

the NIH Record

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

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NATIONAL INSTITUTES OF HEALTH

Marston Names Bowery DRFR Acting Director

Dr. Thomas G. Bowery has been named Acting Director of the Division of Research Facilities and Resources by Dr. Robert Q. Marston, Director of NIH.



Dr. Bowery

He succeeds Dr. Thomas J. Kennedy, Jr., who has become Director of the Office of Program Planning and Evaluation.

Prior to his present appointment, Dr. Bowery was the Division's Associate Director for Operations. Before joining the Division as Assistant Chief in November 1965, Dr. Bowery was Extramural Operations and Procedures Officer, Office of the Director, NIH, for 18 months.

Background Cited

Born in Avalon, Pa., Dr. Bowery received his B.S. degree from Michigan State University, his M.S. and his Ph.D. degrees from Rutgers University.

From 1951 to 1952, Dr. Bowery was research assistant professor at the University of Florida, where he developed a research laboratory for the study of pesticide residue problems.

(See DR. BOWERY, Page 8)

S.A. Kokoa Frogs, at Home in NIH Lab, Contribute Venom for Biomedical Study

By Katie Broberg

A little bit of South American Jungle swamp life lies smoldering in Building 4 of the National Institutes of Health. Kokoá frogs, whose venom is the strongest known to man, are being raised here for use in biomedical research.

For centuries the Cholo Indians of Colombia have captured the tiny kokoá frog to obtain venom for poisoned darts. The National Institute of Arthritis and Metabolic Diseases is now growing its own colonies of kokoá frogs, convinced that a better use can be found for the venom.

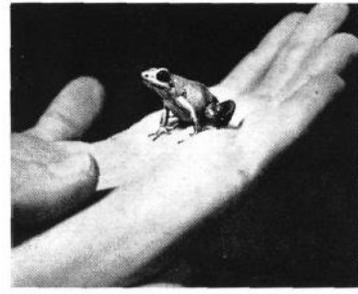
Known to naturalists since the mid-19th century, the jewel-like black and gold frogs attracted little attention until 1961 when Marte Latham, an American zoologist, and Dr. Fritz Marki, a visiting Swiss research associate, collected some on a NIAMD-sponsored jungle research expedition.

Unfortunately, the frogs died en route to NIH. To solve this shipping problem, Mrs. Latham was taught on the spot how to extract the potent venom which was then shipped to Bethesda.

In order to extract venom contained in the frog's skin, the latter must be removed with scissors and forceps and cut into tiny pieces. These are soaked in alcohol and the whole mixture can be shipped in bottles.

It was from such a bottled ex-

(See KOKOA, Page 4)



Colonies of this kokoá frog are now being grown by the NIAMD in hopes of deriving a useful drug from its deadly venom.

Record CFC Goal Assigned to NIH For 1969 Drive

Dr. Seymour J. Kreshover, Director of the National Institute of Dental Research and Chairman of this year's Combined Federal Campaign for NIH, has announced assignment of a record goal of \$207,722.

The campaign opened officially on Sept. 19.

Last year, the readjusted goal came to \$175,540. Contributions totaled \$147,712.43, or 84.1 percent of the established quota. In that campaign, 85.9 percent of NIH employees contributed, and individual gifts averaged \$17.78.

Dr. Kreshover pointed out that, in general, goals throughout the country have been substantially increased by the United Givers Fund, of which the CFC is a part. He reiterated his earlier statement to all NIH employees:

"This year the Combined Federal Campaign is faced with greater responsibilities and larger demands than ever before in its

Population Expert Joins NICHD Research Center

A prominent demographer, Arthur A. Campbell, has joined the staff of the recently established Center for Population Research of the National Institute of Child Health and Human Development.

Mr. Campbell, known for his work on the 1955 and 1960 "Growth of the American Families" studies, is the deputy director of the Center.

Will Conduct Survey

His principal responsibility will be in population research in the social sciences. In addition, he will help plan and conduct a national fertility survey in 1970.

Before coming to the NICHD, Mr. Campbell was special assistant to the Director for Demographic Research, Division of Vital Statistics. There he helped to develop the population research program.

He also analyzed birth and fertility statistics, publishing special studies for professional groups, such as public health officials, physicians, economists, and social workers.

Previously, he served as an associate research professor at Miami University where he en-

(See EXPERT, Page 5)

'NIH Story' to Be Told Each Week Via 2 New Television and Radio Programs

The NIH story will be told regularly beginning this month on two new programs, one on color television, the other on AM/FM stereo radio.

"NIH Reports" is the title of the weekly television program to be carried on WRC-TV, Channel Four, every Saturday at 3:55 p.m.

The first three programs, to be telecast Oct. 12, 19, and 26, will feature Dr. Robert Q. Marston, Director of the National Institutes of Health.

Dr. Marston will introduce NIH to viewers and discuss its role in conducting and supporting medical research and education. Bob Kelly of WRC will be the regular host.

"NIH Reports" replaces "The Doctor Reports" TV series spon-

(See NIH STORY, Page 6)

NIH Record to Be Located Temporarily in Building 36

The Publications and Reports Branch, Office of Information, OD, has moved into new, temporary quarters in Building 36, Room 1C-10.

The NIH Record will be located in Room 1C-18, and the Calendar of Events in Room 1C-19, both in Building 36.

Telephone extensions for the Branch, the Record, and Calendar of Events will remain unchanged.

CFC Quotas for 1969	
Unit	Goal
OD	\$ 5,563
OAM	15,833
DRS	19,110
DRG	11,632
CC	22,434
DBS	5,401
NICHD	6,439
NIGMS	4,154
DRFR	3,116
NCI	28,250
DEHS	831
NHI	12,048
NIDR	6,232
NIAMD	15,371
NIAID	7,686
NIND	15,164
DCRT	6,855
BHM	13,502
NLM	8,101

history. "As Chairman of the CFC at NIH it is my responsibility to urge your consideration of the crushing need that exists in this country and to suggest that you contribute your fair share—the amount you

(See CFC GOAL, Page 2)

the NIH Record

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NEWS from PERSONNEL

COLLEGE LEVEL EXAM

The next Federal Service Entrance Examination for the 1968-69 school year will be given on Nov. 16. Applications for this examination must be postmarked not later than Oct. 9.

Test Covers Many Fields

The FSEE is a medium through which college graduates, and persons with equivalent experience, may qualify for appointment to the Federal service.

The examination covers such fields as personnel management, grants management, general administration, economics and other social sciences, management analysis, electronic data processing, budget management, statistics, and procurement and supply.

COLLEGE RECRUITING PROGRAM

NIH conducts a recruiting program directed specifically toward graduates of colleges and universities.

This year publicity material from NIH has been forwarded to more than 900 schools, many with an enrollment of minority group students.

Seventy-four of these institutions, located in the east, south-east and midwest, will be visited.

Recruiting will be concentrated on the following careers: chemists, biologists, medical technologists, social workers, librarians, engineers, computer programmers, mathematicians, systems analysts, management and information specialists.



Aldine Campbell, CC Environmental Sanitation Control Department, displays the check and certificate he received for his "employee suggestion" of putting yellow warning lights on floor scrubbers to reduce accidents. He is flanked by Howard W. Spence (l), chief ESCD, and Gordon C. Gamble, operations section chief, ESCD.

Employees of the College Relations Office, Personnel Management Branch, representatives of I/D personnel offices, and program officials will take part in the recruiting program.

SICK LEAVE

Employees earn a total of 13 days sick leave a year, or 4 hours for each pay period. Those who do not use their sick leave can let it accumulate indefinitely as a form of insurance against a major illness or injury.

Supervisors may approve sick leave only for those purposes authorized by law. It is important that employees understand and adhere to the regulations governing the use of sick leave. Sick leave may be used when an employee:

- Receives medical, dental or optical examination or treatment;
- Is unable to work because of sickness, injury, or pregnancy and

Record Column Will Let 'Left Hand Know What Right Hand is Doing'

In an institution as large as NIH, sometimes the left hand doesn't know what the right is doing.

More specifically, sometimes those trying to solve a certain problem in a laboratory don't know what workers in the next lab, or the next building, have done to solve the same problem.

Problem Explained

Time and resources sometimes are wasted because it is impossible for any one person to know every type of work that is under way, what equipment is in use, or what results others have obtained by using specific procedures or materials.

Dwight W. Glenn, a physicist in the Radiation Branch, National Cancer Institute, recognizing these problems, has suggested a step to provide solutions.

Through the Employee Suggestion program, he has called for publication of a laboratory resources exchange listing to which scientists, technicians, lab chiefs or other technical personnel can contribute, offering advice or tips, or seeking help from others engaged in similar work.

The *Record* will publish a col-

Part I, Listing Grants, Awards For Fiscal Year '67 Available

Publication of *Part I, Public Health Service Grants and Awards, Fiscal Year 1967 Funds*, was recently announced.

Single copies are available from the DRG Information Office.

Copies of Part I are also available from the Superintendent of Documents, U. S. Government Printing Office, Washington, D.C. 20402, at \$2 each.

CFC GOAL

(Continued from Page 1)

alone know you can spare—for those not so fortunate.

"No one can afford the luxury of ignoring the need that is with us today."

Dr. Kreshover has urged all NIH employees to consider the payroll deduction plan when contributing. Last year, nearly half of the amount pledged came from employees who used the payroll deduction plan.

confinement;

- Is required to give care to a member of his immediate family who has a disease that necessitates quarantine, or

- Would jeopardize the health of others because of exposure to a quarantinable disease.

Laboratory Resources Exchange

Available as surplus: Glowall "Chromolab" gas chromatograph; with recorder; good condition. Ext. 62486.

Our new micro-calorimeter needs only 200 nanoliters of sample. Would you like to try it on your problem? Ext. 62557.

Wanted: One right and one left-hand Prior manipulator. Ext. 61070.

Wish to try out Zeiss-Jena sliding micro-positioner or de Fonbrune micro-manipulator. Ext. 64108.

Would like to borrow Zeiss camera attachment for inverted microscope. Ext. 64108.

Does anyone know of a technique for stripping 1. mil. Teflon-coated platinum wire? Ext. 61070.

Pictures wanted of white blood cells with hypersegmented nuclei to test computer program for counting lobes. Ext. 61115.

umn of such items beginning with this issue, on an experimental basis, under the heading "Lab Resources Exchange."

Users may submit material to the *NIH Record*, Bldg. 36, Room 1C-18. Each item must be typewritten on a 3 x 5 card and limited to 20 words, and must be signed by the originator. Only NIH telephone extensions will be published as identification.

All items submitted will be reviewed for appropriateness in the Office of the Director of Laboratories and Clinics.

Items received too late for one edition will be published in the next. The *Record* will, however, of necessity limit the total number published in any one issue.

Sam, the Hamster



Sam the Hamster has become a "big man on the campus" through his CFC efforts. He urges all who have not yet pledged to "Get with it—we're going for broke."

Spotted Fever Victim, Blood Donor in 1906, RML Meeting Guest

Mrs. Etta Bradley McKinney of Hamilton, Mont., had an extremely pertinent reason for attending the twenty-third Annual International Northwest Conference on Diseases in Nature Communicable to Man.

The conference was recently held at the Rocky Mountain Laboratory in Hamilton, a field station of the National Institute of Allergy and Infectious Diseases.

Blood Sample Aids Research

In 1906, when Mrs. McKinney was a little girl, she contracted Rocky Mountain spotted fever; she contributed a blood sample to Dr. Howard Taylor Ricketts, a pioneer in the research of that disease.

The sample enabled Dr. Ricketts to transfer spotted fever to guinea pigs. The experimental results proved, for the first time, that the organism which carried the disease could be passed to animals and man through blood. Further experiments proved that ticks were the chief carriers.

Now, because of the important role that she had played 62 years



Mrs. McKinney greets scientists on the steps of the new Ricketts Memorial Museum in Hamilton. With her are Dr. William Jellison (l), retired NIAID parasitologist, and Dr. H. G. Stoerner, RML Director.

ago, Mrs. McKinney was an honored guest at the meeting.

The scientists attending the conference also toured the new Ricketts Memorial Museum which exhibits the pioneer work done by Dr. Ricketts and other researchers.

Birth Rate Decreases

In June there were an estimated 280,000 births in the United States. This brings the total for the first half of the year to 1,645,000 (4 percent fewer than last year).

The birth rate for June 1968 was 17.1 births per 1,000 population.—National Center for Health Statistics.

WOMEN AT NIH

Patient Care, Research Make Up Busy Working Day of Dr. Brigid Leventhal, NCI

By Sheila Jacobs

The only woman physician engaged in patient care at the National Cancer Institute is Dr. Brigid G. Leventhal, a senior investigator with the Medicine Branch.

Certified by the American Board of Pediatrics, she has been the pediatric hematologist of the Leukemia Service since 1965.

Her husband, Dr. Carl M. Leventhal, a neurologist, is assistant to the Director of Laboratories and Clinics. His office is in Building 1, hers in Building 10.

Their full calendars leave little time for even a casual lunch together. However, busy schedules are not new to the Leventhals who met as residents burdened with demanding clinical duties.

Evaluates New Drugs

Dr. Brigid Leventhal is one of the physicians who evaluate new drugs for their possible usefulness in the treatment of childhood leukemia.

She is also very active in immunology research centered on laboratory studies of white blood cells—lymphocytes—important in the body's defense against disease. She has studied methods for the biochemical and histochemical identification of the various constituents of white blood cells.

She has also studied the properties of white blood cells *in vivo* by creating "skin windows" in patients with various blood disturbances.

Among her current projects is the study of cell abnormality in patients and animals with a likelihood of developing cancer.

In conjunction with her duties as attending physician on the Leukemia Service, she conducts orien-

R&W Association Study For Facility Under Way

Ron Wylie, president of the R & W Association of NIH, has announced that a feasibility study for construction of an R & W facility on the reservation is due for completion this month.

The report is being prepared by Calvin B. Baldwin, Jr., Chairman of the Building Committee, with the help of six subcommittees.

Mr. Wylie stressed that this is a feasibility study only. If the committee finds that it is possible to construct an R & W facility on the NIH grounds, details of the proposal will be brought to the attention of the full membership for their consideration.

While this possibility has been discussed inconclusively for the past 10 to 15 years, Mr. Wylie noted that the present effort and report will be the first comprehensive study.



Dr. Leventhal breaks hospital routine for her young patients, and acts as hostess at a weekly picnic.

tation conferences with the parents of patients. She also coordinates the medical, nursing, social service, and other paramedical services of the pediatric cancer nursing unit.

One of her projects is a weekly afternoon picnic for her young patients.

Her average day at NCI doesn't leave much time for her hobbies—gardening, reading mystery stories, and the Smithsonian Institution of which she and her family are devoted associate members.

She rises around 6:30 a.m., makes breakfast for her husband and three children aged 6, 4, and 2 years, picks up the housekeeper and takes the children to school before arriving at the Clinical Center.

Her day is spent in the ward with patients, in the laboratory, and in the office working on medical papers for presentation.

Born in London

The Drs. Leventhal often do not get to their gardening until late evening, and frequently have to light their lawn for weeding or mowing.

Dr. Leventhal was born in London. During World War II she and her mother came to the U.S. Her father, then in the Royal Air Force, joined them later. They settled in California where her parents could resume their professions in the motion picture industry.

At present her father is Profes-
(See DR. LEVENTHAL, Page 7)

'Probes of Proteins' Is Opening Topic at 18th Instrument Symposium

"Chemical Probes of Protein Structure" will be the subject of the opening session of the Symposium on Recent Developments in Research Methods and Instrumentation to be held Monday, October 7, at 2 p.m. in the Clinical Center auditorium at NIH.

The 5-day meeting is being presented in conjunction with the 18th Annual Research Equipment Exhibit. The exhibit is the nation's largest display of newly developed equipment for use in medical research. Seventy-six manufacturers will participate, displaying equipment valued at nearly one million dollars.

Dr. Steiner Presides

Dr. Robert Steiner of the Naval Medical Research Institute will preside over the first afternoon's program.

Among topics to be discussed are: Chemical Modifications with Tetranitromethane, Modification of Active Sites on Proteins by Affinity Labeling—Studies with Mouse Anti-Body, Modification of Arginine at Neutrality, and Reagents Designed to Attach Conformational Probes to Specific Sites of Enzymes.

Chairmen Listed

Other session chairmen include Drs. Christian B. Anfinsen, Robert L. Berger, and Leonard Laster, NIH; Britton Chance, University of Pennsylvania; John Stuehr, Case-Western Reserve University; Richard Moore, American Red Cross; A. J. Tousimis, Biodynamics Research Corporation; G. A. Rechnitz, State University of New York at Buffalo; John C. Houck, Children's Hospital, and A. J. Shepard, Food and Drug Administration.

Dates—Times—and Places For Meetings and Exhibits

The dates, the times, and the places for instrument symposium meetings and exhibits are as follows:

Symposium sessions will be held in the CC auditorium at 2 and 8 p.m. Oct. 7, 8, 9, and 10, and at 2 p.m. on Oct. 11.

The research equipment exhibit will be located in Bldg. 22 and will be open daily from 10 a.m. to 5:30 p.m. Oct. 7-10.

Eleven special instrumentation sessions, conducted by manufacturers representatives, will be held in Bldg. 1, Wilson Hall. They are scheduled at 1 and 3 p.m. on Oct. 7, and at 10 a.m., 1 and 3 p.m. on Oct. 8, 9, and 10.

Dr. John Lynch Elected President of Council of Fed. Medical Directors



Dr. Lynch is new head of the council which directs health programs in Federal agencies.

Dr. John M. Lynch, Medical Director of the NIH Employee Health Service, has been elected President of the Council of Federal Medical Directors for Occupational Health for a one-year term.

The council is composed of 42 physicians in the Metropolitan Washington area who are responsible for directing occupational health programs in major Federal departments and agencies.

Three primary goals of the council are: To establish the role of occupational medicine in the Federal Government for the conservation and improvement of health among Federal workers; improve employee health services and establish services where none now exist, and provide for mutual exchange of ideas and open discussion for the airing of health problems.

Dr. Davis, NLM, Named New Center Director

DHEW Secretary Wilbur J. Cohen recently announced the organization implementation of Public Law 90-456 (Senate Joint Resolution 193) signed by the President August 3, 1968, which established the Lister Hill National Center for Biomedical Communications.

The law established the Center as an organizational entity within the National Library of Medicine. Preliminary planning calls for a tower-type structure annex to be erected southwest of the Library.

Concurrent with this announcement by Secretary Cohen, Dr. Martin M. Cummings, Director of NLM named Dr. Ruth M. Davis, as Director of the Center. She will continue in the collateral role of associate director for Research and Development of the Library. The Library's R&D staff will also serve as the initial staff of the Center.

TINY KOKOA FROGS CALL NIAMD LAB 'HOME'

(Continued from Page 1)

tract that NIAMD scientists Drs. Bernhard Witkop and John Daly prepared a crystalline venom, discovering it to be nearly 10 times as powerful as tetrodotoxin—from the Japanese globe or puffer fish—the deadliest of all previously known venoms. There is no known antidote for the kokoá venom.

But what was NIH's interest in kokoá frog venom? Dr. Witkop explained: "There's always hope of developing helpful drugs from a substance with such strong action as kokoá venom. Perhaps in low concentration it will have therapeutic value. It's a truly remarkable substance and deserves careful attention."

Curiously, another arrow poison used in Africa, and chemically related to kokoá frog venom is a heart stimulant.

The action of such potent agents often provides new insight into basic pharmacological and physiological mechanisms that may lead to new methods for testing and evaluating drugs.

Structure Partially Deciphered

Drs. Witkop and Daly in 1965 partially deciphered the chemical structure of the venom and named it *batrachotoxin*, from *batrachos*—the Greek word for frog.

It was found to be chemically related to the steroid hormones but, in addition, contained nitrogen (tertiary nitrogen in a novel ring system) which is responsible for its basic properties.

Further studies on the frog extracts revealed the presence of three other active compounds which were named isobatrachotoxin, pseudo-batrachotoxin and batrachotoxinin A.

The difficult problem of deciphering their structure culminated in

a breakthrough in 1967.

Dr. Takahashi Tokuyama, a visiting Japanese research associate, succeeded in growing a beautiful crystal of the p-bromo benzoate of batrachotoxinin A. X-ray analysis of this crystal by Dr. Isabella Karle of the Naval Research Laboratories, followed by chemical and spectral correlations with the other active compounds, have now led to the complete understanding of the structure of batrachotoxinin A, batrachotoxin and isobatrachotoxin.

Synthesis Sought

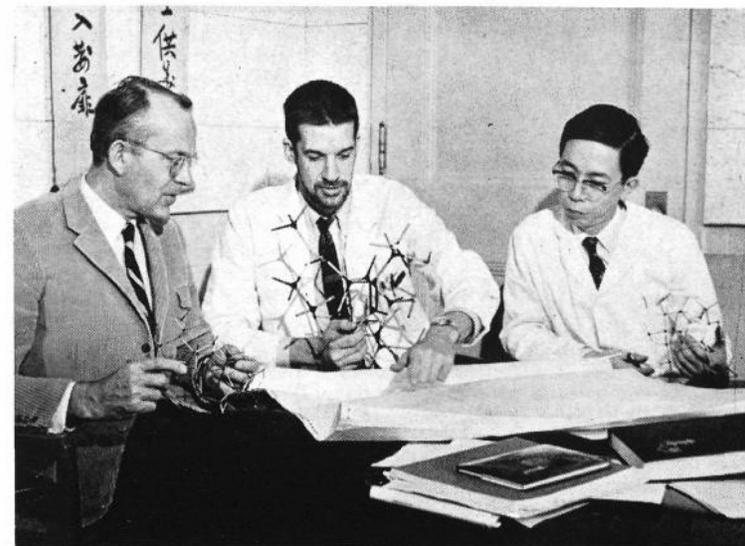
The structure of pseudobatrachotoxin, which is very unstable, is still only partially known. Efforts aimed at the synthesis of batrachotoxin have already been initiated in at least three laboratories in Europe and America.

A collaborative study with Dr. E. X. Albuquerque from the Department of Pharmacology of the State University of New York at Buffalo has now substantiated some of these expectations. Batrachotoxin holds promise as a pharmacological tool for the study of neuromuscular transmission and the role of metal ions in this process.

Blocks Nerve Impulses

In animals, the venom causes an irreversible block of transmission of nerve impulses to muscle, and death ensues within minutes due to cardiac arrest.

Tests have shown that within one minute of a subcutaneous injection of an infinitesimal amount of the poison, an animal becomes completely immobilized. One milligram could kill 50,000 mice. A mouse is still able to move if forced, but with difficulty because equilibrium and coordination are seriously affected.



Analyzing the complex chemical structure of the kokoá frog's venom are: (l to r) Drs. Bernhard Witkop, John Daly, and Takahashi Tokuyama.

How does a Colombian Indian procure the venom? He imitates the frog's mating call, a distinct pattern of chee-chee-chee-chee, by whistling and tapping his cheek. When the frog responds, it is grabbed and quickly slapped into an improvised cage of leaf, mud, and vine.

Because the frog exudes the poison only under stress of heat, cold, or pain, the Indians impale it alive on a stick and hold it over an open fire.

Venom Insoluble in Water

As the milky venom oozes from the skin, the hunter rolls the dart point over the frog's back. Spiral grooves in the tip pick up the poisonous secretion. Dried venom, which is insoluble in water, has remained lethal on the tips of darts for as long as 15 years.

One kokoá frog, weighing only a few grams, can poison as many as fifty blow-gun darts. The Indians still use this primitive, tedious method, and when Mrs. Latham employed them to help her "bag"



This less venomous cousin of the Colombian kokoá frog, called *Dendrobates granulosus*, dwells in Costa Rica.

some for NIH, she estimated it would take 4 to 6 months to catch 3,000 frogs. (Raw venom from 2,400 frogs yields only 30 milligrams of crystalline pure venom.)

The female kokoá lays 10-20 eggs at a time on leaves. The tadpoles hatch within one week and are sometimes carried on the back of an adult frog until they are able to exist independently. The frogs are active only during the day.

Related Species Collected

In addition to kokoá frogs, the NIH collection contains related, but less toxic, species of frogs from Panama and Costa Rica. Drs. Witkop and Daly hope that the active principles from these frogs will prove as interesting and as valuable to research as has batrachotoxin.

Meanwhile, the frogs continue to sing and breed in the small, glass-enclosed patches of simulated Colombian jungles on the NIH reservation.

EXPERT

(Continued from Page 1)



At NICHD, Mr. Campbell will help plan and conduct a survey, in 1970, on national fertility.

gaged in research on fertility and family planning in the United States.

Mr. Campbell is the author or co-author of numerous books, articles, and monographs on subjects relating to demography. In 1957 he received the Department of Commerce Meritorious Service Award.

He was born in Brooklyn, New York, and attended Antioch College, and the Graduate School of Columbia University.

BHM Nursing Brochure Details Scholarship and Other Student Aids

High school students who have the ability and the ambition to become nurses but need help to go to nursing school will be interested in a brochure describing nursing scholarships available through nursing schools under a recent amendment to the Nurse Training Act.

Nursing Educational Opportunity Grants—Information for Students is a publication of the Division of Nursing, Bureau of Health Manpower.

The illustrated brochure explains that scholarship aid of \$200 to \$800 a school year is available to students of exceptional financial need, and also discusses loans for nursing education.

Provides Other Advice

In addition, the pamphlet helps potential nurses to decide which type of nursing practice to prepare themselves for; cautions them to take the high school courses required for admission to a nursing education program, and offers suggestions and leads for becoming informed about nursing careers and choosing a nursing school.

For complimentary copies of the brochure, contact the Division of Nursing, 800 North Quincy Street, Arlington, Va. 22203.

Phospholipase C Found To Inhibit Growth of Semliki Forest Virus

Scientists of the National Institute of Arthritis and Metabolic Diseases and the National Cancer Institute have shown that by altering the cell membranes of cultured chick embryo fibroblasts with phospholipase C from *Clostridium perfringens*, they can inhibit the growth of Semliki Forest virus, with apparently little damage to the host cell.

The investigators treated chick embryo fibroblasts with the enzyme phospholipase C from *CL. perfringens* to alter membranes and make cells unable to support reproduction by Semliki Forest virus, a group A arbovirus.

Treatment of cells both before viral infection and 2 hours after infection prevented virus reproduction.

Cellular functions and cell growth, however, were apparently not disturbed by treatment with phospholipase C, which hydrolyzes about 40 percent of the cell membrane phospholipid.

Enzyme Enhances Process

Adsorption and uncoating of the virus was enhanced by the enzyme treatment. Studies of cell and viral RNA synthesis, and of DNA-directed cell protein synthesis blocked by actinomycin-D, showed that the effective action was confined to viral specific syntheses normally occurring on a host cell membrane.

Specifically, the membrane-dependent transformation of viral RNA into a ribonuclease-resistant replicative form could not be demonstrated, possibly because viral RNA polymerase could not be produced or activated.

Although total phospholipid content of the cells was reduced 42 percent, no membrane changes were noted on electron micrographs. Sphingomyelin, the only phospholipid fraction showing a difference in sensitivity, was reduced 68 percent.

Acts Directly on Cells

Effectiveness of the enzyme 2 hours after virus infection of the host cells suggested that the enzyme was acting directly on these cells.

Since formation of ribonuclease-resistant RNA is over by this time, inability of the membrane to participate in budding of virus cores and release of new virions is suspected.

Sixteen hours after enzyme treatment, cells were again able to support virus multiplication.

Actinomycin-D was found to potentiate the antiviral effect of the enzyme, even though it enhances viral growth when used alone.

Since Actinomycin-D inhibits

Marsupial May Be Excellent Lab Animal Recent Research by DEHS Suggests



The "Marmosa mitis," a South American marsupial not used extensively in research, may enable scientists to study effects of the environment on prenatal development in humans.

The Division of Environmental Health Sciences has not limited its search for an appropriate laboratory animal for research in environmental health to species normally considered laboratory tools.

Other animals may be closer to man in anatomical structure, in susceptibility to latent infections, and in metabolizing environmental chemical agents.

During recent months, the DEHS has become increasingly interested in the use of some of the more exotic animals. One of these is the *Marmosa mitis*, a small South American marsupial that may give scientists the opportunity to conduct comparative studies of the effects of the environment on prenatal development in humans.

One of the advantages of the *Marmosa mitis* is that it gives birth to premature young that are very accessible to the scientists. These young are even more accessible than those in the pouch of the opossum.

Other Advantages Noted

Other advantages of this species include its small size and its willingness to breed in captivity.

Before utilizing such unusual animals, scientists will need to define their anatomical, behavioral, or physiological characteristics and their environmental requirements.

On the other hand, much still remains to be learned about animals that are now normally considered as laboratory models.

Dr. Colbert D. LeMunyan,

phospholipid synthesis, reduced turnover of phospholipid in repairing hydrolysed membrane structures was suggested as a possible mechanism of antiviral activity.

The use of the membrane-hydrolyzing enzyme to restrain viral reproduction was reported by Dr. Robert M. Friedman, NCI, and Dr. Ira Pastan, NIAMD.

DEHS, recently presented a paper titled "Selection of the Appropriate Biological Model for Research in Environmental Health," before the American College of Laboratory Animal Medicine at the 105th Annual Meeting of the American Veterinary Medical Association.

NCI Pamphlet Discusses 'Leukemias, Lymphomas, And Multiple Myeloma'

Leukemias, lymphomas, and multiple myeloma are cancers of the blood-forming and lymphoid organs. Because these cancers involve abnormal growth of cells with similar functions and origins, they are considered related.

Symptoms, treatment, and research on these diseases are discussed in *Leukemias, Lymphomas, and Multiple Myeloma*, the latest in a series of informational pamphlets on cancer prepared for the general public by the National Cancer Institute.

Encouraging progress has been made in extending the survival of acute leukemia patients, according to the pamphlet. This improvement is due to chemotherapy (treatment with drugs) and the development of better methods of patient care.

Single copies of the brochure (PHS Publication No. 1768) are available without charge from the DHEW, Washington, D.C. 20402.

The pamphlet also may be purchased from the Superintendent of Documents, Government Printing Office, Washington, D.C. 20402 at 10 cents a copy or \$5 per 100 copies.

Uniform Anatomical Gift Act Resolves Questions Of Law on Transplants

Many of the legal questions emphasized by recent heart transplant operations will be resolved by a Uniform Anatomical Gift Act, authorizing the donation of all or part of the human body for medical or scientific use after death.

Given final approval by the National Conference of Commissioners on Uniform State Laws on July 30, 1963, the Act is the product of 3 years of intensive study by a special committee of the Conference.

Act as Consultants

Serving as consultants for the special committee were Dr. Alfred M. Sadler, Jr., and Blair L. Sadler, on detail to the National Institute of Arthritis and Metabolic Diseases.

Dr. Sadler and Mr. Sadler, a doctor-lawyer team of brothers, have been working on medical-legal matters of import to the NIH, with particular emphasis on programs involving tissue procurement for research.

The Act was endorsed by the American Bar Association at its annual convention Aug. 7. It is being distributed to all state legislatures and will serve as a nationwide model for enactment of individual state laws.

"Parts" Defined

If enacted in all the states, the Act would provide a uniform legal environment, accounting for all interests of all parties involved in gifts of bodies, or body parts, for medical purposes.

"Parts" are defined in the Act as organs, tissues, eyes, bones, arteries, blood, and other fluids.

The various state laws governing organ donations today are a confused mixture of old common law dating back to the 17th Century and state donation statutes which vary widely in scope and are generally inadequate.

Law Requires Consent

Under common law, removal of cadaver tissue requires consent of the deceased's relatives. A corollary to this is that a person has no "property rights" in his body after death. As a result, the Commissioners decided to draft a comprehensive donation statute which allows a person to control the disposition of his own body after death.

An earlier draft of the Uniform Anatomical Gift Act has already been enacted by legislatures in two states, Maryland and Kansas. The Maryland statute is the most comprehensive and enlightened in the country.

Because of considerable public



Louise C. Anderson (center), chief, Nursing Department, presents achievement certificates to Junior Red Cross Hospital Volunteers ("Teens") at a recent farewell gathering. From left to right: Lynn Wallack, Kathleen Dean, Patricia Roach, Margaret Janda, Phyllis Witkop, Patricia Laut, Nancy Garrick.

Transplantation Society Holds Meeting in N.Y., Cosponsored by NIAID

More than 2,000 physicians and biomedical scientists attended the Second International Congress of the Transplantation Society held in New York recently. The National Institute of Allergy and Infectious Diseases and the John A. Hartford Foundation Inc., were cosponsors of the meeting.

Topics stressed were transplantation of organs, heart, kidney, liver, and lungs. Such areas as bone marrow transplantation; pregnancy and transplantation; cancer immunology and transplantation; transplantation antigens, and immunobiology were also discussed.

NIAID's Transplantation Immunology Branch prepared a special exhibit for the meeting.

Six Achieve 'Special Status' In CC Blood Donor Program

The Clinical Center Blood Bank reports that six donors achieved a special status during the first half of September.

Dr. Paul J. Schmidt, CC, and Chandler Stalvey, NLM, reached the 2-gallon mark. Mary B. Beach, CC, Rudolph Reid, NCI, Dr. George B. Riley, NIND, and Herbert C. Christoferson, NIDR, joined the Gallon Donor Club.

More blood is needed. Make an appointment to donate now by calling Ext. 64506.

interest stimulated by recent heart transplant operations, the legal climate throughout the country is favorable. It is anticipated that, in their next legislative sessions, most states will be examining the Uniform Act with a view toward its adoption.

Edward McManus Named DRFR Administrator

Edward H. McManus has been named administrative officer of the Division of Research Facilities and Resources. Formerly he was with the Intramural Research Program of the National Institute of Mental Health as assistant to the administrative officer, OD.

A native of Hyannis, Mass., Mr. McManus received his B.A. degree from the University of Massachusetts. He started his civil service career in 1961 with the U.S. Treasury Department.

From 1961 to 1964 he served as an officer in the U.S. Navy.

Dr. Pratt, Acting Chief Of DRG Branch, Dies

Dr. James W. Pratt, acting chief of the Research Grants Review Branch, Division of Research Grants, died of a heart attack on Sept. 13. He had been with NIH since 1949.

Dr. Pratt was born in Braintree, Mass. He received both his B.A. and M.A. in chemistry from Boston College. In 1948 he came to Georgetown University to teach chemistry; he received his Ph.D. from that university in 1951.

Dr. Pratt became a science administrator with the National Institute of Arthritis and Metabolic Diseases in 1955. Before that he was an NIH laboratory chemist.

Dr. Pratt was a member of the American Chemical Society, the American Diabetes Association, and the AAAS.

He leaves his wife, the former Eleanor M. LeVangie, four daughters and four sons.



Dr. Pratt

Dr. Mitchell Appointed Asst. to NHI Director

Appointment of Dr. Shiela C. Mitchell as an Assistant to the Director, National Heart Institute, has been announced by Dr. Theodore Cooper, NHI Director.

In her new post, Dr. Mitchell will administer NHI collaborative studies and research activities in congenital and rheumatic heart disease.

She will also serve as executive secretary for the NHI Executive Committee and for special review panels. In addition, she will be the project officer for a training contract with the Board of Pediatric Cardiology to evaluate testing and training procedures in the congenital heart disease field.

Born in Toronto, Canada, Dr. Mitchell received her M.D. degree at the University of Toronto in 1951.

Serves as Fellow

In 1953-54, she was a Fellow in Virology at the Connaught Medical Research Laboratories of that University. From 1954 through 1957, she was a Fellow in Pediatric Cardiology, first at the Montreal Children's Hospital, then at the Hospital for Sick Children, Toronto.

Dr. Mitchell joined the staff of the University of Michigan in 1958 as a research associate in the Department of Pediatrics. In 1960-61, she was a research associate in the Department of Obstetrics, and from 1961 to 1963, in the Department of Epidemiology of the School of Public Health.

In 1963 Dr. Mitchell was appointed to the post of a Medical Officer in the NHI's Epidemiology and Biometrics Program.

NIH STORY

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sored by the Public Health Service for 7 years. Dr. James Watt appeared regularly on the program until he retired earlier this year.

Each Saturday program will be repeated the following Wednesday at 1 a.m.

The new, 15-minute radio program, entitled "Your NIH," will be heard during the intermission of the weekly "Library of Congress Music Series," over Station WGMS (570 AM, 103.5 FM-Stereo) at about 9:15 p.m. every Friday evening.

NIH staff members will be interviewed by Win Clearwater, host of the concert series now in its 17th year.

Dr. Seymour J. Kreshover, NIDR Director, will discuss modern dental research in the first of these WGMS radio interviews on Friday, Oct. 11.



Dr. G. Donald Whedon, NIAMD Director (right) accepts a citation from Dr. William S. Clark, President of the Arthritis Foundation, on behalf of the PHS for "outstanding contributions in our nation's effort to control arthritis and related rheumatic diseases." The presentation was made at the recent observation of the Foundation's twentieth anniversary, at which President Johnson was the main speaker.

Graduate Dietitians Tour CC Metabolic Kitchens

Graduate dietitians from such diverse places as Florida and Canada attended the recent 3-day annual Metabolic Conference at the Clinical Center in order to study techniques used in the operation of Metabolic kitchens.

Under the aegis of Edith A. Jones, chief, CC Nutrition Department, the visitors toured the CC's three Metabolic kitchens and observed the food preparation.

They were also briefed on the workings of the Nutrition Department.

On the final day of the conference the dietitians toured a Life Island kitchen where food is prepared for patients confined to an isolated sterile environment.

Study Establishes Genetic Character of Various Forms of Retinal Degeneration

Advances in the early detection and localization of various forms of progressive retinal degeneration, and conclusive evidence of the genetic character of such degeneration, have been described in a trio of reports by a team of National Institute of Neurological Diseases scientists.

Means of diagnosing rod responses in retinitis pigmentosa (night blindness), progressive cone-rod degeneration, and progressive cone degeneration were described in these studies reported by Eliot Berson, Peter Gouras and Ralph Gunkel of the Ophthalmology Branch, NIND.

These reports are a continuation of 10 years of work with the electroretinogram (ERG), an instrument used to measure retinal electrical activity. This instrument makes it possible to determine with increasing accuracy which parts of the retina are functioning normally and which are damaged by disease or injury.

Present techniques make it possible to detect carriers and thus to identify inherited retinal degeneration in children, to an extent not possible with examination by ophthalmoscope.

While prevention of progressive retinal degeneration, or halting of the disease's progress by medical treatment is not yet possible, detection of the condition early in life provides an opportunity to alert parents to the progressive pattern of the disease and to plan for an affected child's future with knowledge of the limitations his visual defect will eventually impose.

Knowledge of the genetic character of the disorder should be useful too in family planning.

In *Rod Responses in Retinitis Pigmentosa*, the investigators discuss methods used to evaluate retinal function in a family with dom-

inantly inherited retinitis pigmentosa, traced back through three generations.

The study of *Progressive Cone-Rod Degeneration* assessed cone and rod involvement in three males with macular dysfunction and peripheral pigmentary retinal degeneration progressing in adult life.

Cone-rod degeneration was differentiated from dominantly inherited retinitis pigmentosa in that the first appears early to involve some of the rods and most of the cones, while the latter initially involves almost all the rods while sparing the cones.

Visual acuity diminishes early in progressive cone-rod degeneration and much later in dominantly inherited retinitis pigmentosa.

Color vision is absent or decreased in cone-rod degeneration but is present in the very advanced states of retinitis pigmentosa. Both degenerations are associated with bone spicule (needle-like) pigmentation and retinal arterial weakening.

The report on *Progressive Cone Degeneration, Dominantly Inherited* confirms the dominant genetic pattern of progressive cone degeneration. In this study, a family, whose history of visual disorder was traced back three generations, was evaluated.

Dr. Carl Miller to Head Area Branch of AALAS

Dr. Carl E. Miller, a research veterinarian in the Division of Biologics Standards, was recently named President-elect of the National Capital Area Branch of the American Association of Laboratory Animal Science.

The activities and programs of the association provide a medium for exchange of scientific information and education in the fields of production, care, and study of laboratory animals.

The National Capital Area Branch has approximately 200 members representing biological research organizations throughout the Washington, Maryland, and Virginia area.

Dr. Miller had been a member of the DRS Laboratory Aids Branch for 7 years prior to joining DBS in 1967.

A Diplomate of the American College of Laboratory Animal Medicine, Dr. Miller's major research interests include laboratory animal medicine and the application of germ-free and pathogen-free animals to cholera research.

Dr. Rasmussen to Spend Sabbatical Year at RML

Dr. A. F. Rasmussen, Jr., professor and chairman of the Department of Medical Microbiology and Immunology at the University of California, Los Angeles, has arrived at the NIAID Rocky Mountain Laboratory where he will spend a sabbatical year. He will be collaborating with Dr. William Hadow in research on slow viral diseases.

Scientists at RML, including Dr. Hadow and Dr. Carl Eklund, have pioneered in this field.

Dr. Rasmussen is particularly



During his year at RML, Dr. Rasmussen initially will try to improve virus detection methods.

interested in a disease, called *visna*, in which a virus causes a progressive disease of the central nervous system of sheep in Iceland. He plans to collaborate with Dr. Hadow in the search for evidence of a similar disease in Montana sheep.

Visna has been compared to the human disease, multiple sclerosis.

Dr. Rasmussen's initial efforts will be to improve virus detection methods, working in tissue culture as well as the natural host. He will also study immunologic factors in Aleutian disease of mink.

DR. LEVENTHAL

(Continued from Page 3)

sor of Theater Arts at the University of California at Los Angeles; her mother is a planner for a Los Angeles architect.

Dr. Leventhal received her B.A. degree from UCLA in 1955 and her M.D. degree from Harvard Medical School in 1960. She had further training at Massachusetts General, Boston City and St. Elizabeth's Hospitals, all in Boston. From 1964 to 1965 she served as a Postdoctoral Fellow at NCI. She is a member of Phi Beta Kappa and Alpha Omega Alpha.

Dr. Leventhal finds her work intellectually stimulating and a great challenge. She hopes it will in some measure contribute to eventual cure for one or more forms of cancer.



Ernestina Bou, dietitian, CC Nutrition Department, shows participants in the recent 3-day Metabolic Conference how measured diets are prepared. From left they are: Carol P. McMenamin, University of Pennsylvania; Captain Carole Johnson, Walter Reed Army Institute of Research; Catherine Catterton, University of Virginia Hospital; Miss Bou; Grace Wise, Temple University Hospital; Carol Herring, Duke University Medical Center; Brenda Harmon, University of Florida; Marlene Butler, Baltimore City Hospitals; Erica Reber, Medical College of Virginia, and Marie Hori, The Hospital for Sick Children.

DDH Booklet Reveals 82 Million Americans Drink Fluoridated Water

With the addition of almost 10 million Americans who began drinking fluoridated water during 1967, the number of persons enjoying this dental health benefit is now approximately 82 million, according to Dr. Viron L. Diefenbach, Assistant Surgeon General and Director of the Division of Dental Health, Bureau of Health Manpower.

Communities Listed

Fluoridation Census, 1967, a publication released by DDH, also discloses that an additional ten million persons drink water which contains sufficient natural fluorides to inhibit tooth decay. The booklet lists each community with controlled fluoridation and the date the measure was instituted.

In the past year, Detroit, Mich., serving close to three and a half million people, was the largest single population center added to the list of communities served by fluoridated water. The next largest city was Dallas, Tex.

With few exceptions, most states showed a steady increase in population consuming fluoridated water.

Leading the Nation, Maryland, Michigan, Virginia, Wisconsin, Washington (D.C.) and Puerto Rico have fluoridated public water supplies available to over 90 percent of the population.

Single copies of *Fluoridation Census, 1967*, NIH Publication No. 428, may be obtained without charge from the Division of Dental Health, PHS, 8120 Woodmont Avenue, Bethesda, Md. 20014.

DR. BOWERY

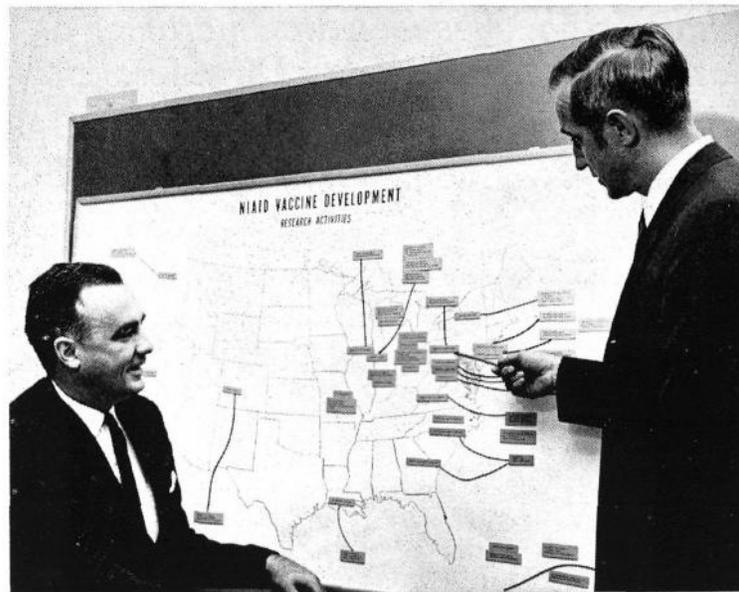
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In 1953, he joined the staff of North Carolina State University in Raleigh as research professor in the Department of Chemistry and Director of the Pesticide Residue Laboratories.

In the latter position, he was responsible for coordinating and directing programs in pesticide residue research for the North Carolina Agricultural Experiment Station.

He was named to the first class of NIH Grants Associates in 1962, and the following year was appointed special assistant to the Associate Director for Research Grants, Office of the Director.

He is a member of the American Association for the Advancement of Science, the American Chemical Society, the American Society for Public Administration, and Sigma Xi.



Dr. Daniel I. Mullally (left) and Dr. Earl S. Beck discuss the NIAID-directed field trials of an experimental vaccine against rubella (German measles) now getting under way in nine U. S. communities. The map shows the location of universities and pharmaceutical companies participating in the programs of NIAID's Vaccine Development Branch, which seeks vaccines against respiratory illnesses as well as rubella.

Alpha-Adrenergic Blocking Agents Found To Increase Catecholamine Biosynthesis

National Heart Institute investigators have reported that alpha-adrenergic blocking agents administered to rats act indirectly to increase synthesis of the catecholamines norepinephrine (NE) and epinephrine (E) in heart, adrenal, and brain.

Norepinephrine is synthesized in the sympathetic nerves and released at the sympathetic nerve terminals to activate alpha- and beta-adrenergic receptors.

Activation of the alpha receptors raises blood pressure, and when these are closed off by alpha-adrenergic blocking agents, the animal's blood pressure is lowered.

The effects of the alpha-adrenergic blocking agents phentolamine and phenoxybenzamine on the biosynthesis of NE and E were tested by administering these blocking agents to rats.

Drs. W. Dairman, R. Gordon, S.



George W. Hawkins, Machine Tabulation Section, DCRT, receives an Employee Suggestion Award from Dr. William Mohler, DCRT associate director. Mr. Hawkins suggested the return of binders supplied to customers.

Spector, A. Sjoerdsma, and S. Udenfriend of the Institute's Laboratory of Clinical Biochemistry and Experimental Therapeutics Branch conducted the tests.

The rate-limiting step in NE and E production is the conversion of tyrosine to DOPA, a conversion that is catalyzed by the enzyme tyrosine hydroxylase.

At the height of receptor blockade following administration of the alpha blockers to rats, the conversion of a tracer dose of tyrosine-¹⁴C to NE in heart, brain, and E in adrenals was increased.

When radioactive ³H-DOPA was given to bypass the step catalyzed by tyrosine hydroxylase, there was no increase of catecholamine synthesis in the drug-treated animals.

These findings indicate that tyrosine hydroxylase activity was being stimulated by the alpha-adrenergic blocking drugs.

The NHI researchers proposed the following mechanism to account for the stimulation of catecholamine synthesis by the alpha-adrenergic blocking agents.

These agents prevented the alpha-receptors from receiving any NE that was released from the nerve terminals. The blockade of the alpha receptors caused a lowering of the blood pressure.

In response to the hypotension, the animal's baroreceptors were then stimulated and sent signals

U.S. Children Take Part In Rubella Vaccine Tests Under NIAID Auspices

Children in nine communities in the United States soon will take part in field trials of a vaccine to prevent rubella (German measles), according to Dr. Dorland J. Davis, Director of the National Institute of Allergy and Infectious Diseases.

NIAID's Vaccine Development Branch is responsible for coordinating the government's intensive efforts to avert a recurrence of the 1964-65 epidemic.

7,500 Children in Program

The full scale testing program—involving approximately 7,500 school children—will be aimed at further evaluation of the rubella vaccine's efficacy. Earlier studies in laboratory animals and volunteers were performed to meet government safety requirements.

Physicians at leading medical centers under contract to NIAID will inoculate the youngsters with a vaccine similar to—or a derivative of—the HPV-77 live attenuated (weakened) vaccine developed by two NIH scientists, Drs. Harry M. Meyer, Jr. and Paul D. Parkman of the Division of Biologics Standards.

Rubella symptoms are often so mild—rash, enlarged glands behind the ears and neck, and many of the symptoms of common cold—that persons may be unaware they have the viral disease.

Causes Abnormal Children

Its greatest danger lies in the possibility that a woman early in pregnancy may be exposed to rubella for the first time. The result can be stillborn infants or infants who die soon after birth, or children crippled by heart disease, mental retardation, cataracts, glaucoma or deafness.

Among earlier rubella vaccine studies supported by NIAID were those conducted on Taiwan by Dr. Thomas Grayston of the University of Washington.

Here, some 9,000 school children were vaccinated prior to and during a rubella epidemic. Evaluation studies are now in progress; interim reports show the vaccine to be highly successful.

to the central nervous system to increase sympathetic nerve activity.

The increased nerve activity resulted in a release of NE from sympathetic nerve terminals.

Tyrosine hydroxylase activity can be inhibited by catecholamines. When NE is released from nerve endings as a result of nerve activity, tyrosine hydroxylase activity could be stimulated due to a local lowering of catecholamine levels.