining rapidly. In 1931, four out of five physicians in private practice were general practitioners.

Ratio Declines

By 1967 this ratio declined to slightly more than one in five. Fewer than 2 percent of 1967's medical graduates went into general practice.

A new medical specialty—family practice—has been discussed as a solution to the problem of providing personal medical care to an expanding population.

Out of this concept the American Board of Family Practice was created and formally recognized as the twentieth American medical specialty. The board has the approval of the AMA's Council on Medical Education and the Advisory Board of Medical Specialties.

Through this specialty board the family doctor can now become a specialist in his own right by taking an examination after completing a minimum of 300 hours of postgraduate study in medicine.

Must Renew Certification

Unlike other specialists, family practitioners must renew their certification by examination every 6 years. Hopefully, the new specialty status of family practice will attract more young doctors into the field.

Other data gathered from the Rochester study indicate the need for a strong foundation in internal and preventive medicine, the behavioral sciences, and rehabilitation in family practice training.

One interesting finding upsets the belief that the older family physician progressively with age assumes the role of clergyman and counselor.

Actually, the surveyors found that he spends less time with each

Dr. Robert J. McCune Assumes New Post As DDH Branch Chief

Appointment of Dr. Robert J. McCune as chief of the Materials and Technology Branch of the Division of Dental Health, BEMT, was announced by Dr. Viron L. Diefenbach, Division Director.

Since 1964, Dr. McCune has been with the Materials and Technology Branch at the Dental Health Center in San Francisco, Calif., which is DDH's field center for applied research and training.

Dr. McCune, a native of Victor, Mont., received his dental degree from Washington University at St. Louis in 1960.

After graduation he served his internship at the PHS Hospital at Seattle, Wash. and at the NIH Clinical Center.

From 1962 to 1964, Dr. McCune served with the Bering Sea Patrol and Operation Deep Freeze in the South Pole as a Dental Officer of the U.S. Coast Guard. He also served at Coast Guard Recruit Training Center at Cape May, N.J.

In addition to his regular dental training, Dr. McCune has taken a Master's degree in Crown and Bridge and Dental Materials from Indiana University School of Dentistry.

patient and counsels them less frequently than his younger counterpart.

The team also discovered that although a variety of equipment was found in the doctors' offices (more than half had an electrocardiogram machine) these devices were seldom used.

In fact the ECG machine was the least utilized; physiotherapy equipment was the most frequently used.

The surveyors conclude that many factors responsible for a physician's choice of general practice in the past will be less important in the future.

Increasing limitations on the scope of general practice, particularly surgery, will cut down on one of its present attractions—variety. Financial barriers to specialization are being removed by loans, higher house-staff salaries, and general affluence.

More Training Required

And with the establishment of the family practice specialty, a specified post-internship training period will be required.

The Rochester study indicates that the essence of family medicine is care of the family.

Tomorrow's family physician must not be the doctor least formally trained, but rather one who is skillfully trained in the prevention, diagnosis, and treatment of a variety of illnesses.

DRG Sociologist With 11 Grandchildren Says Every Generation Experiences 'Gap'

By Pat Gorman
NIH Information Trainee

"The 'generation conflict' is no more intense today than when I was in college—every generation thinks it has found the truth," says a grandmother of 11 who is also a sociologist at the Division of Research Grants.

Dr. Helen Tibbitts, whose special field of sociology is human ecology and political systems, finds nothing new or surprising about the existence of such a breach between old and young.

"In western society, this type of conflict has been going on at least since the time of Sir Francis Bacon. It is a more mature version of the revolt of the 2½-year-old who says 'no' to everything," she explained.

"And it is within this process—whether it be long hair, micro-

field of sociology is human ecology ternal search for such outlets. She suggested this aspect of science as a possible alternative to the westward movement of former generations.

"For young people who are inclined toward this energetic type of socialization and experimentation, social research can provide an outlet for their creativity while producing worthwhile results," she said.

Factors contributing to the need for such outlets, adaptation to new technology in particular, can be traced back in the history of western society. To illustrate by contrast, Dr. Tibbitts explained that the simple style of Pacific Island living encourages harmony between generations.

No Want, No Change

The people live generously from what nature provides: there is no crowding, no want, no change. And no revolt.

The western world, however, maintains a more rigorous climate and greater pressure of population on resources. The struggle to provide a livelihood fosters adoption of new technology which in turn gives rise to greater division of labor, specialization, and a more complex social structure.

Dr. Tibbitts stated, "A change in one component of society has far-reaching effects on others; so when you achieve results in one (for example, technology) you may bring on unintended and disliked results in other segments."

She concluded, "A lot of movement and change means the child is growing up in a world different from that of his parents' childhood." It follows logically that he will see things in a new light.

Must Find Own Way

The sociologist stated that young people have to find their own way. "The best thing an older person can do is help them explore, on an intellectual level, some of their questions and offer a wide range of experiences." She added that a lot of commotion is due to the older generation's abdication of responsibility and lack of clearly defined values.

This need for a happy medium points up sociology's practical role in social issues, that of "producing outcomes of alternative proposals," she said. Research is geared to the study of consequences which are likely to flow from change before

Blood Bank at CC Reports 13 Donors' Special Status

The Clinical Center Blood Bank reports that 13 of its donors have achieved a special status.

Samuel C. Giddings, DRS, and Robert Ginsburg, NINDS, reached the 2-gallon mark.

Joining the Gallon Donor Club were: Paul G. Waugaman, Thelma Fletcher, and Frank D. Nolan, all of NINDS; Alma R. Barclay, FIC; Fred Ederer, NHI; Dr. Gordon Gur-off, NICHD; Marie Burgess and Wilhelm E. Schmidt, DRS; Joseph E. Mercer, OD; Dr. Ronald Thompson, NIAMD, and John P. Hartinger, NCI.

Call the CC Blood Bank now, and make an appointment to donate blood, Ext. 64506.

PHS Grants and Awards For FY 1968 Tabulated In 1st Booklet of Series

A tabulation giving details on 15,703 PHS research grants awarded during FY 1968 is now available.

Publication of *Part I, Public Health Service Grants and Awards, Fiscal Year 1968 Funds* was announced by Surg. Gen. William A. Stewart.

The new booklet is one of a 5-part series published annually to list all current PHS support of medical research, research training, and construction of research facilities.

Other parts of the series will be published soon.

Single copies may be obtained without charge from the Information Office, Division of Research Grants.

Copies of Part I are also available, at \$2 each, from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C.

the actual change is made.

Dr. Tibbitts incorporates this attitude into her work as committee chairman. The committees review applications for NIH fellowships for their scientific merit and make recommendations for awarding funds.

Although sociology is considered a social rather than a medical science, Dr. Tibbitts pointed out that "sociology is basic to the sciences of health and medicine." NIH and the National Institute of Mental Health offer financial support for social research in view of its potential applications to health.

Dr. Tibbitts, a Rockville resident, has been with NIH since 1957. She completed the requirements for a Ph.D. in sociology last year at the University of Chicago, 38 years after earning her M.A. there. A member of several professional or-

Dr. Coulombre Honored By Ophthalmology Ass'n For Research on Eye

Dr. Alfred J. Coulombre, National Institute of Neurological Diseases and Stroke, has received the Friedenwald Award of the Association for Research in Ophthalmology.

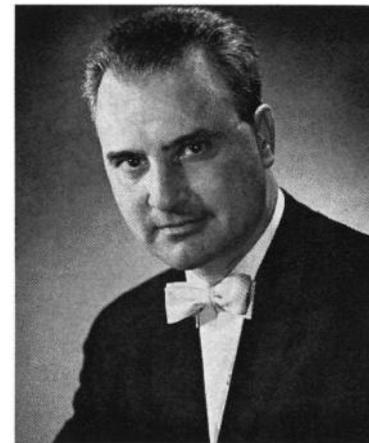
The award, which honors Dr. Jonas Friedenwald, a leader in investigative ophthalmology, is one of the highest honors in this field.

Dr. Coulombre heads the Section on Experimental Embryology, Ophthalmology Branch.

In presenting the Friedenwald Medal to Dr. Coulombre at the Association's award banquet, Dr. Ludwig von Sallmann, Ophthalmology Branch chief, said:

"For 15 years, Dr. Coulombre, in close cooperation with his wife, Jane, has supplied ophthalmology with outstanding contributions. His name and work are known to all investigators in the field of experimental embryology."

Dr. Coulombre's research has been concerned with understanding the way in which nature constructs and perfects the complex organ of vision. He has studied the coordination of growth of the various eye structures, and the internal and external mechanisms influenc-



Dr. Coulombre's investigations have centered on understanding the way in which nature constructs and perfects the complex organ of vision.

ing the eye's development.

Some of Dr. Coulombre's related studies include the influence of intraocular pressure on the growth of the eye and on the developmental timetable of eye tissues.

In accepting the award, Dr. Coulombre remarked, "I would give up this honor, as much as it means to me, and a good deal more to be able

(See DR. COULOMBRE, Page 8)

ganizations, she enjoys dialogue with young people "for they are the future." She concluded, "Youth should be cherished—it's a great thing."



Dr. Helen Tibbitts received her Ph.D. last year from the University of Chicago where she earned her M.A. 38 years ago.

minis or campus protests—that the young person defines himself as an individual in his own world.

"We are often not aware of how things came to be and why things exist as they are today," she stated. "Young people see much that they dislike, but they tend to forget that their parents may not like it either.

"However, youth views social issues as moral issues rather than as rational ones—this, I think, is the essence of the generation gap," she added.

Dr. Tibbitts, chairman and executive secretary of the Behavioral Sciences and Biostatistics Fellowships Review Committees, advocates more extensive research in the field of basic social processes and change.

The chairman centers her interpretation of the current generation conflict around the closing of the western frontier. She explained that movement westward for generations had provided an outlet for youthful energy and experimentation in social ideas.

However, with the closing of the frontier, these avenues for release were blocked, resulting in an in-

SUMMER AIDS

(Continued from Page 3)

Training-Extramural Programs (STEP), has been informal meetings of scientist-administrators to exchange information and experiences on planning and administration of extramural research and research training.

When the group learned of the summer aid program, they enthusiastically took advantage of the opportunity to become involved.

At one particularly lively session held recently, Dr. Alfred M. Sadler and Blair L. Sadler, twin brothers, in the National Cancer Institute, conducted the symposium.

Mr. Sadler immediately informed the group that Dr. Sadler was "3 minutes older than I am, so there are things that I have to put up with."

Transplants Discussed

The remark delighted the class, but all soon got down to a serious subject—the medical and legal aspects of organ transplants. Dr. Sadler took care of the medical angle, Mr. Sadler described the legal implications.

Nine boys, three girls, and one summer youth counselor leaned forward and listened with all the intentness of interns hearing for the first time an eminent surgeon describe an operation.

Soon the subject digressed to the high cost of hospitals and the high fees of doctors. The entire class had a chance to speak up and most did.

The students were frank, especially about medical costs. Both doctor and lawyer listened attentively to the students' shock-value questions and statements.

Not a legal-medico hair or a voice was raised when teen-age Katherine told of her dramatic experience with a sprained ankle, and voiced the straight from the shoulder opinion that "doctors were better in the old days."

Again, with Dr. Bruno taking charge, the subject of heart transplants came up. And in Madison Avenue parlance, Dr. Bruno suggested that "we kick it around for awhile." The class was vocal and the subject came in for a good pummeling.

Preventive Medicine Explained

John McCain, a summer aid counselor, suggested that more effort should be put into developing a cure for bad hearts, less effort in transplants.

Dr. Bruno countered with a discussion on preventive medicine, and told of the old Chinese custom of paying a doctor when the patient was well.

"Supposing," a student questioned in a pseudo-serious tone, "a plague hit the town, something you can't stop, what happened to the Chinese doctor?"

A Different Connective Tissue Protein Found in Microfibrils of Elastic Fibers

At least one connective tissue protein which is neither elastin nor collagen was found in recent electron microscopic and chemical studies on elastic fibers in cattle.

The microfibrils of elastic fibers are composed of this tissue protein according to research supported by the National Institute of Dental Research and the National Institute of Arthritis and Metabolic Diseases.

BREATHING DEVICE

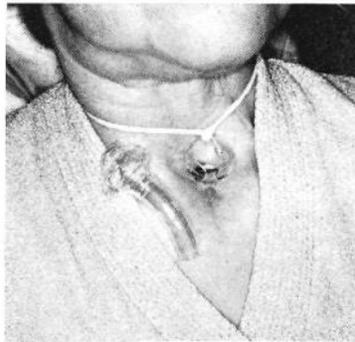
(Continued from Page 1)

The glass, which is hand-blown and case-hardened, is bent and tapered to suit the curvature of the neck.

It is equipped with a cover cap designed to allow air to escape on each side instead of straight forward. The two side-openings prevent excessive loss of humidity and the output of strong blasts of air.

In addition, the design prevents foreign objects from getting into the tube, and allows the user to wear clothing around the neck in cold weather.

The patient carries a duplicate device with him to replace the one in use whenever it becomes clogged with secretions or needs cleaning.



The glass retainer is designed so clothing can be worn around the neck. A model of the tube (at left) shows the device's size.

Equally serious, Dr. Bruno assured the student that "he'd be in trouble."

Most of the students attending these summer classes plan to return to school in the fall. For some, working at NIH was their first job, others had worked elsewhere, but never before had they had the chance to "get to know a scientist."

The comment made by Lamarr (please spell my name with two r's) was fulsome praise echoed by the class: "I always thought scientists were different. I've only seen them on TV, but they're like everyone else, I can talk to them."

Sam, who wants to be a veterinarian, agreed, "They speak in plain, everyday English," he said.

Harry found the sessions informative, and said "I might never again get a chance to ask these questions."

Geneva said that all the people she worked with at NIH were "involved in their work, but took time to answer questions."

The nuchal ligament of cattle, which enables the animal to lift its head, has supplied elastic fibers for studies at various stages of fetal development.

In the mature animal the elastic fiber consists of a large amount of amorphous material surrounded by small (110 Angstrom) tubular-appearing microfibrils arranged in parallel clusters.

These microfibrils amount to 5 to 10 percent of the dry weight of the elastic fiber.

The amorphous central protein of the elastic fiber is known to be elastin. Another well-known connective tissue protein is collagen.

But investigators at the University of Washington in Seattle report that the microfibrils are composed of one or more quite different proteins. These microfibrils appear by the time the embryo is 2 months old, whereas a little of the elastin component become visible as part of a small elastic fiber at 3½ months.

Effect of Treatment Noted

At term (9 months) the elastic fibers are large and consist chiefly of elastin.

Treatment of elastic fibers with the enzymes collagenase or elastase (30 minutes) leaves the microfibrils intact, indicating that they are not composed of collagen or elastin.

Treatment with trypsin, chymotrypsin, and certain sulfur compounds selectively removes the microfibrils leaving the elastin behind, while hyaluronidase and similar enzymes have no visible effect on either part of the fiber.

Once the microfibrils are separated from the elastin core, each part of the elastic fiber can be analyzed separately. The amino acids in hydrolysates of the microfibrils are found in quite different proportions from those in elastin giving further evidence that the two fractions represent different proteins.

The microfibrillar protein also stains differently from elastin suggesting that it has a different electric charge.

Microfibrils appear widespread in connective tissue, and are

The bridge that spans the credibility gap in this class is crossed by knowledgeable talk between scientist and student; the goodwill is mutual.

Conference Proceedings On Microsomes and Drug Oxidation Now Available

The proceedings of a conference on Microsomes and Drug Oxidations, sponsored by the Pharmacology-Toxicology Program, of the National Institute of General Medical Sciences, and the Committee on Problems of Drug Safety, of the Drug Research Board, National Academy of Sciences, are now available.

The 547-page volume covers a 2-day international symposium held in February 1968 at the National Library of Medicine.

Editors Listed

The editors include Dr. James R. Gillette, National Heart Institute, and Dr. George J. Cosmides, National Institute of General Medical Sciences, who were also members of the planning committee.

The symposium discussions centered on the morphology of the liver endoplasmic reticulum, the localization of enzyme systems, the mechanisms for regulating enzyme activity, and the mechanisms of enzyme action.

It contains contributions from 52 internationally known scientists, providing an authoritative review of current areas of investigation.

The proceedings may be obtained at a cost of \$12 from the publisher, the Academic Press, Inc., 111 Fifth Avenue, New York, N.Y. 10003.

formed close against the cell surface. Since they appear first and line up in parallel aggregates, it is possible that they guide and determine together with the cell the eventual shape of the mature elastic fiber.

Drs. Russell Ross and Paul Bornstein reported these findings in the *Journal of Cell Biology*.

Dr. Ross was a Career Development awardee of NIDR, and grants from that Institute and the NIAMD supported the research.



Thomas W. Jones, nursing assistant, CC Neurology Nursing Service, receives congratulations and a cash Employee Suggestion Award from Elizabeth Edwards, chief of the Service. Mr. Jones suggested that—for greater safety—seat belts be installed in buses used to transport patients.

Latest Participants in NIH Visiting Scientists Program Listed Here

6/2—Dr. Victor J. Ferrans, Colombia, Section on Pathology. Sponsor: Dr. William C. Roberts, NHI, Bldg. 10A, Rm. 3E30.

6/16—Dr. Meera Anant Gharpure, India, Respiratory Viruses Section. Sponsor: Dr. Robert Chanock, NIAID, Bldg. 7, Rm. 302.

6/18—Dr. Akimichi Kaneko, Japan, Marine Biological Laboratory. Sponsor: Dr. Henry G. Wagner, NINDS, Bldg. 10, Rm. 10D18.

6/27—Dr. Shmuel Razin, Israel, Laboratory of Viral Diseases. Sponsor: Dr. Robert Chanock, NIAID, Bldg. 7, Rm. 302.

7/1—Dr. Emmanuel L. Bravo, The Philippines, Endocrinology Branch. Sponsor: Dr. Charles Pak, NHI, Bldg. 10, Rm. 8N232.

7/1—Dr. Malcolm C. Johnston, Canada, Human Genetics Branch. Sponsor: Dr. Jerry D. Niswander, NIDR, Bldg. 30, Rm. 106.

BIO-ADHESIVE

(Continued from Page 1)

day hold fillings or orthodontic wires in place or become protective films on tooth surfaces. In medicine, such an adhesive would have countless applications in mending injured tissues.

Dr. Cook began his study with barnacles, but because it is difficult to collect pure cement from them, he surveyed many other sea creatures as well. One, the female lobster, makes a substance, which appears chemically similar to barnacle cement, to coat and bind her eggs together.

Another animal, the mussel, seems quite suitable because it is relatively easy to work with and secretes a fair amount of glue.

Puts Mussels in Tank

Dr. Cook has watched mussels in action in tanks filled with sea water. He photographs them by lining the bottom of the tank with mirrors and shooting through a glass cover.

The mussel extends its foot out between the shells (valves). Out of a large pore in the foot comes a flexible thread which anchors to any available surface by a blob of glue. The glue sets so quickly—in about 5 seconds, Dr. Cook explained—that if the mussel is pulled away as soon as the blob forms, the thread will break in two, the glue remaining stuck to the surface.

In sea water, the mussel will attach to almost anything, including tooth enamel and teflon. Since the mussel shuts its shell when it is out of water, Dr. Cook has not yet found a way to study the glue before it hardens. He plans to overcome this problem by dissecting

Dr. Driscoll Named Chief Of New NIDR Section

Dr. Edward J. Driscoll has been named chief of the newly-established Anesthesiology Section in the Oral Medicine and Surgery Branch, National Institute of Dental Research.

The section will conduct research on local and general anesthesiology associated with operative procedures with emphasis on oral surgery.

Studies will include the effects of anesthesia on the cardiovascular and pulmonary systems, the proper selection of anesthetic drugs, and the evaluation of post-anesthetic incapacities of ambulatory patients.

Dr. Driscoll has organized numerous seminars on dental anesthesia and in 1967 received the Horace Wells Club award for achievement in this field.

He serves as a special consultant to the Council on Dental Therapeutics of the American Dental Association and to the *Journal of Oral Surgery, Oral Medicine and Oral Pathology* on PHS dental research programs.

the gland under a microscope.

Already, he has collected the hardened material by drying teflon sheets after the mussel has attached to them. Then, the adhesive can be brushed off easily and seemingly intact.

Preliminary chemical analysis of this material indicates that it is mainly protein containing at least 17 amino acids. The loss of adhesion with drying should not present problems if the material can be used in the mouth because no such thorough drying would occur there.

If Dr. Cook learns why the glue adheres so well in wet surroundings, perhaps nature's principle of adhesion could be adapted for use in a medical and dental glue.

Dr. Bernard Brodie Given Pharmacological Award

Dr. Bernard B. Brodie, National Heart Institute, received the Schmiedeberg-Plakette, given by the German Pharmacological Society, for his outstanding contributions in biochemical pharmacology.

Dr. Brodie, who is chief of the Laboratory of Chemical Pharmacology, NCI, received the award at the Fourth International Pharmacological Congress in Basel, Switzerland.

He was cited for his "incomparable work to raise the standards in biochemical pharmacology and his great achievements in science."



Dr. Driscoll

DR. KUPFER

(Continued from Page 1)

As chairman of the Ophthalmology Department at the University of Washington, Dr. Kupfer was responsible for administrative and scientific direction of the department, as well as for teaching and patient care. Before coming to the University in 1966, he was assistant professor at the Howe Laboratory of Harvard Medical School.

Background Given

Dr. Kupfer earned his A.B. degree from Yale University in 1948, and his M.D. from The Johns Hopkins Medical School in 1952. From 1949 to 1950 he held the Henry Strong Denison Scholarship.

He completed his internship and residency at the Wilmer Eye Institute, The Johns Hopkins Hospital, and was selected to train as a research fellow in ophthalmology for one year at the Wilmer Eye Institute and a second year at Harvard Medical School.

Dr. Kupfer's research interest and accomplishments in ophthalmology and neuro-ophthalmology are numerous. His research in glaucoma has included studies of the movement of eye fluids, the histopathologic examinations of eyes which had been stressed by elevated eye pressures, and developmental anatomy of the eye.

He has probed the problems of amblyopia ex anopsia, and has contributed important papers on the use of nitrogen mustard for the treatment of retinal blastoma, the transcorneal electrical potential, the corneal fluid pressures and aspects of nerve-muscle physiology, as well as histochemistry of the neuromuscular junction.

Other Studies Noted

Dr. Kupfer has also extensively studied the nervous pathways from the eye to the brain.

Dr. Kupfer is on the editorial board of *Investigative Ophthalmology*, one of the leading basic science journals in the field.

He was a member of the NIH Vision Research Training Committee, and currently serves on the NIH Neurology Program-Project B and on the Advisory Committee of Basic and Clinical Research of the National Society for the Prevention of Blindness, Inc.

Dr. Kupfer also is a member of the American Academy of Ophthalmology and Otolaryngology, the Association for Research in Ophthalmology, the Association of University Professors in Ophthalmology, and the American Physiological Society.

In the NHI laboratory Dr. Brodie and his co-workers, through their studies of drug mechanisms, have helped in developing a number of drugs and in elucidating the various reactions of drugs.

Problems Faced by Aged To Be Aired by Scientists At Gerontology Congress

More than 3,000 scientists from 42 countries are expected to attend the 8th International Congress of Gerontology, August 24-29, 1969, at the Sheraton-Park and Shoreham Hotels in Washington, D.C.

The Congress, sponsored by the Gerontological Society and the American Geriatrics Society, receives additional financial support from, among others, the National Institute of Child Health and Human Development and the HEW Administration on Aging.

Held every 3 years in one of the 29 member countries of the International Association of Gerontology, outstanding professionals in gerontology and allied fields meet to exchange ideas and information relating to aging studies and the problems of the aged.

Throughout the Congress, symposia and other sessions will be held in four major categories—Biology, Clinical Medicine, Psychological and Social Sciences, and Applied Social Research.

Dr. Andres to Give Paper

Dr. Reubin Andres of the NICHD Gerontology Research Center in Baltimore will present a paper on the effect of age on the response of plasma insulin to increased levels of sugar in the blood.

During one of two plenary sessions, Dr. Alex Comfort, London, will discuss biological theories of aging. In addition, Professor H. Thomae, University of Bonn, West Germany, will speak on cognitive theories of personality in the aged.

The clinical aspect of modern geriatric practices will be discussed by Dr. William F. Anderson, Stobhill General Hospital, Glasgow, Scotland at the second plenary session.

Gerontologists and those in allied fields may register for the Congress for \$50. Complete information on registration, housing, and program can be obtained from the Secretariat, 8th International Congress of Gerontology, 9650 Rockville Pike, Bethesda, Md. 20014, or by calling (301) 530-3200.

Others giving financial support to the Congress are the National Science Foundation and the Atomic Energy Commission. The Congress also receives private group gifts.

For Extra Copies of 'Record,' Non-Delivery, Call Mailroom

Requests for additional copies of the *NIH Record*, or complaints about non-delivery of the *Record* or the delivery of an insufficient number for an office, should be directed to Horace Thomas, Bldg. 31 mailroom, Ext. 65651.

Population Control Need Stressed by Dr. Hardin At NICHD Seminar Here

Almost 100 representatives of Federal and private organizations attended the first seminar on population problems presented at NIH by the Center for Population Research, National Institute of Child Health and Human Development, on July 16.

They heard Dr. Garrett Hardin, professor of Biology at the University of California, Santa Barbara, discuss the need for controlling population growth.

Problem Is Timely

The opportunity for exchange of viewpoints and ideas on the U.S. population problem and the world population explosion is considered essential to an effective and timely NICHD research program in population.

The Center plans a series of seminars, about once a month, as a forum for major issues on population and related topics. These will include economic development, food production, and environmental quality.

Dr. Hardin claimed that without legal and moral control mechanisms a stable system of population control will be impossible. Through the process of social heredity—the passing on of ideas and ethics through family contact—people with the highest resistance to the discomfort of high population density would continue to have large families.

Their children would produce more offspring than their less "comfortable" peers, and the cycle would perpetuate itself. Darwinian selection would favor those with the lowest standards of comfort and those who feel children can be taken care of by affluent families and a sophisticated technology.

Individuals Must Decide

Dr. Hardin's position, stated in an article in *Science* ("The Tragedy of the Commons," Dec. 13, 1968), is that technology cannot, by itself, solve the population problem. Individuals making family size decisions in their own interest may not serve the interest of society at large, he maintains.

The commons—anything we share freely, excluding no one and limiting no one's use—has had to be abandoned in one aspect after another as the human population has increased, Dr. Hardin asserts.

Today's most important necessity, claims Dr. Hardin, is abandoning the commons in breeding.

Laws to control population growth must be backed up by the consensus of a large majority of Americans on the moral necessity of such laws, Dr. Hardin told the seminar audience. What is re-

NLM Uses Microfilm to Prevent the Loss Of Deteriorating Biomedical Literature



NLM has five mobile microfilm cameras which save many hours of sorting.

The National Library of Medicine, the United States archives for the world's biomedical literature, holds many items in its collection—the only copies known to exist.

It is essential that these be preserved. But how does NLM do this when most biomedical literature is printed on paper that can begin to deteriorate within a decade and has an estimated average life of only 75 to 100 years?

DR. COULOMBRE

(Continued from Page 5)

to tell Dr. Friedenwald today of my indebtedness to him . . .

"There are few debts that are more impossible to repay than those we incur from those who help us to set out on our lifework."

In conjunction with the award, Dr. Coulombre presented a paper on "Lens development. IV. Size, shape, and orientation."

The article was co-authored by Jane Coulombre, his long-time research collaborator. It deals with the mechanisms controlling the size and shape of the embryonic lens and regulating its orientation in the growing eye.

In this study, the right eye lenses were removed from a group of chick embryos at 5 days of incubation. Each lens was replaced by two lenses from donor chicks of the same age.

When the lenses were examined at 14 days of incubation their volume, shape, and organization had become regulated to correspond to that of a single 14-day lens.

These experiments demonstrate that mechanisms exist which control the size, shape, and orientation of the developing lens.

quired, he proposed, is "acceptable coercion"—acceptable because it is found necessary.

To gain this consensus, Dr. Hardin advocated alerting the young through education—formal and informal—to the dangers of overpopulation; to the alternatives to the American ideal of marriage and several children, and to the attractiveness of careers other than motherhood for women.

This problem is not a new one. For the last century, scholars and librarians have tried to halt the deterioration of paper.

In spite of tremendous advances in photographic and electronic technology, the vast bulk of information still is recorded and stored on paper.

Loss Rate Alarming

This information which should be retained for many years continues to be lost at an alarming rate.

Microfilm is one answer to the problem. This responsibility falls to the Photoduplication Section of the Reference Services Division, headed by Willis Lambert. This group constantly seeks improved methods for transferring printed material to film.

Many improvements have been made to increase the quality of filmed materials and facilitate the filming process. One such device is a bookholder that keeps pages in the focal plane of the camera regardless of which part of a page

He further urged that use of contraception be fostered through education and that free access to abortion be granted as a backstop to contraceptive failure.

The Center for Population Research has been designated the focus of population research activity in the Federal government.

Dr. Philip A. Corfman is the Center's Director; Dr. Arthur A. Campbell is Deputy Director.

VITAMIN K

(Continued from Page 1)

it causes animals to bleed to death. In smaller doses, it is used in surgery and to reduce the pumping load of defective hearts.

Scientists know that the effects of warfarin can be reversed by doses of vitamin K.

By using a strain of laboratory rats resistant to warfarin, the Wisconsin researchers demonstrated that it and vitamin K compete for the same molecular site in the ribosomes of liver cells.

Ribosomes are cellular structures that play a vital role in protein synthesis.

Clotting Action Described

The molecule for which the vitamin and warfarin compete is involved in the production of prothrombin, a substance that rapidly changes to the enzyme thrombin when clotting action is needed by the body. Thrombin in turn speeds the formation of fibrin, which combines with red blood cells to form a clot.

Dr. Suttie's team made the discovery by injecting radioactive warfarin into both normal rats and the warfarin-resistant rats and then tracing its distribution.

The importance of these findings rests in their potential for more effective therapeutic use of vitamin K.

Dr. Suttie presented his findings at a recent symposium on Fat Soluble Vitamins.

is being filmed.

Journal articles are required both for preservation purposes and for mailing through the interlibrary loan service.

The sheer volume of this work led to designing of mobile microfilm cameras. These cameras travel down the stack aisles, bringing the camera to the books.

This saves many hours of sorting and reshelving required when journals are removed from the stacks. The NLM now has five such cameras.

5 New Members Named To NINDS Adv. Council

Five new members have been appointed to the National Advisory Neurological Diseases and Stroke Council by Dr. Robert Q. Marston, NIH Director.

Two of the members, Dr. David D. DeWeese and Dr. Guy L. Odom, will complete the terms of NINDS Council members named to the new National Advisory Eye Council.

The three members appointed to full 4-year Council terms are Ellen Grass, Dr. William G. Hardy, and Dr. Bronson Ray.