

Friends, Associates Gather to Honor Dr. Van Slyke

A birthday reception for Dr. C. J. Van Slyke, Deputy Director, NIH, will be held Tuesday, Dec. 1, from 4:30 to 6 p.m. in Wilson Hall.

Guests from throughout DHEW as well as personal friends from everywhere will honor "Dr. Van" at the informal party marking his 59th birthday.



Dr. Van Slyke

It will be the second time in a month that Dr. Van Slyke has been honored by his friends. On Nov. 6, and informal dinner, attended by 139 of Dr. Van's relatives, personal friends and associates, honored him for his over 30 years of service as a PHS officer, and for his contributions to the advance of medical research.

Dr. Irving Page was chairman of the committee arranging the dinner. Other members of the committee were Dr. Paul Dudley White, Dr. Cowles Andrus, and Mrs. Albert Lasker, who acted as hostess. A scroll honoring Dr. Van Slyke for his role in the development of the Research Grants program was presented him at the dinner.

The citation, signed by all the guests, read in part: "... Those of us who have been privileged to

"If Winter Comes—" Watch Your Parking!

To facilitate snow removal by the Grounds Maintenance Section, parking on streets on the NIH grounds will be prohibited between the hours of 6 p.m. and 8 a.m. This regulation is effective immediately.

The arrangement will remain in effect until the likelihood of any heavy snowfall has passed. Adequate off-street parking will be available.

DRG Applications Establish Record

DRG received 653 grant applications on Monday, November 2, swelling the number of requests for the last 27 work-days to a record 2,384.

The single-day total was 39 higher than the previous record number received on Monday, March 2, 1959. The total number of applications was 32 percent higher than the number submitted for the previous deadline.

work with you through these years of progress wish to record hereby not only recognition of your great endeavors for medical research, but also our abiding esteem. . . ."

Dr. Van was also given two leather-bound volumes containing some 200 telegrams and letters from friends and admirers throughout the country who sent messages especially for the occasion.

Site Chosen for NIH Animal Farm; Option Signed for 513-Acre Tract

NIH has selected a 513-acre site for a permanent animal farm. It is 25 miles from Bethesda, in an area of gently rolling, wooded farmland three miles southwest of Poolesville, Md.

An option to purchase the farm sometime between January 1 and February 1, 1960, was approved on November 13.

Transfer of the property is contingent on satisfactory assurance that the title is clear. Funds for site acquisition were included in the 1960 budget.

Possession will take place on or about April 1, if there are no legal impediments. The move of animals and equipment from the temporary Casey farm facilities near Gaithersburg will be made before July 1.

The Division of Research Services will have the same responsibilities for the farm as it has for the NIH reservation. Its Laboratory Aids Branch will be responsible for care of the animals.

The Division expects to proceed immediately to develop a program of requirements for long-term use of the farm. Each Institute will be requested to furnish information on its needs.

Recommendations from a simultaneous topographical engineering survey will lead to the development of a master site plan as a prerequisite to the installation of water supplies and other utilities, location of roadways, and the construction of permanent buildings.

Present improvements on the property consist of a seven-room farmhouse, a tenant house, dairy barn, and several outbuildings.

Choice of the site was made by a selection committee appointed last June. Chris Hansen, Chief, DRS, is chairman of the committee, and James A. King, Executive Officer, DRS, is secretary.

Other members are Dr. Joseph A. Smadel, Associate Director for Intramural Research, NIH; Richard L. Seggel, Executive Officer, NIH; James B. Davis, Chief, Supply Management Branch, OAM; and Dr. Preston Holden, Chief, Laboratory Aids Branch, DRS.

Dr. Coons to Give Dyer Lecture

Dr. Albert N. Coons, Visiting Professor of Bacteriology and Immunology, Harvard Medical School, will present the Ninth Annual Dyer Lecture on December 1 at 8:15 p.m. in the CC auditorium.

Speaking on "Immunofluorescence," Dr. Coons will discuss the advantages of uniting immunological specificity and cytology by means of visible fluorescent labels for the cases of intracellular synthesis of an antibody and a virus.

A recipient of a 1959 Albert Lasker Award, Dr. Coons is a consultant for the U. S. Public Health Service. He has served on NIH's Allergy and Immunology Study Section, and is currently a member of the NIAID Board of Scientific Counselors.

The R. E. Dyer lectureship was established in 1950 by friends and colleagues of Dr. Rolla E. Dyer, NIH Director from 1942 to 1950, upon the occasion of his retirement from PHS. The invitation is extended to scientists who have made outstanding contributions in the field of medical science.



Dr. Coons

COUNCILS END FALL SESSIONS

Adjournment of the National Advisory Cancer and Dental Councils tomorrow marks the end of the fall council meetings which began on October 12.

Each of the nine National Councils meets three times a year to make recommendations to the Surgeon General on PHS research programs.

A major responsibility of the councils is the review and recom-

mendation of grants to support nongovernmental research. In this connection, the councils have the benefit of the technical advice of groups of consultants.

The Councils meet in October-November, February-March, and June of each year and are composed of both lay and professional leaders in the fundamental sciences, medical sciences, education, public affairs and industry.

the Record

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Charles Rogers Named NIAID Scientists DHEW Press Officer Present Lectures

Charles M. Rogers, Chief of the Heart Information Center for the past two years, has accepted an appointment as Press Officer for the Department of Health, Education, and Welfare, effective November 16.

Mr. Rogers succeeds Acting Press Officer Alec Kritini, who has held the position since August 10, pending the appointment of a permanent successor to H. C. John Russell. Mr. Russell retired June 30.

Mr. Rogers, 36, served in the Navy during World War II. A former instructor in speech, theater, and group discussion at the University of Maryland he served from 1952 to 1954 as news director of Radio Station WEW in St. Louis. He has also been an intelligence officer with the Central Intelligence Agency, and was assistant to the director of Public Relations, International Brotherhood of Teamsters.

Though brief, his stay at the Heart Institute made him many friends and won him wide respect for his abilities. One of the highlights of his service here was management of "A Report to the Nation on a Decade of Progress Against Cardiovascular Disease." This was a colloquium held last February at the Department of Commerce Auditorium, attended by many leading figures in the fields of medicine, science, education, and public affairs.

Mr. Rogers holds a B.A. degree from Boston College and an M.A. from Catholic University. He lives with his wife and five children in Wheaton, Md.



Mr. Rogers

Four NIAID doctors lectured at a postgraduate course in hypersensitivity held November 21 and 22 at Children's Hospital of D. C. The course, titled "Background in Immunology and Hypersensitivity for Clinicians," was sponsored by the Allergy Section of the Research Foundation of the hospital.

The NIH participants were Drs. Sheldon Dray, Sanford H. Stone, Joseph A. Bauer, Jr., and Phillip R. B. McMaster, of the Laboratory of Immunology; and Dr. John P. Nasou, Laboratory of Clinical Investigations.

Other lecturers were Drs. Elmer L. Becker and Geoffrey Edsall of the Walter Reed Army Institute of Research, and Dr. Robert H. Parrott, director of the Research Foundation of Children's Hospital.

The course carried 36 hours' credit with the Subspecialty Board of Allergy, American Board of Pediatrics, and 12 hours Category 1 credit with the Academy of General Practitioners.

Miss Middleton Cited

Agnes Middleton, Chief, Psychiatric Nursing Service, CC, received the District of Columbia Government's Meritorious Public Service Award for her work as a member of the Public Health Advisory Council.

Commissioner David B. Karrick presented the award during a formal ceremony at the District Building on October 26. Another member of the Council, Dr. D. V. Rault, Dean of the Georgetown Dental School, received a similar award.

Miss Middleton had served on the Council for two years on a voluntary basis. She retired from the Council this fall because of the many other demands on her time.

New Indian Committee To Submit Candidates

A new research fellowship nominating committee established in India will help screen candidates for the NIH International Fellowships Program, Dr. Ronald E. Scantlebury, DRG, announced. Candidates are expected early next year.

Dr. C. G. Pandit, director of the Indian Council of Medical Research, New Delhi, heads the committee which will submit up to four nominations for postdoctoral research fellows to NIH. Final selection of the candidates will be made by the NIH Fellowship Panel under the chairmanship of Dr. John R. Paul, professor of preventive medicine, Yale University.

Dr. Schaefer Presents ICNND Program

A program designed to provide continuing assistance and encouragement to countries surveyed by the Interdepartmental Committee on Nutrition for National Defense (ICNND) was presented by Dr. Arnold E. Schaefer, Executive Director, ICNND, at the Third Armed Forces International Conference at Rawalpindi, Pakistan, during the week of October 18.

The followup program which ICNND is making available will encompass not only the initial survey to establish the nutritional standards and needs of a particular population but will provide technical assistance in the development of standard ration requirements and local nutrition services.

More than 50 representatives of Pakistan, Iran, Libya, Spain, Turkey, Great Britain, and the United States, participated in discussions concerning the significance of clinical, biochemical, and dietary findings of the completed surveys.

Among the ten-man U. S. delegation, in addition to Dr. Schaefer from NIH, were Dr. James Hundley, NHI, who delivered a paper on "The Expanding Frontiers of Nutrition Research"; Dr. Ernest M. Parrott, ICNND; and Mr. W. G. Baylis, Executive Officer, NIAMD.



Carolyn Grolman (left) and Verece Silverman, though seeming quite substantial here, appeared as a dieting patient's hallucination in one of the "NIH Confidential" skits.

Group Hears Dr. Daft Stress Attack on CF

Dr. Floyd S. Daft, Director, NIAMD, at the recent National President's Conference at the National Cystic Fibrosis Research Foundation in Philadelphia, stressed the need for a broad, cooperative attack against cystic fibrosis and NIH's program to stimulate both basic and clinical research. Representatives from 82 local chapters of the Foundation heard Dr. Daft's discussion of the intramural and extramural exploitation of basic research in the cystic fibrosis field.



Hamsters, posing here as R&W council members, sing the praises of R&W at the end of a "typical" meeting. The occasion is the recent Hamster production, "NIH Confidential."

Science Section

This four-page section is devoted chiefly to summaries of research findings that have been reported by scientists of the National Institutes of Health. This section is prepared by the Office of Research Information, NIH, and the Information Offices of the Institutes and Divisions.

Physical Biology Is an Expanding Frontier

Physical biology, or biophysics, is a basic science which has been formed and developed from a fusion of the aims and efforts of the life sciences with those of the physical sciences. Biology and physics have joined forces and, aided by an association with chemistry, are seeking new knowledge of the form and function of living tissue. As more and more fundamental knowledge is obtained from this scientific union, the problems of disease will be more effectively attacked.

The concept of this new basic science has been described by A. V. Hill as biological "function and structure viewed through physical spectacles and investigated by physical ideas and methods. . . ."

The Idea and the Approach

Scientific inquiry employs two basic approaches. The descriptive approach has characterized the early development of every field. Observation and detailed recording of features and actions, detectable by many techniques, is a necessary and profitable beginning.

The second approach, the analytical, is the essence of physical science. To represent a system observed in nature, a simplified system, a "model," is conceived, analyzed mathematically, then tested by experiments. From the results of this process is evolved a theory, a principle or a law which provides explanation and understanding.

The analytical approach is now being brought to biological science. Adapting this new approach to the complex, interdependent systems of living organisms is the role of physical biology.

Emerging Discipline

Although the field of physical biology has historical roots in such pioneers as Leeuwenhoek (biology, optical microscope, 1675, Holland) and Helmholtz (physics of vision and acoustics, 1860, Germany), its real development is only 30 years old. The principal techniques and instruments have all been devised within this recent span of only three decades—ultracentrifugation, Svedberg, 1927; electron microscope, Knoll and Bruche, 1932; fractionation of blood and plasma, Cohn, 1942; helical structure of protein molecules, Pauling, 1951; structure of DNA, Watson and Crick, 1953; and genetic informa-



NIAMD chemist models a wire model of a molecule. Scientists use such wire models to convert mathematical data into readily visualized forms.

tion mechanisms, Lederberg, 1957.

The impact of this relatively new field has been reflected in the establishment of new academic departments and research centers—variously titled Biophysics, Physical Biology, Molecular Biology, and Biophysical Chemistry—and a new national scientific organization, the Biophysical Society.

Recognizing this trend, the National Institutes of Health in 1955 formed the Biophysics and Biophysical Chemistry (BBC) Study Section, both to review research and training grant applications in conformance with usual study section practice and to assess the special needs of this developing field.

New Look on Life

Biophysical science, or physical biology, will provide a great deal of new fundamental knowledge by examination of living matter from a new and different point of view.

Physical biology is, for example, examining the physical forces involved in the structure and interaction of cells, cellular particles, vital compounds and molecules. The physical bonding forces involved have electrical, magnetic and other properties, analysis of which will yield new understanding of how these substances work in important life processes. In one phase of their work, physical biologists are literally looking into cellular and subcellular structures not previously seen, using micro-

New Tumor Variants Will Aid Research on Drug Resistance

Scientists of the National Cancer Institute's Laboratory of Chemical Pharmacology have previously reported that mice with systemic leukemia L1210 survive an average of 90 days when treated with halogenated derivatives of methotrexate (amethopterin). This is nine times the average survival time of untreated mice. Some mice given extensive therapy developed recurrences at various sites.

Transplantation of tissue obtained from such mice produced tumor variants of leukemia L1210, whose characteristics have now been reported by Stewart R. Humphreys and Dr. Abraham Goldin in a recent issue of the *Journal of the National Cancer Institute*.

The tumors were histologically similar to the original L1210, but showed a wide range of differences

in rates of growth, degree of invasiveness, and response to drugs, including high sensitivity as well as almost complete resistance. There appeared to be little correlation between the rate of tumor growth and degree of response to drugs.

The variants appeared to be relatively stable in serial passage, without further treatment. One of the slow-growing variants that attained large sizes and showed long survival times retained these characteristics after 15 transplanted generations.

The authors conclude that the study of tumor variants such as these will facilitate studies of the phenomenon of drug resistance and help produce a better understanding of host-tumor-drug relationships, which govern drug effectiveness in cancer chemotherapy.



In efforts to isolate the immunizing fraction of a micobacterium, cell walls are studied with the electron microscope, an important tool of physical biology (National Institute of Allergy and Infectious Diseases).

scopes which see detail far beyond that visible by ordinary optical microscopy. These new techniques, such as electron microscopy and X-ray diffraction, distinguish features at the molecular level.

The various physical methods of this basic science are developing new knowledge of the structure of proteins—fundamental to progress in the study of cardiac muscle function, of connective tissue fibers and of their alteration in rheumatic disorders, of blood coagulating enzymes, and of immunologic processes.

New knowledge is also being developed of the processes of energy storage and transfer in cells, of the mechanisms of sensory reception by nerve cells, and of the means by which the brain analyzes, stores, manipulates and transfers information—fundamental to progress in nervous and mental disease research.

Finally, study of key cellular chemicals, such as deoxyribonucleic acid (DNA), is leading to greater knowledge of the genetic process of transfer of information from one generation to the next.

Molecular Disease Research at NIAMD

As presented to visitors by Dr. DeWitt Stetten, Jr., Associate Director, National Institute of Arthritis and Metabolic Diseases

Among its several responsibilities, our Institute conducts research on "molecular diseases." In this ever-growing category are included such conditions as may today be attributed to the absence or chemical deformation of some single and specific species of molecule normally available in the human organism.

In many instances, it is now known that such a lack of a molecular species is determined by heredity, and the resultant disease is consequently familial. A part of our problem, therefore, is to identify the deficient molecule, to study the biochemical consequences of such deficiency, to inquire into the hereditary transmission of the defect, and to explore possible means of circumventing any untoward consequences of the deficiency.

Diabetes may ultimately prove to have an identifiable, heritable molecular basis. To date, although the disease is known to be familial, the underlying basis for the insulin deficiency which causes its symptoms is obscure. Gout also may fall into this category.

A striking example of a molecular disease, which has been of interest to scientists at this Institute, is galactosemia, a disease of unknown and probably low frequency. The metabolic defect here is an inability of the tissues of the affected individual to metabolize properly the sugar galactose. Since galactose occurs in lactose, the sugar of milk, the intolerance toward this sugar manifests itself in early infancy; and damage to the brain, the lens of the eye, and the liver result from accumulation of unused metabolic intermediates. This damage may be prevented by the exclusion of milk and other sources of galactose from the diet, provided an exact diagnosis is made early enough.

In one of our laboratories of enzyme chemistry, Dr. Herman Kalckar and his associates Drs. E. Anderson, E. Maxwell, K. Isselbacher, K. Kurahashi, and Neil Kirkman, were studying the several steps whereby galactose is normally utilized in the animal. It was revealed that a series of sequential reactions were involved, represented as A—B—C—D—(galactose — galactose-1-phosphate—UDPGal—UDPGluc—), before this pathway merged with the more familiar pathway of glucose metabolism. Each reaction required the presence of a specific enzyme, and for each enzyme an assay procedure was devised.

In collaboration with a clinician,

Dr. Isselbacher, these assay procedures were applied to the red blood cells and liver cells of patients suffering from galactosemia. It was clearly shown that whereas each of the other component enzymes in the sequence was present and active, the enzyme required for reaction B—C was lacking.

This phenomenon provided the first rapid and unequivocal diagnostic test for galactosemia, and has permitted earlier institution of dietary treatment and more effective prevention of brain and eye damage than was previously possible.

Back in the laboratory, Dr. Yale J. Topper and his colleagues were studying, in isolated tissues of animals, the effects of certain pharmacologically active compounds called steroids upon the rate of oxidation of various sugars. Their most striking findings related to the sugar galactose, whose oxidation by liver and intestinal tissue was greatly enhanced by addition of certain steroids, notably progesterone. This was an observation which of course called for clinical study, since the oxidation of galactose was precisely the area of incompetence of the galactosemic patient.

Once again patients were admitted and studied, in collaboration with clinicians Drs. Leroy A. Pesch and Stanton Segal. Galactose labeled with radioactive carbon, when administered to galactosemic subjects, gave rise to no detectable radioactivity in expired carbon dioxide, indicating little if any total oxidation. After being maintained for one week on small doses of progesterone, the same patients on the same test did exhale radioactive carbon dioxide, showing that they had now acquired the capacity to burn the sugar.

The possible therapeutic implications of this finding are being explored in the clinic. Meanwhile, back in the laboratory, elucidation of the mechanism whereby progesterone exerts this effect is being sought through further biochemical studies of interactions of hormones and enzymes.

Certainly not all of the research in our Institute is of the sort immediately applicable to clinical problems. Much of our program is devoted to pure and basic research for which no presently discernible practical application is known. We cherish such research also, because we know that, with virtual certainty and increasing promptness, the seeds of pure research will bear practical fruit.

First Direct Evidence Bats Can Transmit Rabies Virus by Bite

A bat that attacked hunters in the Bitterroot Mountains of Montana was captured and brought to the Rocky Mountain Laboratory of the National Institute of Allergy and Infectious Diseases, where it was allowed to bite 3 of a litter of 6 suckling mice. The mice which were bitten died in about 2 weeks, and virus was demonstrated in their tissues. The mice that were not bitten remained normal.

By means of specific neutralization tests, rabies virus was shown to be responsible for the death of the mice. The bat died before it had had an opportunity to bite other animals, but virus was demonstrated in the brain and salivary glands.

By the use of the relatively simple procedure of allowing bats to bite suckling mice, it is possible to answer certain questions of importance in the study of bat rabies, points out Dr. J. Frederick Bell of RML.

It has not been difficult to demonstrate rabies virus in the salivary glands of insectivorous bats, but until this experiment there has been no direct evidence that they were capable of transmitting the virus by bite.

This isolation confirms the supposition that bite may be the method whereby virus is maintained in bat colonies, and also that rabies in man, as suggested by reports of three cases, may result from bites of infected bats.

A total of 11 infected bats of 6 species has been found in Western Montana since 1954. It is interesting to conjecture as to the role that infected bats may play in initiating outbreaks of rabies in both wild and domesticated animals.

For instance, in Montana in 1950, there was an outbreak of rabies in small animals. This was the first recognized outbreak that had occurred in the state for many years, and no evidence could be

Sheep Most Frequent Source of Q Fever Spreads in Northwest

The National Institute of Allergy and Infectious Diseases' Rocky Mountain Laboratory in Hamilton, Montana, has investigated factors associated with a marked increase in Q fever in Idaho during 1958. The study by Dr. Herbert G. Stoenner and associates at RML is reported in the *American Journal of Hygiene*.

During 1951, 20 cases of Q fever were noted in Idaho. These occurred predominantly in males and in persons having contact with sheep. During the period from 1951 to 1958, 131 persons were found to be infected. Most of the cases occurred in persons aged 20 to 69 years, and only 9 percent were in females. The majority of cases occurred during the months of March to June during the lambing season.

It was possible to demonstrate that sheep are infected with Q fever organisms, but that the infection tended to be limited in time. Surveys of dairy herds conducted in 1951 indicated that less than 1 percent of the herds were infected. An alarming increase in the number of infected dairy herds was detected in 1958, for 17 percent of the herds were found to be infected.

These results indicate that Q fever has become a serious problem in the northwestern United States and that sheep and cattle are widely involved. While the epidemiologic data presently available indicate that human disease is most often contracted from sheep, the recent widespread increase of infection in cattle has built a potential reservoir of infection for man which must be reckoned with in the future.

accumulated to suggest how the virus had been imported. It is possible that virus could have been introduced by means of bats rather than by accepted classical methods such as introduction by rabid dogs or cats.

Cancer and Aging

Cancer, while occurring with greater frequency in the aged, is not considered to be part of the aging process *per se*. It appears that changes which accompany aging predispose toward the development of cancer, and a number of the studies conducted and supported by the National Cancer Institute are attempting to develop more information in this regard.

The incidence of new cases of

cancer increases rapidly with age. At age 25 the incidence rate is 40 cases per 100,000 population; at age 50 it is 475; and at age 75 it is 1,900. More than half of all cancers are found in people over 50 years of age; and the number of persons in this advanced age group is increasing constantly.

It appears that one factor enabling a cancer to spread throughout the body is the ability of cancer cells to elicit the formation of suitable connective tissue which acts as a scaffolding for invading cancer cells.

Psilocybin, New Tool In Brain-Mind Studies, Found Similar to LSD

A comparative study of the reactions induced by psilocybin and lysergic acid diethylamide (LSD-25), conducted by Dr. Harris Isbell, Director of National Institute of Mental Health's Addiction Research Center at Lexington, Kentucky, revealed that both hallucinogenic drugs have similar effects.

Psilocybin, a synthetic compound structured after the active ingredient in an intoxicating mushroom used by Indians in Mexico, is chemically related to serotonin and to bufotenine. Because of this and because it is a much simpler compound than LSD, it may prove to be an important tool in biochemical studies on the role of serotonin in brain function.

May Act on Serotonin

Psilocybin (O-phosphoryl-4-hydroxy-N-dimethyltryptamine) is chemically related to serotonin (5-hydroxytryptamine), which is believed to play an important role in the function of the central nervous system. This similarity has led to the speculation that psilocybin may cause an abnormal state by interfering with the actions, synthesis, disposition or metabolic degradation of serotonin. Other researchers have postulated that LSD-25 and other psychotomimetic agents might act through such mechanisms.

In Dr. Isbell's study, reported in *Psychopharmacologia*, both LSD and psilocybin caused elevations in body temperature, pulse and respiratory rates, and systolic blood pressure. Threshold for elicitation of the kneejerk was decreased by both drugs.

Similar Mental Effects

After both drugs, abnormal mental states characterized by feelings of strangeness, difficulty in thinking, anxiety, altered sensory perception (particularly visual), elementary and true visual hallucinations, and alterations of body image were reported by the subjects. The effects of psilocybin did not persist as long as those of LSD. LSD is 100 to 150 times as potent as psilocybin.

The similarity of reactions induced by LSD and psilocybin suggest that a common biochemical or physiological reaction is responsible for the effects of these two drugs.

Psilocybin was isolated by Hoffman and associates from the mushroom *Psilocyben mexicana* Heim, which has been used by the Mexican Indians since pre-Columbian days in their religious rites. The

MARU, CANAL ZONE CO-OP LAB, STUDIES PAN-AMERICAN ILLS



The building in the foreground, slightly to right of center, is headquarters for the Middle America Research Unit in the Panama Canal Zone. In the background are buildings of the Gorgas Memorial Hospital.

The Middle America Research Unit (MARU) is an inter-agency exploratory field research laboratory in the Panama Canal Zone sponsored by the Public Health Service's National Institute of Allergy and Infectious Diseases (NIAID) and the Walter Reed Army Institute of Research.

It is a research unit of considerable mobility, adaptable to developing opportunities within the context of its mission, available to agencies of the U. S. Government for cooperative research, and sensitive to the objectives, needs and collaborative resources of world medical agencies in the region.

Research Under Way

Now in its second year of operation, MARU has assembled a competent scientific staff from NIAID and the Walter Reed Army Institute of Research. Former dormitory type facilities of the Gorgas

chemical constitution and synthesis of psilocybin was announced in 1958 by Hoffman and associates. It is manufactured by Sandoz and Company. It is a psychotomimetic drug of basic research interest for those who wish to induce psychotic-like states, but is not available commercially.

Hospital in the Canal Zone have been converted to laboratory use. Two major avenues of research have been started. Excellent working relationships with the Gorgas Memorial Laboratory in the Republic of Panama and with a number of other health and research units in Middle America have been established.

Works with Local Agencies

In a region where several medical research groups take pride in their reputations for work on segments of the abundant disease problems, the intent of MARU is not to encroach. By respecting the special spheres of others, the inter-agency laboratory has been accepted as a cooperative adjunctive unit in a region where the opportunities for profitable research far exceed the resources for exploiting them.

MARU has accepted invitations to participate in certain pertinent investigations within the purview of other groups.

Infectious diseases often represent the major public health concern of tropical countries. MARU is at the crossroads of Panamerican areas linked politically and economically with the United States.

The health problems of the Cen-

tral American area are also potentially important to health in the United States and are generally applicable to problems of military forces in the tropics and to the well-being of an increasing number of diplomatic and commercial representatives of the United States living in these areas.

The Middle America Research Unit in the Panama Canal Zone closes one of the important gaps in the belt of world-girdling tropical and semi-tropical stations for research in epicenters of arborviral and other imperfectly understood infections.

Instrument of Good Will

MARU represents one facet of the United States "good neighbor" policy, as the Walter Reed Army Institute of Research, NIAID, and a number of collaborative health agencies seek to provide the research knowledge essential to the success of international health activities.

These activities are not only representative of simple human good-will; they are in national self-interest. They have massive impact which is felt and recognized by the individual citizen of the Nation being aided as well as by the political and intellectual leaders.

Malaria Work Reported By NIAID Scientists

Research findings on malaria were reported by scientists of the National Institute of Allergy and Infectious Diseases at the Eighth Annual Meeting of the American Society of Tropical Medicine and Hygiene. The extension of chloroquine's suppressive effect and the mode of action of 15 anti-malarial drugs were among the studies.

Chloroquine Extenders

Chloroquine in combination with certain other drugs may result in more than doubled protection against malaria, according to experiments reported by Drs. L. E. Gaudette and G. Robert Coatney of the Laboratory of Parasite Chemotherapy.

After treatment with 100 micrograms of chloroquine, mice experimentally infected with *Plasmodium berghei* were free of infection for 4 days. With the same dosage of the drug, plus equal amounts of an auxiliary "extender" drug, protection against the disease increased to 8 days. Isoniazid, pyrimethamine, and two experimental drugs (Eli Lilly 18947; Smith, Kline and French 525-A) have been found to extend chloroquine activity, and other inhibitor drugs are also being tested.

If the results reported can be applied to man, chloroquine combined with a drug prolonging its action could be administered at intervals of 3 to 4 weeks and possibly several months, in contrast with present weekly dosages.

Drug Action Investigated

Consistent results on nucleic acid metabolism were demonstrated for fast-acting antimalarial drugs such as quinine, chloroquine and quinacrine in tests by Drs. Karl A. Shellenberg and G. Robert Coatney of the Laboratory of Parasite Chemotherapy. These clinically effective drugs are part of a series whose mode of action against malaria is being studied.

Acid soluble, lipid RNA and DNA phosphorus fractions were isolated and their specific activities determined in tests with more than 15 different drugs. At concentrations 10^{-5} M or higher, RNA uptake was inhibited an average of 70 percent and DNA 90 percent by quinine, quinidine, cinchonine, cinchonidine, quinacrine and chloroquine.

Supports Liver-EE Theory

The studies of Dr. Don E. Eyles, Head of the Cytology Section of the Laboratory of Parasite Chemotherapy, bolster the validity of currently accepted findings on the exoerythrocytic stages of malaria in the liver of primates.

Dr. Eyles, working in Memphis, Tennessee, injected monkeys with

Milk Medium May Aid Cancer Virus Search

The search for viruses in human neoplasms may be aided by studying cell lines grown in serum-free media, since even small amounts of animal or human serum may contain virus inhibitors. Dr. Alan S. Rabson and Frances Y. Legallais, National Cancer Institute's Laboratory of Pathology, with Dr. Samuel Baron of the Laboratory of Viral Products, Division of Biologics Standards, previously reported the adaptation of a strain of animal tumor cells in a culture medium in which sterilized nonfat milk was substituted for serum.

Now, in collaboration with Miss Legallais, Dr. Rabson has reported in a recent issue of the *AMA Archives of Pathology* that a strain of cells from a human epidermoid carcinoma grew equally well in this medium.

In this study, malignant tissue obtained from the biopsy specimen of a facial skin lesion was cultured in a serum-free medium containing 20 percent autoclaved nonfat milk.

At the present time, the cell strain has been maintained for two years and carried through eight consecutive subcultures. Its structural characteristics of epidermoid differentiation have been preserved during this interval.

large numbers of uninfected salivary glands of Anopheles mosquitoes. No exoerythrocytic parasites or any structures which could be confused with them were found. Subsequently, smaller numbers of infected glands were injected into the same monkeys and produced many typical EE parasites.

Convincing evidence that the parasites are of malarial origin was provided by chemotherapeutic experiments with pyrimethamine and primaquine.

Dr. Eyles believes that these experiments indicate beyond any reasonable doubt that the structures seen are in fact pre-erythrocytic malaria parasites and not artefacts which could be confused with EE parasites.

Primaquine Might Break Cycle

An exceedingly small amount of the drug primaquine, given daily to each malaria-infected person, may be sufficient to help break the man-mosquito-man cycle of malaria, according to Dr. Martin D. Young, of the Laboratory of Parasite Chemotherapy, Columbia, S. C.

Two or three milligrams or less of primaquine daily, following a weekly dose of about one-half grain, caused an incomplete sexual cycle of malaria parasites in hu-

Glycerin Potentiates Drugs Used Against Schistosome in Mice

A study of chemotherapy of schistosomiasis induced in mice showed that among 32 adjuvants tested in combination with tartar emetic and stibophen, glycerin alone enhanced schistosomacidal activity.

Dr. George W. Luttermoser of the Laboratory of Parasite Chemotherapy, National Institute of Allergy and Infectious Diseases, reports that the administration of tartar emetic or of stibophen solution in glycerin increases the effectiveness of the drugs against experimental infections of *Schistosoma mansoni* in mice. The results of his investigation appear in the *Journal of Parasitology*.

White mice exposed to about 250 *S. mansoni* cercariae each were held for at least 35 days before treatment was started. By this time the parasites were mature. Only animals free of gross signs of illness and differing no more than 1 or 2 grams in body weight were used. Groups of usually 30 or more mice which had been infected at the same time were divided into 3 lots.

The first lot was maintained as the untreated control, the second received stibophen intraperitoneally or tartar emetic orally in physiological saline, while the third lot was given the same regimen of the drugs in glycerin.

Drugs were given on the basis of body weight, and treatment was continued daily for 5 consecutive days. Appraisal of treatment was made the third week after treatment. Live parasites remaining in each mouse were perfused out and counted. A comparison between the average number of living schistosomes in the treated and untreated groups gave the approximate percentage reduction in infection resulting from treatment.

In early trials the drugs were consistently more effective in glycerin. In 4 tests, there was a 51-percent reduction in infection following the regimen of tartar emetic in saline, but a 74-percent reduction from the tartar emetic in glycerin.

The activity of stibophen was increased considerably by glycerin: a 32-percent reduction with saline, and a 79-percent in glycerin. Further trials showed similar enhancement of stibophen in

Ileal Bladder Passes NCI Clinical Tests

Surgical management of patients whose normal urinary flow has been disrupted by disease or operative procedure is a matter of considerable clinical importance. The successful use of the ileal bladder as a means of urinary diversion in laboratory animals has encouraged scientists of the National Cancer Institute's Surgery Branch to apply this technique clinically. They have now reported their observations in a group of 22 pelvic cancer patients.

The ileal bladder was constructed by attaching a 20-25 cm. segment of the terminal ileum to the ureter, making an incision in the outer abdominal wall, and allowing the ileal bladder to drain into removable plastic containers. Serial examinations of the blood and urine were performed frequently for evidence of change in physiological processes over periods of six months to two years.

The studies revealed that physiological processes were not affected by this method of urinary diversion. Kidney function was maintained or improved, blood electrolytes were not abnormally altered, and the upper urinary tract was not damaged by ascending infection. From these findings the authors conclude that the ileal bladder is a valuable method of temporary or permanent urinary diversion.

These observations were reported in *Surgery, Gynecology and Obstetrics* by Drs. James R. Jude, Alvin H. Harris and Robert R. Smith.

8 or 9 tests, and of tartar emetic in 3 out of 4 tests.

In considering the various means by which glycerin might enhance the schistosomacidal activity of stibophen and tartar emetic, the investigator pointed out that the latter drug is more stable in glycerin solution, suggesting that *in vivo* the adjuvant may maintain the blood level of the drug for a longer period of time, and thus adversely affect the schistosome parasites in the blood.

Results of his study, concludes Dr. Luttermoser, suggest a further testing of these combinations in larger animals. The effect of glycerin on the activity of additional heavy metal compounds against this infection and others might profitably be investigated.

man blood after their ingestion by the biting mosquito.

This method of malaria control could provide a stop-gap measure to check further spread of the disease in conjunction with drug therapy and residual spraying

with mosquito-killing compounds like DDT. A major obstacle in using primaquine in this way is the difficulty of administering it routinely to each of the estimated quarter-billion people who are afflicted with the disease.

Publication Preview

The following manuscripts were received by the SRB Editorial Section between June 8 and June 16.

DRG

Aborn, M. and Rubenstein, H. Psycholin-
guistics.

CC

Staff, CC Idiopathic hypoalbuminemias:
Clinical Staff Conference at the National
Institutes of Health.

NCI

Andrews, H. L. Radiation biophysics.
Bharadwaj, T. P. and Love, R. Cytology
of rat liver cells during starvation and
refeeding.

Ederer, F. A parametric estimate of the
standard error of the survival rate.

Evans, V. J.; Kerr, H. A.; McQuilkin, W.
T.; Earle, W. R.; and Hull, R. N. Growth
in vitro of a long term strain of monkey
kidney cells in medium NCTC 109 free of
any added protein.

Goldin, A.; Venditti, J. M.; and Kline, I.
Evaluation of antileukemic agents employ-
ing advanced leukemia L1210 in mice.

Haenszel, W. Some problems in the esti-
mation of familial risks of disease.

Harris, A. H. and Smith, R. R. Operative
wound seeding with tumor cells: Its role
in recurrences of head and neck cancer.

Lipsett, M. B.; Engel, H. R.; and Bergen-
stal, D. M. Effect of glucagon on plasma
unesterified fatty acids and in nitrogen
metabolism.

Steinfeld, J. L. and Greene, F. E. Anemia
and oligocythemia in patients with malig-
nant diseases: A reconciliation of con-
flicting reports.

Venditti, J. M.; Humphreys, S. R.; and
Goldin, A. Investigation of the activity of
cytoxin against leukemia L1210 in mice.

Watkin, D. M. and Stieglitz, E. J. Nutri-
tion in the aged.

NHI

Anfinsen, C. B. Some approaches to the
study of active centers.

Brodie, B. B. Comments at the symposium
entitled "Pharmacological Approach to the
Study of the Mind."

Chenkin, T.; Dayton, P. G.; Weisberg, L.
G.; and Weiner, M. Effect of starvation,
acenocoumarin and vitamin K on the
coagulation pattern of the guinea pig.

Long, R. T. L. and Cornell, W. P. The
detections of circulatory shunts with injec-
tions of krypton⁸⁵.

Mayer, S.; Maickel, R. P.; and Brodie,
B. B. Kinetics of penetration of drugs and
other foreign compounds into cere-
brospinal fluid and brain.

Morrow, A. G.; Waldhausen, J. A.; Peters,
R. L.; Bloodwell, R. D.; and Braunwald, E.
Supraaortic aortic stenosis: Clinical,
hemodynamic and pathologic observations.

Udenfriend, S.; Creveling, C. R.; Ozaki,
M.; Daly, J. W.; and Witkop, B. Inhibi-
tors of norepinephrine metabolism *in vivo*.

Udenfriend, S.; Lovenberg, W.; and
Sjoerdsma, A. Physiologically active amines
in common fruits and vegetables.

Vagelos, P. R. Caproyl coenzyme A—de-
pendent malonyl coenzyme A: bicarbonate
exchange reaction.

NIAID

Luttermoser, G. W.; Bruce, J. I.; and
McMullen, D. B. The prophylactic and
curative activity of 1-maleinyl-4-(3'-chloro-
d'-methyl-phenyl)-piperazine (Hoechst S-
688) in experimental schistosome infestations.

Phillip, C. B. Two new Chrysosomine flies
(Tabanidae, Diptera) from India.

Rosen, L. A hemagglutination-inhibition
technique for typing adenoviruses.

von Brand, T. The metabolism of trypano-
somes with special reference to *Trypano-
soma cruzi*.

NIAMD

Dubin, D. T. The assay and characteri-
zation of amines using 2,4-dinitrofluoro-
benzene.

Ehrlich, G. E. Eugene Sue.

Pesch, L. A.; Segal, S.; and Topper, Y. J.
Progesterone effects on galactose metabo-
lism in pre-pubertal patients with congeni-
tal galactosemia and in rats maintained
on high galactose diets.

Gershfeld, N. L. and Shanes, A. M. Stabi-
lizer and labilizer effects and antagonisms
demonstrable with monomolecular films of
stearate.

Glenner, G. G. and Lillie, R. D. Observa-
tions on the diazotization-coupling reaction
for the histochemical demonstration of
tyrosine: metal chelation and formazan
variants.

Reid, M. E. and von Sallmann, L. Nutri-
tional studies with the guinea pig. VI.
Tryptophan (with ample dietary niacin).
Warren, L. Nucleotides and nucleosides.

NIDR

Burstone, M. S. Histochemical and cyto-
chemical demonstration of cytochrome oxi-
dase with new amine reagents.

Burstone, M. S. Histochemical localiza-
tion of oxidase activity in the mitochon-
dria of the human heart.

Fullmer, H. M. Effect of peracetic acid on
the enzymatic digestion of various muco-
polysaccharides: Reversal of the PAS
staining reaction of mucin.

NIMH

Brodey, W. M. Image, object and narcis-
sistic relationships.

Chapman, K. W. Narcotic addiction.

Essig, C. F. and Flanary, H. G. Convul-
sions in cats following withdrawal of
sodium barbital.

Hordern, A. A review of clinical investiga-
tions in progress in W.A.W. Service since
the active implementation of the NIMH-
SEH collaborative program in the summer
of 1958.

Locke, B. Z.; Kramer, M.; and Pasama-
nick, B. Mental diseases of the senium in
Ohio: Problems in interpretation of pat-
terns for first admissions to public mental
hospitals.

McNabola, F. M. School mental health ac-
tivities of the National Institute of Mental
Health.

Mills, C. E. Program execution.

Noshpitz, J. D. On the etiology of adoles-
cent delinquency.

Staff, NIMH The Model Reporting Area
for Mental Hospital Statistics.

Staff, NIMH Patients in mental institu-
tions, 1956. Part III. Private hospitals for
the mentally ill and general hospitals with
psychiatric facilities.

Staff, NIMH Patients in mental institu-
tions, 1956. Part IV. Private institutions
for mental defectives and epileptics.

Staff, NIMH Psychopharmacology at the
Federation Meetings.

NINDB

Cammermeyer, J. Is the perivascular oli-
godendrocyte another element controlling
the blood supply to neurons?

Campbell, J. B. and Windle, W. F. Rela-
tion of Millipore(R) to healing and regen-
eration in transected spinal cords of
monkeys.

Deacon, W. E.; Alexander, L.; Siedler, H.
D.; and Kurland, L. T. Multiple sclerosis
in a small New England community.

Kuhlman, R. E. and Kaufman, H. E. A
microchemical study of the aqueous humor
enzyme-protein interrelations.

Kurland, L. T. and Alter, M. The cur-
rent status of the epidemiology and genet-
ics of myasthenia gravis.

Paton, D. Angioid streaks and sickle cell
anemia. A report of two cases.

Tasaki, I. Resting and action potentials of
reversed polarity in frog nerve cell.

Wolf, M. K. and Bradley, D. F. Quantita-
tive dye spectrophotometry with the aid of
a semi-micro magnetic stirring bar.

Dr. Herman Assigned To Translation Post; Succeeds Himmelsbach

Dr. Samuel S. Herman, Execu-
tive Secretary of the Radiation
Study Section of DRG, has been
named Director of the NIH Rus-
sian Scientific Translation Program.

The program, set up in 1956 on
recommendation of the Senate Ap-
propriations Committee, has in-
tramural and extramural activities.

The intramural program con-
tracts for translation and publica-
tion of entire journals and for
translation of articles for repub-
lication in American journals.
The extramural program arranges
for review and appraisal of grant
applications.

Dr. Herman's appointment fills
the vacancy created by the reas-
signment of Dr. Clifton K. Him-
melsbach to the position of Associ-
ate Director of the Clinical Center.

Dr. Branham Is Named Woman of the Year

Dr. Sara E. Branham, who re-
tired last year from DBS after
30 years of microbiological re-
search for PHS, has been chosen
1959 Medical Woman of the Year
by the D.C. Chapter of the Ameri-
can Women's Association.

On December 2, the chapter will
hold a special dinner in Dr. Bran-
ham's honor. Dr. Thelma Dunn,
NCI, who was honored last year
by the group, will make the a-
ward presentation to Dr.
Branham.



Dr. Branham

ward presen-
tation to Dr.
Branham.

Each chapter
names an out-
standing woman
physician
for this a-
ward annually.

Eleven women
were honored
on Nov. 15
during the A-
MWA's mid-
year meeting in
Hot Springs,
Arkansas.

Dr. Branham's citation, to be
read by AMWA President Dr.
Jessie Brodie, will say in part:

"More than 70 papers on the re-
sults of research in the fields of
bacteriology and immunology have
been contributed to the medical
literature by Dr. Branham."

Dr. Ella M. A. Enlows, formerly
with NIAID, and now in private
practice in Fort Lauderdale, Fla.,
received a similar citation.

Correction

A recent RECORD article
concerning a NINDB ex-
hibit award failed to mention
that Joseph M. Morel, Diag-
nostic X-ray Department,
CC, shared the honor with
Dr. Bruce E. Cohan, NINDB.
The award was presented by
the American Roentgen Ray
Society.



Alice Nez (center) is celebrating her third birthday and the anniversary of her first year as a CC patient. Known as the "Queen of 8 West," Alice came here from the Indian Health Service Hospital in Tuba City, Arizona. She keeps in touch with her family on the Navajo Reservation through photographs and through letters exchanged between the CC staff and her sister, who learned English at the Bureau of Indian Affairs school on the reservation. Alice has an obscure blood dyscrasia which the medicine men in the area, including her father, were unable to treat. When CC physicians recently requested an extension of Alice's stay here, her father called a tribal gathering. They ruled that Alice should stay another year.



A corrosion specimen of liver, showing the vascular system, is held by exhibits specialist Philip Joram.



Inez Demonet, Chief, Medical Arts Section, and Assistant Chief George Marsden (center) plan with Dr. J. Robert Andrews, NCI, for his exhibit "Cancer Interstitial Radiation Therapy."

Arts Section Aids Researchers

As one of NIH's research services, the Medical Arts Section, DRS, contributes significant support to scientific and administrative staffs. Composed of five units, the Section provides visual interpretations of diverse scientific and administrative projects. Frequently the development of projects, especially exhibits, requires the collaboration of artists in all units.

This year, the Drafting Unit produced approximately 6,000 charts, graphs, maps, graphics, and other visuals for medical journals; visuals for lantern slides; charts showing budget trends and allocation of funds for intramural and extramural research, etc., as well as large charts for presentation of research facts to congressional committees.

The General Illustrating Unit prepares illustrations for use in publications, film strips, and flip charts, as well as designs and formats for brochures. Large exhibits, shown at professional meetings, are designed and frequently

constructed by this Unit.

Medical sculptures, prepared by the Moulage Unit, demonstrate changing conditions of patients under study. Moulages of facial cancer conditions are sculptured here as are wax models of arthritic hands and feet.

The Plastics Unit maintains a file of the latest information on plastics techniques and materials. Among many services of this Unit are the preparation of gross pathological specimens in plastics mounts and wet and dry museum mounts.

Precise drawings of clinical manifestations are provided by the Clinical Illustration Unit. Periodically during investigations, doctors request the specially trained clinical illustrators to sketch unusual conditions, such as hereditary eye anomalies, or to draw dissected anatomical specimens. Also, these artists frequently are called into operating rooms to illustrate surgical techniques such as heart catheterization.



An artist puts finishing touches to a moulage of a human brain. This hand-tinting provides realism to medical sculptures prepared here.



A general illustrator prepares dummy layouts from which one will be selected for a CC Nursing Department brochure.



Clinical illustrator Howard Bartner, using an ophthalmoscope, makes preliminary sketches of cataracts in arthritic patient's eyes.



Helen Smith, head of the Drafting Unit, discusses with Dr. Raphael N. Shulman, NIAMD, data for a graph being prepared for publication.