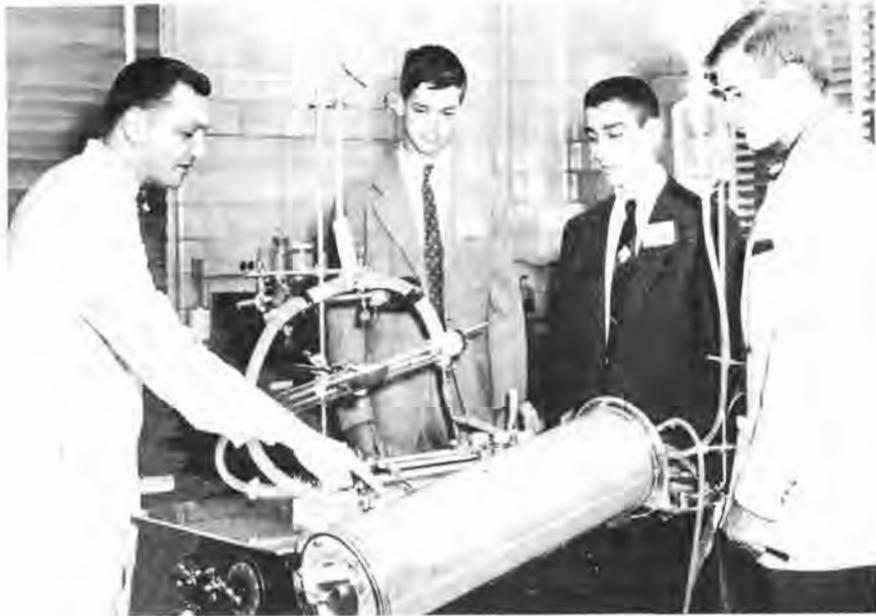




## SCIENCE-IN-ACTION DAY HELD JUNE 20



Dr. Joseph W. Gilbert, Jr., NHI (left), demonstrates a Melrose pump oxygenator, or heart-lung machine, for high school students who attended NIH's first Science-in-Action Day program June 20. The students are (left to right) Anthony Conrad, of Baldwin, Md.; Donald Blain, Philadelphia, Pa.; and Charles Gastin, Lancaster, Pa.

A "Science-in-Action" Day program was held for the first time at NIH on June 20. Thirty of the Nation's most talented high school science students had an opportunity to observe demonstrations of research work and to speak with leading NIH scientists in their laboratories. The students were either finalists in the National Science Fair Competition or in the National Science Talent Search contest. Many of them were accompanied by their science teachers and parents.

After a welcoming ceremony, the students spent the day visiting laboratories in all seven Institutes. Among the research work they viewed were demonstrations of germ-free animals and tissue culture methods in the growth of viruses.

## DR. LYNDON F. SMALL NIAMD, DIES JUNE 15

Dr. Lyndon F. Small, chief of the Laboratory of Chemistry, NIAMD, died June 15 at his Rockville, Md., home after a brief illness.

Dr. Small, an international authority on narcotics, had just received in absentia, June 8, an honorary degree of Doctor of Science from his alma mater, Dartmouth College. The citation read in part:

"One of the rarely talented research chemists of our time, your original persevering work on opium alkaloids has gone far to bring the oldest human burden of unbearable pain within beneficent reach of modern medicine."

(See Dr. Small, Page 3)

## DR. SARNOFF RECEIVES FIRST JACOBS AWARD

Dr. Stanley J. Sarnoff, NHI, is the first recipient of an award for meritorious research in the cardiovascular diseases presented by the Leslie L. and Helen F. Jacobs Foundation of Dallas, Tex.

Dr. Sarnoff, Chief of the NHI Cardiovascular Physiology Laboratory, received the award, which includes a plaque and a \$1,000 honorarium, during his recent four-day tour of Dallas heart research facilities. While in Dallas he also lectured at several medical institutions and discussed mutual research problems with local investigators.

The Jacobs award was instituted this year by a gift to the Dallas Heart Association and the University of Texas Southwestern Medical School. A nominating committee consisting of Dallas heart specialists, DHA officials, and two nationally prominent heart experts unanimously picked Dr. Sarnoff as the first recipient.

A graduate of Princeton and Johns Hopkins Universities, Dr. Sarnoff joined NHI in 1954.

## TEACHERS ATTEND 8-WEEK RESEARCH PROGRAM AT NIH

High school science teachers from all over the United States are working in laboratories at NIH as part of the work-study institute sponsored by American University.

Twenty teachers have been assigned to laboratories in several NIH Institutes where they are assisting in phases of research for an eight-week period. The program includes lectures at American University on recent advances in chemistry and physics.

While at NIH, the teachers have an opportunity to observe the latest

(See Teachers, Page 4)

# Improved Technique for Study of Heart Action

No. 187 in a Series

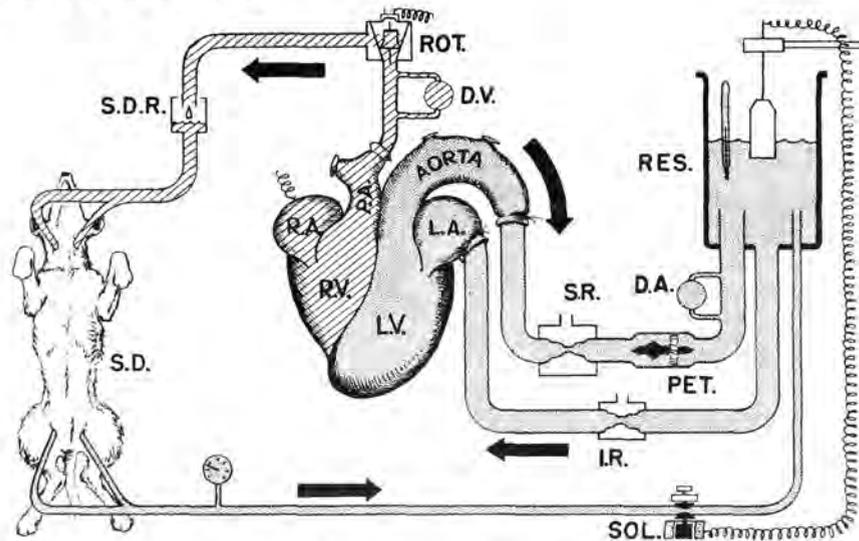


Diagram of the isolated supported heart preparation. Blood is pumped by left ventricle (L.V.) through resistance (S.R.) and flowmeter (PET.) to reservoir (RES.) and back to left atrium (L.A.). Coronary venous, or "used," blood, which collects in the right ventricle, goes through supporting dog (S.D.) before returning biochemically purified to the reservoir of the isolated heart.

An improved technique for study of the mechanism of the heart's action has been developed in NHI's Laboratory of Cardiovascular Physiology, headed by Dr. Stanley J. Sarnoff.

The experimental preparation involves an isolated dog heart. This, unlike previous isolated heart preparations, can produce cardiac outputs and pressures similar to those of the nonisolated heart rather than of the normal animal. The technique is made possible through an improved method for keeping the isolated heart alive.

The experiments have shown that the heart muscle's need for oxygen does not depend on the amount of work it does, but on the amount of pressure, or total tension, that it develops with each beat. Thus the amount of blood the heart pumps apparently does not, of itself, substantially influence its oxygen requirement.

The use of an isolated heart with essentially normal performance characteristics makes possible an analysis of the factors influencing the heart's requirement for oxygen. This analysis has not been possible in the intact animal.

Isolated hearts in the past have been nourished by blood or a salt solution chemically resembling blood plasma. These hearts tended

to fail progressively, presumably because the nutritional adequacy of the continuously re-used blood deteriorated with time, even though the blood was oxygenated.

The new isolated heart preparation of Dr. Sarnoff and his co-workers is supported by a second dog. This keeps the blood that feeds the isolated heart biochemically normal.

The blood supply for the isolated heart comes from the leg artery of the supporting dog and after use by the isolated heart drains back into a neck vein to be oxygenated, biochemically reconstituted, and wastes disposed of by normal lungs, kidneys, and liver.

The new findings--which show that developed tension rather than the amount of blood pumped by the heart determines oxygen consumption--call for a critical reappraisal of some of the classical concepts of heart action. Such findings have far-reaching implications at both the theoretical and applied levels and throw new light on the mechanism of the low efficiency and relatively high energy requirement of the dilated or failing heart.

Collaborating with Dr. Sarnoff in this research have been Drs. Eugene Braunwald, Robert B. Case, George H. Welch, Wendell N. Stainsby, and Radi Macruz.

## Publication Preview

The following manuscripts were received by SRB Editorial Section between May 21 and May 28.

Andrews, J. M. Veterinary problems in tropical medicine.

Andrews, J. R., et al. Continuous visual monitoring of 2 mev X-ray therapy.

Baldwin, M. Psychological changes related to lesions of the temporal lobe.

Bates, R. W., et al. Thyrotrophin potency of transplantable pituitary tumors of mice through four transfers.

Bayley, N., et al. Long term experience with methyltestosterone as a growth stimulant in short immature boys.

Bondareff, W. Cytogenesis of intracellular pigment in the spinal ganglia of senile rats. An electron microscope study.

Cole, K. S. Electric structure and function of cells.

Cranblett, H. G., et al. Vaccinia: A case report of an accidental infection with a discussion of the laboratory studies and a review of the literature.

Duhl, L. J. The normal development of the mentally retarded child (planning a Federal program).

Edgcomb, J. H., et al. Histopathologic changes in the skin of patients with mycosis fungoides following therapy with high energy electrons.

Goodman, H. C., et al. Adrenocorticotrophic hormone (ACTH) and corticoid treatment of nephrotic syndrome.

Hall, K. D., et al. Case report: Separation of craniophagus.

Heller, J. R. The future of cancer research.

Holland, M. G., et al. A study of the innervation of the chamber angle. II. The origin of trabecular axons revealed by degeneration experiments.

Lillie, R. D. Adaptation of the Morel Sisley protein diazotization procedure to the histochemical demonstration of protein bound tyrosine.

O'Connor, G. R. Precipitating antibody to toxoplasma.

O'Keefe, D. E. Social work participation in medical and psychiatric research.

Rall, J. E. Radiation and the medical profession.

Shakow, D. Research in child development.

Sokoloff, L., et al. The occurrence and significance of vascular lesions in rheumatoid arthritis.

Stadman, T. C. Microbial metabolism of steroids.

Stetten, D., Jr. Certain aspects of the metabolism of glycogen.

Stoener, H. G., et al. Leptospirosis (ballum) contracted from Swiss albino mice.

Tasaki, I., et al. Current-voltage relations of single nodes of ranvier as examined by the voltage-clamp technique.

Van Scott, E. J., et al. Therapy of mycosis fungoides with high energy electrons.

Yagoda, H. Anomalous heavy primary cascades recorded on Viking 10 rocket flight.

NIH RECORD

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## NJH Spotlight



Philip R. Joram

A visitor to the Medical Arts Section in Building 1 will pause to glance through a glass partition into a room that bears the inscription "Plastics." There among colorful bottles and displays sits a tall young man mumbling to himself and occasionally gesturing wildly. This is Phil Joram, Biologist, hard at work rehearsing his lines for a forthcoming Hamster performance.

In the past three years Phil has risen to stardom in at least six Hamster plays. His latest triumph was "White Sheep of the Family," in which he convincingly played the romantic lead, true to his reputation as "big, sweet, old, lovable Phil."

The active imagination and vigor that enabled Phil to become a success on the stage also extend to his work in Medical Arts. The application of plastics to medical research, he explains enthusiastically, is a relatively new and challenging field and holds countless possibilities.

Routinely Phil prepares and mounts specimens in plastic for display purposes, for the clinical research museum, or whenever records or preservations are needed. He recently developed a new type of mounting jar that can be adapted to fit the specimen.

Often a scientist will call on Phil for assistance in a research project. This calls for a wide knowledge of plastic types and their uses. A plastic may be rigid or flexible, clear or colored, film-thin or solid. From his own wide knowledge and from information and samples from commercial plastic firms, Phil decides

the type he will need. Working with scientists, he has constructed artificial veins, plastic foam-rubber joint discs, and is now working to develop an artificial lung.

Phil's interest in plastics began during his four-year term in the Army, where he learned the intricacies of plastic embedding at the Armed Forces Institute of Pathology. His college premedical background and interest in medicine have been of assistance in this field.

Actually Phil is a frustrated Texan--that is, a Texan away from Texas. But he compensates by avidly reading Western stories, watching Western movies and talking about Texas at the drop of a hat--10-gallon, pardner!

Born and educated in Longview, Tex., Phil tore himself away long enough to attend Loyola University in New Orleans, where his outside interests were in dramatics, basketball, and pretty girls.

At present he lives in Washington with his wife, Helen, and three children, Ellen, 3 1/2, Michael, 2 1/2, and Mark, 10 months. His ambition just now, Phil says with a twinkle in his eye, is to stick around long enough to get a 30-year pin.

## DR. SMALL Contd.

In 1949, Dr. Small received the Hillebrand Prize of the American Chemical Society for outstanding research on alkaloid chemistry.

Joining PHS in 1939, Dr. Small was made chief of NIAMD's Laboratory of Chemistry in 1951, directing and coordinating activities of the steroid, carbohydrate, and analgesic sections.

Among the many important offices he held during his distinguished career were U. S. Technical Representative to the League of Nations, 1931; U. S. Delegate to the Opium Assay Commission of the League of Nations Health Section, 1937 to 1939; and U. S. Expert Chemist to the United Nations Opium Committee, 1954.

At the time of his death, Dr. Small was serving as a member of the Committee on Drug Addiction and Narcotics, National Research Council, and of the Expert Advisory Panel on Drugs Liable to Produce Addiction, World Health Organization, United Nations.

Dr. Small is survived by his widow, two children, and seven grandchildren.

## 300th ANNIVERSARY OF Wm. HARVEY'S DEATH



Dr. Herbert M. Evans (third from left), professor emeritus, University of California, Berkeley, and visiting professor in the history of science, University of California, Los Angeles, lectured June 10 in Wilson Hall on the life and times of William Harvey (1578-1657). The lecture was in observance of the tercentenary of the death of Harvey, the English physician who first described the circulation of the blood. With Dr. Evans are (left to right) Dr. James Shannon, Mrs. Evans and daughter Gail, Dr. Evelyn Anderson, chief of Section on Fractionation and Isolation, NIAMD; and Dr. DeWitt Stetten, Jr., associate director of NIAMD. Dr. Anderson is a former pupil of Dr. Evans.

## DBO COURSE TRAINS SECRETARIES



Participants in the clerical training course pictured above are (seated, left to right) Ronica Schwartz, Jane W. Viera, Suzan Harkcom, Dorothy T. Popham, Elinor Fortin, and Barbara Helen Dyson. Standing are (left to right) Dorothy R. Cramer, Evelyn P. Dewey, Alberto Jarvis, Arleen W. Kennedy, Yvonne M. Didier, Claudette Justice, Adelia J. Downey, Wilda H. Mitchell, assistant course director; and Irene D. Skinner, director of the course.

A secretary who comes to NIH is often bewildered by the number of forms and special techniques that confront her. For this reason the Administrative Services Section of DBO launched a clerical training course three years ago, and since then has trained over 250 secretaries and typists for NIH offices.

This interesting and unique program was designed by Irene Skinner, Head of the Administrative Services Section. Mrs. Skinner now teaches the 4-week course with the assistance of Wilda Mitchell. Most trainees are new to NIH, but many experienced employees have attended to brush up on techniques and learn new methods.

The secretary or typist who enrolls in the program attends classes one hour each day. She is expected to attend each lecture and, on completion of the course, takes a written examination. Several employees have found the instruction so beneficial they have taken the course several times.

The first sessions of the program are devoted to an explanation of the DHEW Communications and Style Manual, the standard guide in writing letters, memoranda, telegrams, special letters, and other style provisions. Any communication, Mrs. Skinner emphasizes, is an important reflection of the office from which it comes.

The class is also instructed in the use of the Supply Management Guide, and students are told how to order equipment, transfer property, and deal with other problems that occur. An imposing pile of sample forms relating to time and leave, travel,

and other subjects is distributed to each girl, and the uses of each form are carefully explained.

Other classes include a movie on verbal communications, an explanation of personnel forms and actions, a tour of the CC and the library, and tips on how to dress and act in an office. A fascinating device nicknamed the "telecon" enables students to record and hear their voices in imaginary telephone conversations.

Completion of this course may not make a secretary an expert, but she will know where to find the information she is looking for and how to deal with many situations that she encounters. Any stenographer, clerk, or typist at NIH is eligible to enroll in the classes and may

## AREA STUDENTS ATTEND CAREER WORKSHOP HERE

A group of Washington area high school students interested in medical careers attended a career development workshop at NIH June 24.

Their visit, sponsored by the YWCA, was designed to acquaint the teenagers with various fields and opportunities in medical research. Their full-day program included lectures and visits to NIH laboratories to talk with scientists and see demonstrations of research work.

The program at NIH was part of a 10-day medical career conference conducted for the second year by the YWCA. The students were high school juniors and seniors selected by their academic counselors.

## TEACHERS Contd.

research techniques and work with modern equipment under the direction of leading scientists. Participants have been placed according to their interests in such fields as biology, radiation biology, chemistry, and instrumentation.

An orientation program was held for the science teachers on June 24, which featured talks by Dr. Luther Terry, NHI, and Dr. Heintz Specht, NIAMD. Color films and a tour of the CC were also included in the program.

The special teacher institute, designed to help the science teacher keep abreast of scientific developments, is supported by a grant from the National Science Foundation.

apply through her supervisor or administrative officer.

## Two New Buses Arrive At NIH



Two new 15-passenger buses have recently been acquired for employee use on the NIH grounds. Posing with the buses are (left to right) Donald R. Cushing, Chief of the Office Services Branch, DBO; John Finch, Head of the DBO Transportation Section; and bus drivers Leonard A. Coombs and Nathaniel Williams. The buses follow a scheduled route between the Stone House and Bldg. T-6 every half hour. Schedules may be obtained by calling ext. 3426.