Alpha Radiation In Space Travel May Harm Brain

Clues to a radiation hazard that could affect man’s brain in traveling through outer space may be provided in a new study conducted by the National Institute of Neurological Diseases and Blindness in collaboration with two other research organizations.

Investigators for the project were from the Institute’s Surgical Neurology Branch; the Donner Laboratory, University of California; and the Armed Forces Institute of Pathology, Washington, D.C.

Recognized as Hazard

Alpha radiation is known to exist in outer space and presents a potential hazard in manned space flight. An important technical point in devising protective methods is precise knowledge as to how alpha radiation damages the brain.

Previous studies by other investigators have resulted in differing conclusions concerning the primary site of radiation brain damage. One widely held opinion has been that the primary damage is to the blood vessels of the brain.

This study, which used sensitive new methods to show the early effects of alpha radiation on the brains of rats, indicates that damage primarily occurs in the cells of brain tissue itself and that blood vessel injury is secondary.

Disabling Accidents Decrease 46 Percent, Survey Reveals

NIH employees are becoming more safety conscious, according to the latest accident report issued by Plant Safety Branch, OAM.

The report, covering January through July of this year, revealed a 46 percent reduction in the rate of disabling injuries over last year.

Potentially serious injuries, and no-lost-time injuries in all Institutes, Divisions, Office of the Director, and the Cilical Center are also on the decrease, the report indicated.

Commenting on the report, Dr. G. Burroughs Mider, Director of Laboratories and Clinics said, “We’re beginning to make some progress in this business of accident prevention. A 46 percent reduction in the frequency of disabling injuries can result for the most part from only one factor—a greater effort by all in attempting to prevent accidents.”

In the first seven months of 1961 there were 4.2 disabling injuries per million man-hours worked, compared with 7.8 disabling injuries per million man-hours worked in 1960.

New Medical Library ‘Roof’ Has Uniqueness and ‘Zing’

This recent picture, looking northwest, shows a portion of the hyperbolic paraboloid shell under construction atop the new National Library of Medicine Building here.—Photo by Bob Pumphrey.

By John M. Blamphin

The pagoda-like roof of the new National Library of Medicine—that unusual building nearing completion on the southeast corner of the NIH reservation—has increasingly become a subject of a question often asked of modern art: “What is it?”

The Record, as curious as any, assigned this reporter to find out. The assignment led to interviews with engineers in the Research Facilities Planning Branch of DRS, in which they explained “the roof” in language a layman might understand.

It’s Not a Roof

As a result, this reporter is able to report that what everyone thought was a roof is not a roof at all. It is a four-quadrant hyperbolic paraboloid shell made of reinforced concrete. And it takes the place of what otherwise would have been a dome on the $7.5 million building.

Moreover, it enjoys the distinct advantage of being 636 days without a disabling injury. In the first seven months of this year, only two—DGMS and NIDR—reported no disabling injuries in 1960.

Seven of the Institutes and Divisions—NIMH, NIAMD, NINDS, NIAID, DBS, NIDR, and DGM—have a record of no disabling injuries during the first seven months of this year. Of these, only two—DGMS and NIDR—reported a decrease in disabling injuries in 1960.

Dr. Mider gave special recognition to Plant Engineering Branch, DBS, for integrating safety into the design of new structures. He also congratulated NIDR for “operating 636 days without a disabling injury.”

Postdoctoral Stipends Increased by $500

The Executive Committee for Extramural Affairs, Division of Research Grants, has announced a $500 increase in stipends for postdoctoral fellowships awarded on or after July 1, 1961. This decision follows a recent National Science Foundation recommendation.

The new stipend scale will be as follows: first level—$5,500; second level—$5,000; third level—$6,000.

The stipends were initially approved on July 1, 1962, following a National Science Foundation recommendation. The funds appropriated for earlier fiscal years will not be affected by the new recommendations.
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Brazillian Heart Society Presents Scroll to NHI

The National Heart Institute has received a testimonial of recognition from the Brazilian Society of Cardiology for its part in the support of the Sixth Inter-American Congress of Cardiology, held last August in Rio de Janeiro under auspices of the Brazilian and Inter-American Societies of Cardiology. Dr. Paul Schlesinger, Adjunct Secretary of the Brazilian society, presented the testimonial, a parch-ment scroll, to the Heart Institute Director, Dr. James Watt, on July 18.

NHI supported the Congress in part through a grant awarded to the International Society of Cardiology Foundation.

The grant was recommended by the National Advisory Heart Council, which emphasized that the Congress would offer an unusual opportunity for the interchange of ideas and research experience among cardiovascular physicians and researchers in the Western Hemisphere, and that its support would provide important tangible evidence of North American good will.

In a letter accompanying the scroll, Aarao Benchimol, President of the Brazilian society, said the grant "represented an important contribution to the strengthening of the traditional ties of friendship and good will among the cardiologists of the American Continent."

Dr. Eleanor M. K. Darby, Head of the Conference and Publications Section, Grants and Training Branch, represented NHI at the Congress.

NIAID Scientists Attend Conference In Hawaii

Four NIAID scientists will be among representatives of more than 50 nations participating in the Tenth Pacific Science Congress to be held at Honolulu, Hawaii, August 21-September 6.

Dr. G. Robert Coate, Chief of the Laboratory of Parasite Chemotherapy; Dr. Leon Rosen, of the Laboratory of Infectious Diseases; and Dr. John E. Tobie, of the Laboratory of Immunology, will present papers to the Congress.

Dr. Dorland J. Davis, Associate Director in charge of Research, will consult with officials of the Hawaii State Department of Health and the University of Hawaii, in addition to attending the Congress. Sessions at which papers will be presented or symposia conducted will be supplemented by plenary sessions, Oahu field trips, public lectures, evening panel discussions, and visits to marine research ships.

The program will be divided into nine sections reflecting broad scientific interests, including geophysical sciences, biological sciences, public health and medical sciences, agricultural sciences, forestry, conservation, anthropology and social sciences, geology, and scientific information.

SPACE TRAVEL

Alpha particles from a 60-inch cyclotron at the University of California were used to irradiate the brains of the experimental rats—specifically, the rear portion of the thalamus and adjacent structures. These disturbances consisted of sugar (glycogen) granules within the cells, which were detected within 12 hours after the animals were exposed.

A new technique involving the "labeling" of protein molecules (fluorescein) made it possible to detect disturbances in the permeability of the blood vessels in the brain. These disturbances were observed 48 hours after irradiation.

Alice Hecht, staff photographer.
Dr. Arnold Completes Three-Week Tour of Soviet Institutions

Dr. Francis A. Arnold, Jr., Director of the National Institute of Dental Research, returned recently from Russia, where as a member of an 8-man dental mission he spent three weeks touring dental and research institutions.

The group returned an earlier visit to the United States by a Russian dental mission. The exchange was sponsored and arranged by the American Dental Association with the Ministry of Health, U.S.S.R.

"At the present time," Dr. Arnold said, "dental research is not as advanced in the U.S.S.R. as it is in this country. Dentistry as a profession is much younger than it is in the United States."

"However, it should be recognized," he said, "that under Russia's 7-year plan the decision has been made to increase the scope of dental services as an integral part of health services."

Members Named

The group, headed by Dr. Charles H. Patton, President of the ADA included Dr. John W. Knutson, Assistant Surgeon General and Chief Dental Officer of the PHS; Dr. Harold Hillenbrand, Executive Secretary, ADA; Dr. John R. Abel, President-elect, ADA; Dr. Thomas J. Hill, Professor Emeritus, Western Reserve University; Dr. Arthur F. Schopper of Kansas City, Mo.; and Dr. Gerald D. Timmons, Dean of the School of Dentistry, Temple University, Philadelphia.

The itinerary, planned by the Russians, included research, educational, and public health institutions in Moscow, Leningrad, Kiev, Tbilisi (Tiflis), and Sochi.

Dr. Arnold also attended two large dental meetings while abroad. He read papers on dental research in the United States at the 8th Annual Congress of the European Organization for Research on Fluorine (ORCA) in London, and before the 49th Annual Session of the Federation Dentaire Internationale in Helsinki, Finland.

Soviet Childbirth Film Available from NINDB

The NINDB Information Office recently obtained a Russian-language motion picture, entitled Without Pain, which tells the story of childbirth experience in the Soviet childbirth program.

The film portrays the expectant mother attending lectures on the physiology of pregnancy and the mechanics of labor and delivery, and then, after relaxing and distracting herself during labor, finally giving birth without benefit of pain-killing drugs or anesthetics.

A print of the film with an English translation can be borrowed from the NINDB Information Office.

Dr. Laqueur Appointed Head of NIAMD Lab

Dr. Gert Laqueur was appointed Chief of NIAMD's newly designated Laboratory of Experimental Pathology, formerly the Laboratory of Pathological Anatomy, following the retirement of Dr. Llewellyn L. Ashburn last month.

At the same time Dr. Frederick Stohlman, Jr., was appointed Chief of the Section on Hematology, succeeding Dr. George Brecher who will devote full time to the Hematology Service in the Clinical Center.

The redesignation of the Laboratory of Experimental Pathology reflects the Laboratory's broadened scope of research function within its five sections—Anatomical Pathology, Histochemistry, Hematology, Biophysical Histology, and Rheumatic Diseases.

Dr. Laqueur joined the NIAMD staff in July 1950. From May 1954 to May 1957 he worked as Chief of Pathology of the Atomic Bomb Casualty Commission in Hiroshima, Japan, where he conducted follow-up studies of the survivors of the atomic bomb explosion.
tion of being one of the largest hyperbolic paraboloid shells ever constructed, and the only one of its kind in this section of the country.

This four-quadrant shell consists of four hyperbolic paraboloids that share a common center—the high point of the shell. These hyperbolic paraboloids may be visualized as solid parallelograms, having depth (thickness) as well as length and breadth.

The surface of each quadrant has both an upward and a downward curvature. These opposing curves are between each pair of diagonally opposite corners, creating the effect of a surface that is evenly and symmetrically warped in both directions.

Covers Central Room

The entire shell covers a large central room 63 feet square, where card catalogue files for the library's more than one million books will be located.

It measures 98 feet on each of its four sides and is only three inches thick at its thinnest part.

Although the hyperbolic paraboloid form has been known to architects for many years, it has seldom been used because of the complicated mathematics necessary to incorporate it into actual design and construction.

According to the RFPB engineers, the hyperbolic paraboloid shell is amazingly strong and is considered cheaper to build than the conventional dome.

For strength it relies on shape rather than mass, and it permits economical use of construction materials.

Lines Contribute 'Zing'

Its angular and sweeping lines also add a bit of “zing” to the otherwise solid and static rectangular bulk of the building.

The shell is formed on a straight-member frame of reinforced concrete ribs which rest on four steel columns each 35 feet high. The 185 cubic yards of concrete in these ribs required approximately 15 hours to pour.

After the ribs had attained a required and tested strength of 3,000 pounds per square-inch, steel reinforcing was laid in a criss-cross pattern between them to form the curved slopes of the four quadrants.

Gunite concrete was then sprayed onto the steel reinforcing. Gunite, sprayed under pressure from a hose, is more fluid than regular concrete. It dries quickly and has great adhesive strength.

When the concrete had set, the main weight of the shell rested on the wooden forms used when the concrete was poured. To transfer the weight from these forms to the four steel columns, it was necessary to stress the shell. This was done by means of the shell's supporting columns.

For this purpose, each column was constructed in two sections. The bottom section was firmly imbedded in the building foundation and extended to the mezzanine floor. It was separated from the top section by a steel plate covered with graphite, to permit the slight degree of horizontal movement essential to the stressing operation.

Hydraulic Jacks Used

Hydraulic jacks, mounted horizontally on the mezzanine floor at the base of each upper column, applied force to the columns in an outward direction. The resultant force on the shell was, therefore, in an inward direction, toward the center. This stressed the shell and transferred the applied force to the four steel columns.

The upper and lower sections of each column were then welded together permanently, and the wooden supports were removed.

Heavy Pressure Applied

Thousands of pounds of pressure per square inch had to be applied at the base of each of the upper sections to move them the fraction of an inch required to stress the shell.

This was the first time that supporting columns had been used as cantilevers to stress a hyperbolic paraboloid shell, according to the engineers.

Last steps in the construction of the shell will be the smoothing and painting of its under surface, application of insulation to the top surface, and addition of a final covering of white marble chips. The open space between the eaves of the shell and the mezzanine roof will then be enclosed with glass.

Another unusual feature of the building is that most of its floors—under ground. Only the main and mezzanine floors are above ground.

Public Building Service of General Service Administration is responsible for contract administration, and Research Facilities Planning Branch of DRS, serving in a liaison capacity, is supervising the construction of the building.

The contractor is Arthur Venneri Co. of Westfield, N.J., and the structural engineers are Severud-Elstad-Krueger, Associates, of New York. The architects are R. O’Connor and W. H. Kilham, Jr., also of New York.

Although the new building will be part of the NIH physical plant and will be maintained by NIH, the library is administered as a separate bureau of the Public Health Service.
Variety of Unusual Animals Aid in NIH Laboratory Research

Alligator, Clams, Frogs, Necturi Among Those Used in Red Cell, Heart, and Kidney Studies

By Carole Spearin
Summer Information Trainee

Ever wonder how to dissect a mosquito? Or take a blood sample from an alligator’s tail? These are but two problems now confronting NIH researchers as they work with a host of unusual animals in the never-ending war against disease.

Investigators first used large numbers of unusual animals during World War II when the customary mice and guinea pigs were not available in sufficient quantity. Also, certain animals such as clams and toads have relatively simple organs that react in particular ways like human organs.

Clams Donate Hearts

Venus clams, for example, have been donating their hearts to NIH for two years. Obtained locally and from the Woods Hole Oceanographic Institute on Cape Cod, the clams measure about 3½ inches across. They are slightly larger than the ordinary cherry stone clam and are used commercially in chowder.

Dr. Richard Irwin of the Neuropharmacology Laboratory, National Institute of Neurological Diseases and Blindness, reports no particular problems connected with keeping the clams—wet or dry.

“We don’t even need a sea water solution,” he said. “We just let them close up and keep enough fluid in their shells. Then we put them in our refrigerator.”

The clams’ hearts are being used in research to measure the amount of acetylcholine—a chemical thought to be released at certain nerve endings—that is present in the nervous and muscular systems.

100 Frogs Used Monthly

Like the Venus clam, the North American leopard frog (Rana pipiens) is giving its heart to NIH research. Each month Dr. Hajdu receives 100 frogs from a Wisconsin supplier. Before research can begin, however, these frogs must be given chloromycetin to cure an infectious, ordinarily fatal bleeding disease known as red leg.

Dr. Hajdu is using the frogs’ hearts to study cardioliglobulins, a group of protein substances found in blood plasma, which are essential for maintaining the normal contractility of heart muscle and may prove to be the main regulator of heart function.

The frog is particularly useful in this work because it has one of the lowest natural cardioglobulin concentrations, permitting varying amounts of the substance to be more easily measured.

Probably the most unusual animal now used in NIH blood research is Calvin, a 3-year-old, 8-pound Louisiana alligator.

Kept in an aquarium with a constant flow of fresh water, Calvin eats goldfish, mice, and horsemeat.

Dr. Martin Cline of the National Cancer Institute’s Metabolism Service is using Calvin to measure the life span of red blood cells at various metabolic rates. Alligators are useful in this work, since they not only vary their metabolic rate according to changes in surrounding temperature but are large enough to withstand repeated blood samplings.

Dr. Cline reports no outstanding problems in keeping alligators. “Well, one once bit a keeper at the Washington zoo, but that was before it was brought here.”

One difficulty, however, is capturing Calvin and tying his jaws long enough to sample the blood from either his heart or tail after injection of radioactive isotopes.

Calvin will soon return to the Washington zoo, and Dr. Cline reports that it’s just as well. “Calvin has never been the same since he was separated from his mate which went back to the zoo. He’s depressed. He used to come to the surface and eat, but now he just sits there.”

Mud Puppies Eat Little

NIH doctors are using other unusual animals in kidney and bladder research. Dr. Herbert Lubowitz of the Laboratory of Kidney and Electrolyte Metabolism, NHI, is maintaining a colony of 50 Necturi maculosi, otherwise known as mud puppies. These are salamander-like amphibians about eight inches long, tail included. Kept in saline solution at five degrees C, the Necturi have an extremely slowed metabolic rate and require little food during their stay at NIH, even when tempted with delicacies like flies, bugs, and shrimp.

“In fact, as far as we can tell,” says Dr. Lubowitz, “they don’t eat anything. They may even be a bit cannibalistic. Every once in a while we find one with a bite out of his tail.”

Necturi are valuable in kidney research for several reasons. Their kidneys are relatively simple, with large, conveniently arranged tubules and a capsule (kidney covering) thin enough to allow easy insertion of micropipettes for injection or withdrawing fluid and chemicals.

During the past year NIH kidney research has also used toads from a pet farm in Florida. The toads are kept in cages in straw-like matter.

Since this toad’s bladder functions like a certain portion of the human kidney, Drs. Joseph Handler and Jack Orloff, Leukemia, NHI, are using it to study the action of hormones causing urine concentration.

Doctors are also using several

(See ANIMALS, Page 7)
Mosquito Proven Malaria Carrier In Monkeys

A mosquito that transmits malaria to monkeys in nature has been identified and reported for the first time by Dr. R. H. Wharton of the National Institute of Medical Research, Kuala Lumpur, Federation of Malaya, and Dr. Don E. Eyles of the Laboratory of Parasite Chemotherapy, National Institute of Allergy and Infectious Diseases.

Their report, appearing in the July 28 issue of Science, marks the first demonstration of a natural vector of any monkey malaria. Whether this mosquito, *Aeophlebic hackleri*, also transfers simian malaria to man remains to be proven.

**Under Investigation**

The problem of transmission of this malaria in nature is under intensive investigation as a follow-up to the discovery last year by Dr. Eyles and his colleagues (also reported in Science, June 17, 1960) that monkey malaria is transmissible to man. (The mosquito involved in that work was *A. freeborni*, a species distinct from the one in Malayan studies.) This fact has disproved the long-held concept of malaria investigators that types of malaria infecting lower animals cannot be inoculated successfully into man by the bite of an infected mosquito.

Until comparatively recently, the *A. hackleri* mosquito was regarded as a rather rare species breeding in split bamboo in inland forest. It is now known, however, to be quite common on the Selangor Coast of Malaya.

**Mosquito Trap Set**

Mosquitoes were caught in an open net hung from a platform 20 feet above ground level. Over a period of 34 nights, 20 *A. hackleri*, including 17 which contained blood, were captured. Four without blood were taken in a similar trap on the ground. Tests with blood from freshly fed mosquitoes confirmed that *A. hackleri* was feeding upon monkeys.

In a search for the parasite which causes malaria, over 700 mosquitoes were dissected to find one sporozoite infection—the phase of the developmental cycle when the parasite becomes infective for its vertebrate host.

An uninfected Indian rhesus monkey was inoculated intravenously with the sporozoites. Six days later small ring forms were found in the blood. The infection built up so rapidly that the monkey died three days later. The parasites which caused the malaria were identified as *Plasmodium knowlesi*, a common form of simian malaria.

**Presence of Serum Protein Antibody Gives Clue to Transfusion Reaction**

During the past few years the field of genetic blood characterization has developed in new directions due to the finding that people can be classified into sharply distinct groups according to differences in their serum proteins. Many of these serum protein variations are genetically determined and can be detected by starch gel electrophoresis and other techniques.

These developments prompted scientists of the National Institute of Arthritis and Metabolic Diseases to investigate the possibility that sera of people who had received multiple blood transfusions might contain antibodies which would react with particular serum proteins, present in some individuals but not in others. Such a reagent has been shown in rabbits and monkeys by previous investigators.

**Precipitin Found**

The NIAMD scientists first found a precipitin (an antibody which acts on its antigen to produce a precipitate) in the serum of a patient who had recently received approximately 50 transfusions with such reactions for fever, headache and muscle pain for no known reasons.

There was no evidence of red cell incompatibility with donor bloods; rather the patient's serum gave a well defined precipitin reaction (i.e., acted as an antibody) with an alpha-two macroglobulin, a protein present in the serum of some normal individuals but not in the serum of others. The investigators subsequently found a specific-protein antibody as the first subject.

**Family and twin studies of the precipitin reaction showed that the presence or absence of the alpha-two macroglobulin which causes precipitation with the transfused patient's antibody is inherited according to simple Mendelian rules. The studies define the genetic constitution of the protein in normal serum which reacts with antibody has been designated AgA.**

**Antigen Frequency Varies**

Approximately half of the American sera tested by the NIAMD scientists contained the protein involved in the precipitin reaction. In a sample of sera from a Central Pacific Micronesian population 50 out of 51 individuals gave a positive precipitin reaction, indicating that the frequency of the antigen varies in different geographic groups.

Besides being of genetic and anthropological interest, this finding of a specific precipitin in serum suggests that human serum protein immunization may occur.

**The studies by Drs. A. C. Allison** (NIAMD visiting scientist, now at the National Institute for Medical Research, London) and B. S. Blumberg of NIAMD's Epidemiology and Biometry Branch, reported in The Lancet, also indicate that serum protein antigen-antibody reactions may be involved in some post transfusion reactions in multitransfused patients.

**Causative Unknown**

The cause of the disease, which rarely kills but often severely cripples its victims, is not known. Scientists have noted, however, that some forms of the disease definitely increase after epidemics of encephalitis or influenza, both of which are caused by viruses.

The pamphlet notes that "no one perfect medicine has yet been discovered for the disorder" and that surgery is effective treatment only in highly selected cases. However, the vigor and scope of research being conducted or supported by the Public Health Service and by other scientific organizations promises considerable improvement in treatment methods.

Written primarily to inform and reassure the victims of Parkinson's disease and their families, the pamphlet describes three typical cases.

**Skilled Care Needed**

Emphasis is given to the role of the family physician and assistance by skilled physical, occupational, and recreational therapists. Under their care the symptoms of the disease can often be reduced and the patient helped to retain a more normal existence.

**Parkinson's Disease — H o p e Through Research is listed as Public Health Service Publication No. 811 and Health Information Series No. 100.**

Single copies may be obtained without charge from the NIH Information Office or the Public Health Service. Orders under 100 are 15 cents a copy from the Superintendent of Documents, Government Printing Office, Washington, D.C.
**ANIMALS**

(Continued from Page 5)

**NHI Scientists to Conduct Research At Pakistan-SEATO Cholera Lab**

Dr. Robert S. Gordon, Jr., and Dr. Ross McIntyre, of the National Heart Institute's Geographic Pathology Section, will leave in September for two years' research and clinical work at the Pakistan-SEATO Cholera Laboratory in Daee, E. Pakistan.

Dr. Gordon will head the Clinical Research Section and will be in charge of organizing a new ward and the Laboratory's first patients will be admitted. He will investigate the possible role of nutritional deficiency in susceptibility to cholera and will also collect data on whether recovery from clinical cholera produces lasting immunity.

To Conduct Studies

Dr. McIntyre, a newly commissioned Public Health Service officer, will assist in the clinical and research work. He will conduct a number of studies including an investigation of the role of nutritional deficiency and anemia in susceptibility to cholera.

Recent studies have led some investigators to suspect that the result of infection with the cholera-producing organism is a breakdown of the normal mechanism by which the bowel transports ions (electrically charged atoms) into the bloodstream. The study of the changes in the transport process, such as occur in cholera, may help in understanding the longer-term disturbances in the ion transport which occur in chronic heart failure and kidney disease—a subject of great interest to many investigators in the National Heart Institute.

**Devises Test**

In 1959 Dr. Gordon was one of the American doctors who accepted the Government of Thailand's invitation to do research during the cholera epidemic there. Last December he reported his findings at the Conference on Cholera, sponsored by SEATO and NIH at Daee, during which the Laboratory was dedicated. A test which Dr. Gordon devised indicates that cholera patients do not lose appreciable quantities of blood plasma proteins through the intestine. Replacing protein is therefore not a necessary part of treatment for these patients.

Dr. McIntyre completed his undergraduate work at Dartmouth and received his M.D. degree from Harvard Medical School in 1957. He interned at the University of Pennsylvania, and completed his residency at Dartmouth Medical School this year.

The Research Laboratory, housed in a three-story wing of the Daee Institute of Hygiene and Epidemiology, was converted by the Pakistani Government and equipped with SEATO funds.

**Snails Prefer Cakes**

As Dr. Louis Olivier, Laboratory of Parasitic Diseases, NIAID, says, "We're lucky here because tap water is all right provided we get the chlorine out by letting the water sit for a day."

Feeding was rather a problem until the Laboratory developed its own food cakes, a pulped and dried mixture of wheat germ, powdered milk and leaves, to stimulate snail appetites. The snails now prefer the cakes to Roman lettuce.

The snails have been "trained" to lay their eggs on pieces from plastic freezer bags spread on the water surface. These plastic pieces can be manipulated easily without damage to the eggs.

Dr. Olivier, whose previous experiments in conjunction with Dr. Willard Haskins showed that low concentrations of sodium pentachlorophenate can almost completely stop the snails' fertility, is now investigating the effects of this and other chemicals on the eggs themselves.

**Mosquitoes Get Sick**

In fact, Dr. Coateney reports "problems—nothing but problems" in raising his mosquitoes. "In nature they grow without any trouble but when we try to keep them they are different. Did you know that mosquitoes get sick just like people?"

Another animal used in parasitic disease research is the reddish-brown snail Australorbis glabratus, one of the hosts for the blood fluke causing schistosomiasis, a disease found in over 100 million people throughout the tropics and subtropics. Begun more than 15 years ago, the NIH snail colony, which has included numerous species in experiments in conjunction with Dr. Robert E. Shimp, Dr. Howard B. Andervont, Dr. W. E. Beeson, Dr. Sidney J. Cutler, Fred Ederer, Dr. Sarah E. Stewart, Marjane Irwin, and Dr. Eugene J. Van Scott, Dr. Lewis C. Robbins, Chief of the Cancer Control Program, Bureau of State Services, also contributed to one of the panel sessions.

**Dr. Wright**

Dr. Barbara E. Wright, a biochemist in the Laboratory of Cellular and Molecular Metabolism, NIH, will leave NIH at the end of August to accept a position in the Huntington Laboratories of the Massachusetts General Hospital in Boston. Dr. Wright joined the staff of the Heart Institute at the Pennsylvania Hospital in 1960.

In her new position she will continue her studies of the mechanisms underlying biochemical differentiation.

**Works in Denmark**

A native of Pasadena, Calif., Dr. Wright received a B.S. degree in 1947 and a Ph.D. degree in 1951 from Stanford University. Before coming to NIH, she worked for three years on post-doctoral fellowships at the Carlsberg Laboratories in Copenhagen, Denmark.

Dr. Wright's husband, Dr. Herman Kalkar, a former NIH Visiting Scientist, will become Professor of Biological Chemistry at the Harvard Medical School at the end of this month, as reported in the July 18 issue of the Record.

**Cancer Conference Proceedings Published**

Proceedings of the Fourth National Cancer Conference, sponsored jointly by the National Cancer Institute and the American Cancer Society, and held September 13-15, 1960, at the University of Minnesota, have been published by J. B. Lippincott Co., Philadelphia.

The 774-page volume contains lectures and panel discussions on the causation, development, spread, and treatment of cancer and control of the disease. Contributions from almost 130 scientists summarize recent advances in knowledge of cancer through laboratory research and clinical studies.

NCI scientists who participated in the conference were Professors M. Endicott, Dr. Michael B. Shinkin, Dr. Howard B. Andervont, Dr. W. E. Beeson, Dr. Sidney J. Cutler, Fred Ederer, Dr. Sarah E. Stewart, Marjane Irwin, and Dr. Eugene J. Van Scott, Dr. Lewis C. Robbins, Chief of the Cancer Control Program, Bureau of State Services, also contributed to a special issue of the conference proceedings.
Dr. Chaudhury Reveals New Method for Assay Of ADH in Body Fluids

In a National Heart Institute Lecture on July 21, Dr. Ranjit R. Chaudhury of New Delhi, India, described to NIH staff members an improved method for the assay of antidiuretic hormone in body fluids. An Assistant Professor of Pharmacology at the All India Institute of Medical Sciences, New Delhi, Dr. Chaudhury is presently conducting research at the Drug Laboratories of the Government of Canada in Ottawa.

Research on antidiuretic hormone has been hindered by the lack of techniques for accurate measurement of this substance in body fluids. The available methods, usually intricate, laborious, and time consuming, yielded only rough approximations even when skillfully applied.

Results More Accurate

The technique described by Dr. Chaudhury combines some of the desirable features of several earlier techniques. It is not simple either, but rewards the user with more accurate results.

Antidiuretic hormone regulates one of the most important kidney mechanisms for adjusting fluid output to fluid intake: the urine concentrating mechanism. A deficiency of this pituitary hormone, and the resulting failure of the concentrating mechanism, leads to the enormous urinary water losses and the characteristic thirst that characterize diabetes insipidus.

Antidiuretic hormone is measured in body fluid samples by bioassay techniques. This involves administering a given volume of the sample to be analyzed to a test animal, then comparing its effects on urinary volume or concentration with the effects of an equal volume of a standard containing a known amount of ADH.

Hormone Action Mimicked

To complicate matters, however, a number of other substances in the blood mimic the action of antidiuretic hormone, among them serotonin, acetylcholine, angiotensin, norepinephrine, and epinephrine. Further, the animal’s own production of ADH must be halted completely or he might add his own ADH to that injected.

In the method used by Dr. Chaudhury, the animal’s ADH production is halted by feedings of 10% alcohol. This is followed by water or 5% alcohol to initiate diuresis.

Urine samples are then taken to establish base line data, the urinary water losses being replaced by equal volumes of 2% alcohol to maintain the block on ADH production. The NIH exhibit is one of the most popular at the first Montgomery County Science and Industry Showcase, held at the Silver Spring Armory July 27-29. Left: Carolee Sparian, NIH Summer Information Trainee, takes names of school children requesting NIH publications. Right: A germfree animal tank inhabited by white rats attracts some of the estimated 10,000 who visited the NIH display. — Photos by Sam Silverman.

Dr. T. L. Perrin Joins Creighton Medical Staff

Dr. Theodore L. Perrin, former Chief of the Department of Pathology at NIH, has been appointed Chairman of the Department of Pathology of the Creighton University School of Medicine, Omaha, Neb., according to a recent announcement.

Dr. Perrin, who has conducted research primarily in the field of infectious diseases, will also serve as a consultant in pathology to the Division of Hospitals of the Bureau of Medical Services, PHS.

A PHS commissioned officer for 25 years, Dr. Perrin retired with the rank of Medical Director last June. He joined the NIH staff in 1937 and remained until 1947, with two years out for wartime service with the Coast Guard.

NINDB Information Office Moves to Robin Building

Due to construction in Building 8, the NINDB Information Office is now located in the Robin Building, Silver Spring.

Mail should be addressed to NINDB Information Office, Rm. 4A 21, Robin Bldg., NIH, Bethesda, Md. The telephone extension is 8426.

NINDB Study Suggests Coenzyme DPN Governs Metabolism of Oxygen

Factors which may govern the channeling of metabolic activity via either of two parallel chemical pathways in the brain have been defined by National Institute of Neurological Diseases and Blindness scientists.

The availability of a specific coenzyme appears to influence the probable reciprocal relationship between a direct metabolic route, by way of succinyl coenzyme A, and a “shunt” pathway, via gamma-aminobutyric acid.

Previous studies by these investigators have shown that derangement of the latter pathway is intimately associated with the development of epileptic seizures.

In conducting the study, a specific phase of cerebral oxidative metabolism was investigated in subcellular bodies, known as the mitochondria, in the cat brain. Findings were reported by Drs. Karl Frank, the Chief of the Department of Pathology, and Guy McKhann, Now of Massachusetts General Hospital, and Donald B. Tower, Laboratory of Neurochemistry, NINDB, in the Journal of Neuroscience.

Experiments Cited

Experiments revealed that an increase in the level of the common chemical precursor, alpha-ketogluta-rate, enhanced the activity of the direct pathway and depressed the shunt or gamma-aminobutyric acid pathway. However, chemicals which blocked the direct route caused an increase in the activity of the shunt pathway, indicating that high levels of the common precursor, per se, are not a regulatory factor.

When the mitochondria were made permeable to a coenzyme, di-phosphopyridine nucleotide (DPN), the investigators found a significant increase in the utilization of the gamma-aminobutyric acid pathway. They suggest that the two pathways may compete for oxidized DPN and that the availability of the coenzyme may be an important factor in regulating metabolism.

Drs. Ingraham, Hilberg Accept PHS Positions

Dr. Samuel C. Ingraham and Dr. Albert W. Hilberg, both formerly of the Diagnostic Research Branch of the National Cancer Institute, have recently accepted positions with the Radiological Health Division of the Public Health Service.

Dr. Ingraham has been named Chief of the Training Branch, and Dr. Hilberg Director of Human Studies, a new position in the Research Branch.