



DEPARTMENT OF  
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## FIRST ANNUAL NIH ART EXHIBIT DRAWS MANY ENTRIES



First-prize winners in the first annual NIH Art Exhibit are shown with their winning entries. From left: Jennie Lea Knight, NIMH, and her oil painting, "Late Flying Swamp Bird"; Saide Fishman, NIMH, with her limestone sculpture, "Family Group"; and Inez Demonet, DRS, whose aquatint and drypoint print depicts the Arch of Constantine in the Roman Forum. See story on p. 3.

### \$1000 BEQUEST MADE TO PATIENTS' FUND

The CC Patients' Welfare Fund was the recipient of a \$1,000 bequest made by Mrs. Grace E. Berger, recently deceased wife of Rudolph Berger, a former CC patient. This is the first time a bequest has been made for this purpose.

Mr. Berger was a patient in the CC during part of 1957. He died in November of last year. Mr. and Mrs. Berger were residents of Washington, D. C.

Mrs. Berger's bequest will augment the fund used to provide certain necessities for patients who are financially unable to provide for themselves. Assistance may take the form of partial maintenance for a relative visiting Washington to be near a patient critically ill, or a small weekly allowance for such things as tobacco, magazines, and stamps. Financial help of this

(See Bequest, Page 4)

### DR. FRANK JOINS MISSION TO USSR

Dr. Karl Frank, of the Laboratory of Neurophysiology, NINDB, left for the USSR last week as a member of a six-man team of American scientists surveying the status of neurology in that country.

The mission, sponsored by PHS and NINDB, is the first of its kind in the field of neurology. Under an agreement between the United States and Russia to exchange missions in various fields, a group of Soviet Specialists will make a similar study of neurology in this country at a later date.

Other members of the U. S. team are Dr. Francis M. Forster and Dr. Clinton N. Woolsey, of the University of Wisconsin; Dr. Paul Ivan Yakovlev, Harvard; Dr. Louis S. Goodman, University of Utah; and Dr. Henry M. Woltman, Mayo Foundation Graduate School.

### NIMH, ST. ELIZABETHS OPEN RESEARCH CENTER

The Clinical Neuropharmacology Research Center, under the joint operation of NIMH and St. Elizabeths Hospital, was officially opened November 20. Located in the William A. White Building on the hospital's grounds, the Center combines basic research and clinical techniques in a comprehensive project to study the effects and use of drugs in the treatment of mental illnesses.

Scientists at the Center will carry on their studies in research laboratories in the basement and on the fifth floor, while over 300 patients will be treated on the other floors.

Psychiatrists, pharmacologists, psychologists, physiologists, biochemists, and other specialists are beginning a series of studies to determine the effects of chlorpromazine, reserpine, meprobamate, and other drugs in the treatment

(See Research Center, Page 4)

# Electron Microscopy Defines Structure of the Synapse

No. 219 in a Series



Cross section of synaptic terminals on nerve cell. Large arrow points to synaptic complex.

Precise knowledge about the fine structure of the synapse has not been available in the past because of the magnifying limitations of the conventional light microscope.

Today, electron microscopy, by extending the resolution of the microscope from 0.1 micron to 0.001 micron, has confirmed the neuron doctrine of His and Cajal--that nerve cells are independent structural units connected only by discontinuous contact.

An extremely efficient device for conveying information through the nervous system, the synapse is the junction across which nervous impulses are transmitted from nerve cell to nerve cell.

Recent modifications in silver-staining techniques have demonstrated the close packing of the simple nerve endings in the part of the brain known as the medulla oblongata. These techniques when applied to the study of nervous tissue in small vertebrates have provided information regarding the position and shape of the nerve terminals but not about their internal structure.

Under the electron microscope, according to Dr. Sanford L. Palay, NINDB neurocytologist, synaptic terminals appear as small, rounded expansions packed closely together in shallow, saucer-like depressions in the surface of the neuron and its dendrites. Inside the terminals cluster a throng of minute membranous particles (synaptic vesicles) as well as numerous rod-shaped mitochondria similar to those that appear in all cells. The synaptic membrane is irregular in

density, thicker in spots where the cluster of synaptic vesicles is greatest. This area of the synaptic complex is probably the actual site of impulse transmission.

The presynaptic terminals of one neuron are separated from the postsynaptic surface of the next neuron by a definite cleft  $1/2,500,000$  inch wide. The cleft seems to be extracellular space. Stray parts of glial cells sometimes cap the synaptic terminals. "Presynaptic" and "postsynaptic" are terms designating the "message" sending and receiving components of the neuron.

Apparently, the synaptic cleft is narrow enough for the rapid diffusion of transmitter substances and wide enough for the free flow of ions and electric current. Whether the cleft alters in size and shape during ion discharge is a question that can only be answered by examination of live tissue.

The architecture of most synapses so far studied appears to follow the same general plan, although there are some variations. More study of representative sections of nervous tissue from all major orders of vertebrates will be necessary before any sweeping generalizations can be made about the structure of the synapse in different parts of the nervous system.

Electron microscopy of the synapse is of great interest to physiologists, who look to an eventual correlation between ultrastructure and the function of living cells for a clarification of the nature of impulse transmission.

## Mink And Money Mingle

Part of the staff of Financial Management Branch, DBO, took up bigtime gambling recently when they joined the mob in "Guys and Dolls," the Hamster hit of two weeks ago. Branch Chief G. A. Van Staden played Angie the Ox, while Budget Section Head B. J. Sadesky appeared as Harry the Horse.

Those minks enveloping Miss Adelaide and the Hot Box girls were the real thing -- \$7,000 worth of pure mink. Lent by the Capitol Fur Shop, the furs were put in the safe each night, then picked up every morning by the shop and delivered again at show time.

## Publication Preview

The following manuscripts were received by the SRB Editorial Section between August 14 and August 26.

DBS

Schmidt, P. J., and Chaplin, H., Jr. A modified sterile pilot tube for collection of the donor's blood for crossmatching: A follow-up study on the effects of storage.

Schmidt, P. J.; Morrison, E.; and Shohl, J. The antigenicity of the Rh<sub>0</sub> variant (D<sup>u</sup>) in transfusion practice.

NCI

Haenszel, W.; Shimkin, M. B.; and Mantel, N. A retrospective study of lung cancer among women.

Hertz, R.; Bergenstal, D. M.; Lipsett, M. B.; Price, E. B.; and Hilbish, T. F. Chemotherapy of choriocarcinoma and related trophoblastic tumors in women.

Liebling, M. E.; Humphreys, S. R.; and Goldin, A. Studies of 5-fluorouracil in the treatment of L 1210 leukemia in mice.

Loo, T. L.; Michael, M. E.; Garceau, A. J.; and Reid, J. C. 6-thiouric acid -- a metabolite of 6-mercaptopurine.

McQuilkin, W. T.; Earle, W. R.; and Evans, V. J. Microcinematographic studies of animal cells *in vitro*. I. Active proliferation of mouse fibroblast cells after nearly 3 years in chemically defined protein free medium NCTC - 109.

Potter, J. F., and Malmgren, R. A. A new technique for the detection of tumor cells in the blood stream and its application to the study of the dissemination of cancer.

Stewart, S. E., and Eddy, B. E. Tumor induction by polyoma virus and the inhibition of tumors by specific neutralizing antibodies.

Watkin, D. M. Increased fat utilization in the hypermetabolism of active neoplastic disease.

NHI

Baker, S. P.; Gaffney, G. W.; Shock, N. W.; and Landowne, M. Physiological responses of five middle-aged and elderly men to repeated administration of thyroid stimulating hormone (thyrotropin; TSH).

Burns, J. J.; Trousof, N.; Evans, C.; and Agranoff, B. W. Conversion of myo-inositol to D-glucuronic acid and L-gulonic acid in the rat.

Duncan, L. E., Jr.; Cornfield, J.; and Buck, K. Circulation of labeled albumin through the aortic wall of the dog.

Kinsky, S. C. Hydrogen oxidation by *Clostridium kluyveri*.

Korn, E. D. The assay of lipoprotein lipase *in vivo* and *in vitro*.

Morrow, A. G.; Sharp, E. H.; and Braunwald, E. Congenital aortic stenosis: Clinical and hemodynamic findings, surgical technic and results of operation.

Rector, F. C., Jr., and Orloff, J. The effect of the administration of sodium bicarbonate and ammonium chloride on the excretion and production of ammonia. The absence of alterations in the activity of renal ammonia-producing enzymes in the dog.

Stadtman, T. C. A menadione-dependent enzymic hydrolysis of p-nitrophenyl phosphate.

Steinberg, D. Radiassay of C<sup>14</sup> in aqueous solutions using a liquid scintillation spectrometer.

Yu, T. F.; Burns, J. J.; and Gutman, A. B. A clinical trial with G-28315, a sulfoxide analogue of phenylbutazone, as a uricosuric agent in gouty subjects.

NIAMD

Bell, J. F.; Jallison, W. L.; Owen, C. R.; and Larson, C. L. Applicability of the Ascoli test to epizootic tularemia in wild rodents.

Emmons, C. W. Fungus nuclei in the diagnosis of mycoses.

Eyles, D. E. Toxoplasmosis in pet animals -- a public health problem.

Greenberg, J., and Kendrick, L. P. Resistance to malaria in hybrids between Swiss and certain other strains of mice.

Gundelfinger, B. F.; Hantover, M. J.; Bell, J. A.; Loosli, C. G.; and Rowe, W. P. Evaluation of a trivalent adenovirus vaccine for prevention of acute respiratory disease in Naval recruits.

Hasenclever, H. F. Attempts to immunize mice against sporotrichosis.

Utz, J. P.; German, J. L.; Louria, D. B.; Emmons, C. W.; and Barter, F. C. Pulmonary aspergillosis with cavitation: iodide therapy associated with an unusual electrolyte disturbance.

Weinbach, E. C. Biochemical changes in mitochondria associated with age.

#### NIAMD

Cochin, J., and Axelrod, J. Biochemical and pharmacological changes in the rat following chronic administration of morphine, nalorphine and normorphine.

Gladner, J. A.; Folk, J. E.; Laki, K.; and Carroll, W. R. Thrombin induced formation of co-fibrin. I. Isolation, purification and characterization of co-fibrin.

Matsuura, T., and Cahnmann, H. J. Model reactions for the biosynthesis of thyroxine. I. Structural influence of the side chain in analogs of diiodotyrosine on their conversion to analogs of thyroxine.

Olson, R. A., and Engel, E. K. "Chlorophyll" absorption microscopy of *in vivo*, cell free, and fragmented *Chlorella* chloroplasts.

#### NIDR

Piez, K. A., and Gross, J. The amino acid composition and structure of some invertebrate and vertebrate collagens.

Russell, A. L., and White, C. L. Oral health study in children of suburban Washington, D. C.: fifth year.

#### NIMH

Sokoloff, L., and Kaufman, S. The effects of thyroxine on amino acid incorporation into protein.

Greenhouse, S. W., and Geisser, S. On methods in the analysis of profile data.

Kety, S. S. Theory of blood: Tissue exchange and its application to measurement of blood flow.

Parloff, M. B. Patient-therapist relationships and therapeutic outcome.

Rosvold, H. E. Electroconvulsive shock. Sapir, P., and Brand, J. The National Institutes of Health Research Grant Program and the history and sociocultural aspects of medicine.

#### NINDB

Abraham, K., and Richards, N. G. EEG changes induced with photic stimulation in patients treated with ACTH and adrenal corticoids.

Aronson, S. B. II, and Shaw, R. Corneal crystals in multiple myeloma.

Kaufman, H. E.; Melton, M. M.; Remington, J. S.; and Jacobs, L. Strain differences of *Toxoplasma gondii*.

Macri, F. J.; Wanko, T.; and Grimes, P. A. The effect of extraocular muscle contraction on the elasticity of the eye.

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## NIH Spotlight



Fred Hethcoat

Fred Hethcoat, Painter Leader in the DRS Construction Engineering Section, might easily lay claim to the title of NIH's Most Widely Traveled Employee. That is, if he were the kind who would make extravagant claims. But Fred's quiet, soft-spoken manner belies a man who has painted his way through a wide and colorful variety of experiences--ranging from torpedo attacks in the North Atlantic to planning flower beds in Montgomery County.

Ever since he joined the Army as a boy back in the early twenties, Fred has been seeing most of the faraway places of the world, and steadily acquiring the techniques that have made him a skilled painter. Army service took him to the Philippines and to Panama; then followed 17 years in the Merchant Marine, in which Fred rose to the grade of Chief Boatswain. And on a ship, there is only one Chief Boatswain.

Fred says he has been around the world on a ship more times than he can remember. During the Second World War, he was assigned to cargo ships plying the hazardous route to Russia.

An Alabamian by birth, Fred has lived in California, Virginia, and Florida, doing independent paint-contracting while not at sea. He left the Merchant Marine after he was married, painted for Douglas Aircraft in California, for Walter Reed Army Medical Center in Washington, and came to NIH eight years ago.

Now settled in Rockville, he spends much of his spare time in his garden, raising dahlias and tulips. "When I first moved out

## ART EXHIBIT WINNERS AWARDED CASH PRIZES

Award winners in the R&W-sponsored first annual NIH Art Exhibit will receive cash prizes at the R&W annual meeting on December 3. In each of the three categories of art, first award winners will receive \$50, second will receive \$25, and third, \$10.

First award for an oil painting went to Jennie Lea Knight, Laboratory of Psychology, NIMH. A student of art for 11 years, Miss Knight is co-director and a member of the teaching staff of the Studio Gallery in Alexandria, Va.

Saide Fishman, Laboratory of Psychology, NIMH, received first prize for her sculpture entry. Miss Fishman has studied sculpture for seven years. One of her pieces was sold in Paris this summer, and others have been sold in this country.

In the graphic arts category, which included tempera, watercolors, prints, and drawings, first prize was awarded to Inez Demonet, Chief of the Medical Arts Section, DRS. Miss Demonet has been winning prizes for her art since she was in the 8th grade. She has her own studio and printing press in her home.

Other winners included: second prize in oils, Mrs. Agnes Winters, mother of Claire Mayer, NINDB; and third prize, David Orem, husband of Helen Orem, DRS. In the sculpture category, both second and third place went to Barbara Jean Bloom, wife of Dr. Ben Bloom, NIAMD. Second award in the graphic arts division was won by Lily Hagerman, Nursing Section, NCI; and third by Dr. F. J. McClure, Laboratory of Biochemistry, NIDR.

Limitations of space prevented the showing of all the entries.

there," he says, "I didn't know anything at all about growing flowers. But I read and experimented and have come up with some real beauties."

Fred plans to stay at NIH. He likes the campus-like grounds, the location, and above all the people he meets.

Future plans? He'd like to stay at NIH as long as he can, then to Florida. He would like to run a deep sea fishing boat for tourists. "Because once a man has smelled that salt air, it's hard to keep away from it."

## Lillie Receives Prize From Surgeons' Group

Dr. Ralph D. Lillie, NIAMD, has received the Association of Military Surgeons' first Sustaining Membership award in recognition of his accomplishments in the field of histochemistry.

The award, a scroll and \$500, is given by the Association to government employees who have distinguished themselves through outstanding work in science.

Dr. Lillie has been assigned to NIH for the past 33 years. He has published more than 200 papers and a textbook on pathologic technic and histochemistry. He assisted in the founding of the Histochemical Society, and is editor of the Society's journal.

## Dr. Burney Dedicates NCI Hagerstown Lab

The Coffman Research Laboratory, in Hagerstown, Md., was officially dedicated and turned over to NCI last week by PHS Surgeon General Leroy Burney and Governor Theodore R. McKeldin, of Maryland.

A five-year research program is planned, in which the Washington County Health Department will cooperate with NCI. The center is an addition to the Coffman Medical Center, a gift to the County by Mr. and Mrs. Andrew K. Coffman, of Hagerstown.

## RESEARCH CENTER Contd.

of mental disorders. Such research will include work with patients suffering from various types of mental illness, and with the actions and reactions of selected drugs.

Research with animals will use electrical techniques in an attempt to locate areas of the brain affected by drugs which cause behavioral changes.

Director of the Center is Dr. Joel J. Elkes, NIMH psychopharmacologist, former Chairman of the Department of Experimental Psychiatry of the University of Birmingham, England, and Consultant in Pharmacology to WHO.

Assisting Dr. Elkes on the staff of the new facility are Dr. Hans Weil-Malerbe, Dr. Ian C. Whitfield, and Dr. Theresa Harwood.

## NFFE ELECTS OFFICERS; ADOPTS CONSTITUTION

The first membership meeting of the newly organized NIH local of the National Federation of Federal Employees (NFFE) was held November 13 at 12 noon in Wilson Hall. Members adopted a constitution and elected officers.

Officers of the new local are Dr. George M. Briggs, DGMS, President; Dr. John G. Bieri, NIAMD, 1st Vice President; John W. Finn, DBO, 2d Vice President; Phyllis Snyder, DRG, Secretary-Treasurer; Britton H. Smith, NCI, Guardian; and Rosemary Roberts, DRS, Vera P. Ranssey, CC, and Betty Mok, DRS, Executive Committee members.

Installation of officers will be held at the next meeting, Thursday, January 15, at noon. The location will be announced later.

## BEQUEST Contd.

kind cannot be provided from Government-appropriated funds.

Expenditures of the Patients' Welfare Fund total approximately \$5,000 a year. The R&W Association provides the basic support for this fund by contributing 35 percent of the profits from vending machines located throughout NIH.

## Yule Toys And Food For County's Needy

Barrels for collections of Christmas toys and food for needy families of Montgomery County will be placed at cafeteria entrances in Bgs. 1 and 10 early in December.

Sponsors of the collection are the Christmas Bureau of Montgomery County and the Marine Reserve Toys for Tots. The Bureau is a subunit of the Greater Metropolitan Health and Welfare Council, a UGF agency. The entire effort is staffed by volunteers. Recipients are screened by professional social workers, public health nurses, and trained volunteers.

Dr. Lee H. Carter, Rockville, chairman of the drive, urges that the toys be new, or like new, and that only canned or dried foods be donated.

## "GP's" May Receive Psychiatric Training Under NIMH Program

A program to provide psychiatric training for general practitioners has been announced by NIMH.

The first objective of the program is to support special traineeships for physicians who wish to undertake formal training leading to a degree in psychiatry. The second aim is to give wider support to postgraduate courses in psychiatry for physicians who will continue practicing in their own fields.

## CHRISTMAS? NO, IT'S A DRG DEADLINE DATE



The heaviest one-day volume of research grant applications ever received by DRG arrived November 3. A portion is shown on desk and file cabinets in the Mail and File Unit, DRG. The staff receive instructions in dating, acknowledging, and re-routing the applications from the unit head, Mary Fauce, seated at right. From left are Nat Dove, Josephine Gilmore, Olga Minard, and Grace Rogers.