

the

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## Clifford Johnson Named ORI Chief By Dr. Shannon

Dr. James A. Shannon, NIH Director, has announced the appointment of Clifford F. Johnson as Chief of the Office of Research Information.

Mr. Johnson succeeds Lealon E. Martin, recently appointed by the Director of the National Heart Institute as his Staff Assistant for Scientific and Public Information. (See the *Record* of Dec. 22, 1960.)

In his new position Mr. Johnson will be Dr. Shannon's principal assistant for information activities and public relations.

The NIH Director, in making the announcement, cited Mr. Johnson's extensive experience in health and medical public information.

"I am confident," he said, "that Mr. Johnson will be able to make a valuable contribution to Public Health Service programs in his new assignment."

Prior to his transfer to NIH in April 1957, Mr. Johnson served for

(See *JOHNSON*, Page 2)



Mr. Johnson

## Annual Meeting of CU Scheduled for Thursday

The 1961 annual meeting of the NIH Federal Credit Union will be held Thursday, January 19, at 12 o'clock noon in the CC auditorium.

The agenda will include the annual report of Credit Union activities and the election of the new Board of Directors and Credit Committee members.

To be eligible to vote, members must present their pass books at the meeting.

The present Board of Directors has declared a 4¼% dividend for the second half of 1960. It was credited to members' accounts on January 5.

The first 200 persons attending the meeting will receive a souvenir.

## It's a Model Hospital but—

## Admission to Clinical Center Is Based on Research Needs

By Elsie Fahrenthold

Many things at NIH are unique, and the Clinical Center is a case in point. Unlike most hospitals, it has twice as much laboratory space as patient area. Each patient is carefully selected for a specific research project and must be referred to the CC by a physician familiar with the individual's medical history and current condition.

Selection is not influenced by race, creed, or geographic location. Referrals are made from all over the United States, and some come from abroad. Nursing and medical care are provided without charge to the patients, but they must arrange their own transportation to and from Bethesda.

### Normal Reactions Important

An important phase of medical care is to find out what takes place in normal, healthy people in order to determine how and to what degree various parts and processes of the body are affected by disease, drugs, or procedures. Consequently, the CC has a normal volunteer program in which perfectly healthy "patients" make such observations possible.

As in all good hospitals, the welfare of the patients at the CC, including normal volunteers, is paramount. CC physicians have the same professional and moral obligation as have family doctors to

(See *CLINICAL CENTER*, Page 8)

## Health Service Begins Seven Day Schedule, Closes Robin Unit

The NIH Employee Health Service, located in Suite B2A-06 of the Clinical Center, will be open seven days per week beginning Saturday, February 4, the Service has announced.

The Saturday, Sunday, and holiday hours will be 8 a.m. to 4:30 p.m. The Monday to Friday hours will be 8 a.m. to 5 p.m., as at present.

### Waiting Time Cut

At the same time EHS announced the closing on Friday, January 27, of its Auxiliary Health Unit in the Robin Building, Silver Spring, where a nurse is presently on duty weekdays from 8:30 to 10:30 a.m. This nurse will be added to the EHS staff in Building 10 on a full time basis.

As a result, the Service said, it will be able to cut down on patients' waiting time and provide more efficient service.

### Medical Officer Available

During weekends and holidays, only one nurse will be on duty, but additional service will be provided, when necessary, by the Medical Officer of the Day.

Employees located in off-the-reservation buildings are urged to avail themselves of the extended service here. During the night hours, when the EHS offices are closed, employees are asked to report to the Clinical Center Nursing supervisor, as at present. The Medical Officer of the Day is also available during those hours.

## Maitland Baldwin Appointed NINDB Clinical Director

Dr. Maitland Baldwin, Chief of the Surgical Neurology Branch, NINDB, since 1953, has been appointed Clinical Director of the Institute. The announcement was made December 23 by PHS Surgeon General Burney.

In his additional post as NINDB Clinical Director, Dr. Baldwin succeeds Dr. G. Milton Shy, recently appointed to the newly created position of Associate Director of the Institute.

Before coming to NIH, Dr. Baldwin was assistant professor of neurological surgery at the University of Colorado. Previously he was assistant neurosurgeon at the Montreal Neurological Institute, Montreal, Canada, and a member of the faculty of medicine at McGill University in that city.

He received a Master of Science Degree and the Diploma in Neurological Surgery from McGill and his M.D. from Queen's University, Kingston, Ontario.

Dr. Baldwin is author and co-author of numerous articles and books on various phases of neurology. As NINDB's new Clinical Director, he will direct a program of investigation in a wide variety of neurological and sensory disorders.



Dr. Baldwin

## Information Committee on Cancer Established

A Joint Committee on Cancer Information has been established by the National Cancer Institute and the Cancer Control Branch, Bureau of State Services, to coordinate the planning, production, and distribution of public and professional information materials relating to cancer research and control.

The committee will help implement a directive from the Surgeon General instructing the two agencies to work closely together in this area.

James F. Kieley, NCI Informa-

tion Officer, and Dr. Lewis C. Robbins, Chief of the Cancer Control Branch, are co-chairmen of the committee.

The other members are Norma Golumbic, Head, Research and Program Reports Section, and Robert B. Callahan, Head, Information and Education Section, both of NCI; and Dr. G. Howard Gowen, Special Assistant on Medical Education; William Herman, Information Assistant; and Daniel I. Zwick, Program Management Officer, all of the Cancer Control Branch.

# the Record

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## PERSONNEL TO PERSON

### TAX ASSISTANCE

The Employee Relations and Services Section wishes to announce that Federal, Maryland, and District of Columbia income tax forms are now available in Bldg. 1, Rm. 21.

As in the past, assistance in the preparation of these forms will be available to NIH employees until April 15.

Employees may call Ext. 4851 for appointments and further information.

### COUNSELING SERVICE

William L. Fournier, Educational Counselor, George Washington University, will again be available to counsel NIH employees on their immediate academic interests and needs as well as their long-term educational plans and programs.

Mr. Fournier's first visit to NIH for this purpose was last September and his counsel was well received.

As before, assistance will not be limited to any particular field. Mr. Fournier will have curricular information from the many colleges and universities in the Washington area.

The counseling service will be available, by appointment, on January 17 and 19, in Bldg. 1, Rm. 114, between 10:30 a.m. and 2:30 p.m. Interested persons may schedule an appointment by calling the Employee Development Section, Ext. 2147.

### Burney to Head AMS

PHS Surgeon General Burney was elected President of the Association of Military Surgeons of the United States at its 67th Annual Meeting in Washington.

### New Booklet Evaluates NIH as News Source

"The National Institutes of Health as a Source of Science News," a booklet recently published by the Office of Research Information, is an unabridged transcript of tape-recorded evaluation of science news coverage here by a panel consisting of two science writers, a radio-TV news editor, and a TV news commentator, all well known to the public.

A limited number of copies of the booklet are available for general distribution. Requests should be directed to Mrs. Pearl Giles, Ext. 5895.

### JOHNSON

(Continued from Page 1)

16 years in the Office of the Army Surgeon General. Upon return from military service in 1946, he was selected for the Civil Service Commission's Fourth Administrative Intern Program, designed for the specialized training of Federal employees who had demonstrated administrative ability and were considered to have potential qualities for executive positions in the Federal service.

Following this training, Mr. Johnson joined the staff of the Bulletin of the U. S. Army Medical Department, and in 1948 became its managing editor.

In August 1949 he was appointed Assistant Chief of Technical Information in the Office of the Army Surgeon General, a post he held until his transfer to NIH. For the past 10 months he has served as Chief of Public Information of the Research Information Office he now heads.

Mr. Johnson received the Department of the Army's Award for Meritorious Service in 1949, and on November 23, 1960, received a Sustained Superior Performance Award here at NIH.

## Dr. Shapiro Is President-Elect of BIO; Murtaugh Delivers Keynote Address

Dr. Norman Z. Shapiro, Chief, Computation and Data Processing Branch, DRS, is president-elect of the Biomedical Information-Processing Organization, a new professional society he helped organize last September. The initials of the new organization appropriately spell BIO.

Dr. Shapiro will take office in January 1962. He was elected at the first national meeting of BIO, held in New York December 30 in conjunction with the annual meeting of the American Association for the Advancement of Science.

Joseph S. Murtaugh, Chief, Office of Program Planning, OD, deliv-

ered the keynote address. He spoke on new developments in medical research of significance to the computer field. The speech is reproduced on page 3.

BIO's first president is Dr. Max Woodbury, research professor of mathematics, who also heads the Computing Center, Research Division, New York University College of Engineering. Dr. Charles Roach, of the System Development Corporation, is secretary-treasurer, and Dr. Robert S. Ledley, of the National Biomedical Research Foundation, is past president.

Dr. John Z. Hearon, Chief, Office of Mathematical Research, NIAMD, is serving as a member of the Executive Council, and so is Dr. Lee D. Cady, formerly associated with NIH.

BIO was formed in recognition of the tremendous importance and potential of computer technology in biomedical research and medicine, and of the interdisciplinary nature of this new field. Its goals are to encourage and expedite

## CC Patients to Attend Advance 'Annie' Showing

Patients in the Clinical Center received a formal invitation last week from the Director of NIH to attend a special advance performance tonight (Jan. 17) of "Annie Get Your Gun."

The musical comedy, produced by the R&W Hamsters with a cast of 35, is scheduled for public presentation on the four succeeding nights, January 18-21. All performances will be staged in the CC auditorium beginning at 8:30.

The special performance for CC patients is an innovation. Also for the first time, tonight's performance will be telecast on the NIH closed circuit system to the 14th floor assembly hall, so that patients may also see it there.

Special tickets were issued for tonight's performance to patients' relatives and friends.



Shapiro, Murtaugh, and Hearon

greater exchange of information concerning the use of digital computers in biology and medicine, to create an awareness of the potentialities of digital computer technology, and to stimulate the use of digital computers and related technology in biomedical research and medicine.

### Scope Is Broad

The new organization has no local or regional chapters. Members include representatives from all parts of the United States and from government, universities, and private industry.

BIO's constitution provides for affiliation with "surrogate" organizations, or specifically with any group whose goals overlap those of BIO and who wish to work closely with the new organization. The idea of surrogate organizations was developed in order to minimize the harmful effects of forming still another professional organization.

Individual memberships in BIO are open to all biomedical research investigators at NIH and others over the country who now use or plan to use computers as an integral part of their research. Additional information may be obtained from Dr. Shapiro's office, Ext. 2282, Rm. G-729, Bldg. 12.



Annie, Little Jake, and Winnie wave goodbye from the observation platform of a train on the CC auditorium stage. Rehearsing for "Annie Get Your Gun" on the set under construction are, from top, Verece Silverman (Annie), Stanley Hirsch (Little Jake), and Betsy Slay (Winnie).

# Science Section

## Data Processing Expansion Parallels Rapid Rise in Biomedical Research

Excerpts from talk delivered by Joseph S. Murtaugh, Chief, Office of Program Planning, National Institutes of Health, at first national meeting of the Biomedical Information-Processing Organization held in conjunction with the annual meeting of the American Association for the Advancement of Science in New York, December 30, 1960.

Development and expansion of the field of digital computer technology and application has been unbelievably rapid. In the brief span of five years a major field of human endeavor—the processing and manipulation of information—has been completely transformed. A new order of machines with great capabilities in both procedural and conceptual terms have come into widespread use. A new professional and technical manpower skilled in communicating with and directing this apparatus has come into being. The dimensions within which observations can be formulated into hypotheses have been enormously extended. Obviously cross communication in such a field is of extraordinary importance.

### Research Expenditures Increase

There has also been a dramatic increase in the magnitude of the national effort in the field of medical and related biological research. Total national expenditures for medical research have increased eightfold since 1947, trebled since 1955:

Year	Estimated Total National Medical Research Expenditures (In Millions)
1947	\$ 88.0
1955	240.0
1960	715.0

Today, with the exception of institute-type arrangements like Los Alamos and Argonne, nearly 43% of all research, in all fields, in all the universities of the Nation is in the life sciences in which the medical sciences are the predominant component. Medical and biological research involves the observation, measurement, and manipulation of data relating to multitudinous, involved and often obscure or incomplete phenomena. Means for more effective handling of such data is an obvious need.

### Challenge Presented

These are a set of circumstances which presents a challenge of the highest order for the adaptation of computer theory and capability. And they are, indeed, auspicious circumstances in which to launch an organization whose major purpose is to bring together the streams of development in two important fields of scientific endeavor.

It is desirable to consider what the prospects are for further growth in the extent of national investment in medical research. We have already noted the dra-

matic increase in medical research expenditures since the immediate postwar period. There are some people who view this rapid expansion with considerable apprehension and who feel that any further growth is beyond the bounds of practicability as well as scientific propriety. There is, however, no indication that the rate of growth in national medical research expenditures is slowing down. A cold and careful assessment of the national scene seems necessarily to lead to the conclusion that there will be—and must be—further growth, perhaps more rapid than has been experienced to date. These are the conditioning factors:

1. The problems still confronting the diminishment of disease and disability and in the achievement of human well-being are formidable. They will be greatly exacerbated in the future by increasing environmental hazards, the pace and tension of urbanized society, the aging of our population.

2. Progress in medicine through research and the scientific approach has made possible outstanding achievements in health; the prospect of further victories will compel even greater and broader effort. The area of fruitful scientific inquiry into the problems of well-being and the nature of basic biological and social phenomena related to health is limitless.

3. There is clear evidence, reflected by the recent actions of the Congress, of the willingness of the Nation to devote an increasing share of the Nation's resources to research in medicine and the related basic sciences.

4. This action has been accompanied by substantial investment in the training of research manpower and in the construction of research facilities. In this process national action has shifted from its earlier supportive function to a leading positive force aimed at creating the research facilities and resources in trained manpower necessary for further enlarge-

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

ment of the national medical research effort.

Looking to the future, with this pattern of past growth and the effect of the powerful influences just enumerated in mind, estimates of national medical research expenditures in 1970, 10 years hence, range from \$2.3 billion to \$3.8 billion. For planning purposes we have utilized a figure of \$3.0 billion as the measure of national medical research effort in 1970. This represents a quadrupling of present expenditures.

### Issues Outlined

A figure of \$3.0 billion for medical research in 1970 has the obvious limitations of all such projections. It is better viewed as a measure of the opportunity considered to exist and the effort believed needed. Its attainment depends on the kinds of actions which are taken now. These actions relate to: (1) expanding the supply of trained manpower in fields related to medical research; (2) the development of the complex physical facilities essential for medical research in an age of accelerated scientific change; and (3) means to sustain the vigor, autonomy and capability of our basic research and educational institutions. These issues will be in the forefront of national consideration and discussion during the next few years.

Apart from the general meaning of this prospective growth in national effort in medical research to the field of computers, the specific implications can be seen in the nature of the changes taking place in the substance and conduct of medical research at the present time. It is likely that these shifts in emphasis and direction will continue for the foreseeable future.

### Post-War Research Broadens

In the post-war years, medical research broadened extensively in terms of the sciences and disciplines included within the scope of scientific attack upon disease and ill health. The direction of inquiry to progressively more fundamental levels has brought investigations in basic sciences, considerably apart from the traditional medical sciences, to bear upon problems of health and disease. On the one hand, these have led into the basic biological and physical sciences and on the other into the behavioral and social sciences.

Today there is a considerable diversity in the scientific fields and kinds of investigations involved in medical and health-related research. One or two figures may help to convey the nature of this change:

(See BIOMEDICAL, Page 6)

## Evidence Shows ASH Produced By Kidneys

Aldosterone, a hormone from the adrenal cortex, plays an important role in the regulation of salt excretion by the kidney, and thus secondarily in the maintenance of blood volume. Released in response to sodium depletion or acute blood loss, and in certain clinical states with edema, aldosterone promotes salt and water retention by the kidneys, sweat glands, and certain other tissues.

Although ACTH from the pituitary probably plays a supporting role in the synthesis and release of aldosterone, the immediate stimulus to its production appears to be still another hormone designated the aldosterone stimulating hormone (ASH).

### Source Indicated

The chemical nature of ASH, the site of its production, and the mechanism or mechanisms governing its release have been the subject of much research and much conflicting evidence. Recent National Heart Institute studies indicate that ASH is produced by the kidney, and not by the liver, pituitary, brain, or any intracranial structure previously suspected of being the source of this hormone.

The studies were by Drs. James O. Davis, C. J. Carpenter, C. R. Ayers, and J. E. Holman, of the Laboratory of Kidney and Electrolyte Metabolism, and by Dr. Robert C. Bahn, of the Mayo Clinic, Rochester, Minnesota. Their findings have been accepted for publication in the *Journal of Clinical Investigation*.

### Secretion Rates Determined

Rates of aldosterone secretion before and subsequent to bleeding were determined in normal dogs for comparison with the findings in other experimental groups. In these groups, the scientists investigated a number of organs previously proposed as possible sites of ASH production: the kidneys, liver, brain, pituitary, and other intracranial structures such as the pineal gland. This was done by systematically removing these organs, singly and in combination, and then determining the effect of bleeding on the rate of aldosterone secretion.

As expected, aldosterone secretion fell in animals whose pituitaries had been removed, since

(See ASH, Page 5)

## Cholera Research Laboratory Is Dedicated in Pakistan

Protected by a gaily colored awning from a sun which was brilliant even at the 8:30 a. m. start of the ceremonies, more than 500 scientists, government officials and wives, medical students, and nurses gathered on the lawn beside the Institute of Hygiene in Dacca, E. Pakistan, for the dedication of the Pakistan SEATO Cholera Research Laboratory.

The Laboratory is a "true symbol" of the joint efforts being made by the SEATO nations in meeting the problems of Southeast Asia on all fronts, Brig. Gen. M. N. Sharif, Director-General for Health for the Government of Pakistan, declared.

### Lab Importance Emphasized

The importance of the Laboratory as part of the SEATO cooperation in a non-military sphere was also emphasized by SEATO Deputy Secretary-General William Worth. He added that it is particularly appropriate that SEATO undertake the eradication of cholera, since it is a disease endemic to Southeast Asia, attracting world attention only during periods of epidemic.

The Institute of Hygiene in which the Laboratory is housed is a large white, flat-roofed, four-story building located about four miles from the center of Dacca. This location by itself from other parts of the city, bears a slight resemblance to the location of the first buildings at NIH which 20 or so years ago seemed quite far from Washington. Physically, there is no resemblance, since the terrain is flat, trees few in comparison with Bethesda, and only one narrow road leads to the building. The Institute of Hygiene itself is not a hospital, and is concerned with production of cholera and other vaccines and with public health

activities in general.

The new Laboratory occupies one wing of the building. On the ground floor are two- and four-bed wards for cholera patients. No patients had been admitted at the time of the dedication. The traditional bright red blankets of Pakistan hospitals and the colorful cotton of the pillows showing through the white slips looked cheerful.

Unlike hospitals and institutions in northern climates, the wards and laboratory rooms and offices all open off corridors running along the outside of the building. Since these have large unglazed openings along their length, they are more like verandas than building corridors.

### NIH Supplies Equipment

On the upper three floors all the laboratory equipment—autoclaves, ovens, refrigerators, etc.—purchased and shipped by NIH last spring was installed and functioning. Laboratory benches, stools and other such furniture was furnished and installed by the Government of Pakistan. Many an NIHer would be envious of the ample space, although when fully staffed, this Laboratory may become as crowded as are some in Bethesda.

Since cholera is always present in E. Pakistan, material from patients and from klongs (ponds sur-



Brigadier M. Sharif (second from left) escorts delegates through the Pakistan-SEATO Cholera Research Laboratory following the dedication of the building.

rounding each home or cluster of homes and used for all water supplies and sewage) had already been obtained and was being studied.

### Conference Opened

Following the dedication and inspection of the Laboratory, scientists and official guests proceeded to the Assembly in Dacca for the opening of the first Conference on Cholera sponsored by SEATO and the National Institutes of Health. The Assembly is a red brick building formerly used for legislative meetings. The hall used for the meetings has seats (with desks and microphones) arranged semi-circularly and rising in tiers. It accommodates about 500 persons. In addition to this hall are a number of rooms for offices and one large room suitable for exhibits.

Greetings and good wishes from

(See CHOLERA, Page 5)



Abdus Salek Mian, a technical assistant at the Pakistan-SEATO Cholera Research Laboratory, operates an autoclave which treats chemical solutions at critical temperatures. Laboratory equipment was donated by the U. S. Government.



Brigadier M. Sharif, Director General, Health, Government of Pakistan, convenes the 4-day SEATO Cholera Conference in Dacca on December 3. The conference was attended by delegates from eight SEATO countries and observers from Japan.



Brigadier M. Sharif inspects a new microscope donated by the U. S. Government to the Pakistan-SEATO Cholera Research Laboratory. Following the dedication of the laboratory, delegates toured the new facilities.

## CHOLERA

(Continued from Page 4)

Surgeon General Leroy E. Burney, Public Health Service, were read to the Conference by Dr. John D. Porterfield, Deputy Surgeon General.

### Sessions Continue

Scientific sessions started in the afternoon with reports on the management of clinical cholera by health and medical officials of Bangkok and Dacca, and continued for the remainder of four days with research reports on the physiology, pathology and pathogenesis of the disease, its epidemiology, the status of immunization, and laboratory identification of the organism.

### Texts to Be Published

The Proceedings of the Conference on Cholera when published will contain full texts of all scientific papers and discussions.



Dr. Joe Stockard, Deputy Director of the Cholera Research Laboratory, studies a cholera culture. Dr. Stockard is a PHS Commissioned Officer.

## New Evidence Supports Filtration Theory

Evidence supporting the filtration theory of atherosclerosis has been obtained from studies on experimental atherosclerosis conducted by Dr. Leroy Duncan, Mrs. Katherin Buck, and Mr. Almorris Lynch, of the National Heart Institute's Laboratory of General Medicine and Experimental Therapeutics.

The filtration theory assigns the chief role in the development of atherosclerosis to lipoproteins, fat-protein complexes which serve as the major vehicles of lipid transport in the body. According to this theory, intact lipoproteins carrying cholesterol pass from the plasma into the inner layer of the arterial wall. Here, because of the structure of the wall, they are trapped and give rise to atheromatous lesions.

### Previous Studies Used

The studies on experimental atherosclerosis were based on information gained in previous studies on the movement of plasma albumin into arterial walls. These studies had disclosed that the rate of albumin penetration of the aortic wall is not homogeneous throughout the length of the vessel, entering most rapidly in the upper aorta and progressively more slowly down its length.

The investigators reasoned that plasma albumin and plasma lipoprotein might enter the aortic wall by similar mechanisms and thus show the same distribution of entry rates. When combined with the filtration theory, this reasoning led to the prediction that there should also be a systematic variation in the intensity of deposition of cholesterol along the length of the aorta early in the development of experimental atherosclerosis.

Subsequent determinations of the cholesterol concentrations along the length of aortas in dogs confirmed the prediction. Early in

## Thermal Dilution Curves Found Useful In Clinical Diagnosis of Cardiac Shunts

Thermal dilution curves have been used successfully by scientists of the National Heart Institute Surgery Branch for the diagnostic evaluation of circulatory shunts in patients with congenital heart disease. The basic technique was not developed at NIH, but was modified here and new instrumentation developed for its application to clinical diagnosis.

The technique is a substantial improvement over standard dye dilution methods because, while retaining the accuracy of these methods, it eliminates the necessity of withdrawing large blood samples and also the problems of skin discoloration and allergic reaction that occasionally follow multiple dye injections.

### Studies Reported in Journal

These studies are reported in the *American Journal of Cardiology* by Drs. Theodore Cooper, Eugene Braunwald, and Andrew W. Morrow, of the NHI Surgery Branch, and G. C. Riggle, of the Division of Research Services.

Dye dilution curves are widely used to identify, localize, and estimate the magnitude of cardiac shunts, the flow of blood through abnormal holes in the partitions that separate the two sides of the heart.

In this technique dye is injected into the appropriate side of the heart and its concentration subsequently measured in blood withdrawn from a vessel located downstream from the injection site. As the blood is withdrawn at a constant rate into a special syringe, its dye concentration is continuously measured by a densitometer.

If no shunt is present, the dye concentration plots as a curve with a sharp upslope followed by a

smooth, gradual downslope. However, a shunt causes a break in the curve or a second peak resulting from the appearance of dye detoured by the shunt.

Though accurate and safe, this method requires the withdrawal of large blood samples, and frequently necessitates blood transfusions, especially in young children. Multiple determinations, frequently needed for precise diagnosis, are also limited with this technique because of decreasing accuracy and increasing danger of allergic responses.

The new technique uses cold saline as the indicator and estimates its concentration as a function of blood temperature in a vessel downstream from the point of injection by means of a heat-sensing element called a thermistor.

Since the thermistor can be introduced directly into the vessel with a special needle or short catheter, no blood samples need be withdrawn. The comparison by the NHI scientists of the new technique with standard dye dilution methods showed that the thermal dilution curves are strictly analogous to dye dilution curves and appear to be equally sensitive and accurate for the diagnostic evaluation of shunts.

Repeated determinations can be made with this technique without any decrease in accuracy and without any danger of toxicity, features which make possible the more precise diagnosis of shunts as well as immediate evaluation of surgical measures to correct them.

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## ASH

(Continued from Page 3)

ACTH from this gland promotes aldosterone production. However, ACTH was not essential, because aldosterone production increased following bleeding in hypophysectomized dogs and even in decapitated animals.

Only one of the extirpation procedures used was found to prevent any significant rise in aldosterone production subsequent to bleeding: the combined removal of the pituitary and both kidneys. This indirect evidence that the kidney is the source of ASH was greatly strengthened by the finding that the injection of kidney extracts into these previously unresponsive animals resulted in increased aldosterone secretion.

Although these studies provide strong evidence that ASH exists and that the kidney is the site of its production, the nature of the hormone and the mechanism which triggers its release are still unknown.



Richard L. Towle, American health and sanitation expert in Dacca, explains the working of a hypo-spray jet inoculator to William Worth, Deputy Secretary General of SEATO. The jet inoculator, one of the conference exhibits, is used in Pakistan in the cholera vaccination program.

## BIOMEDICAL

(Continued from Page 3)

1. In 1950, 60 percent of new NIH grants went to medical schools. In 1960, only 1/3 of the new grants went to medical schools.

2. In 1950, 62 percent of the first-time NIH grantees were MD's and only 37 percent were PhD's; in 1960, only 37 percent were MD's while 56 percent were PhD's.

3. In 1950, 88 percent of first-time NIH grantees were in the medical and pre-clinical sciences; and in 1960, only 60 percent were in such disciplines.

This broadening of the scope of inquiry relevant to medical research will continue with even greater extensions into the behavioral and social sciences.

### Complexity Increases

At the same time as medical research has broadened in scope of inquiry, it has also penetrated to new depths of intensity of inquiry. Adaptation of the methods and instruments of the physical sciences has made possible finer, more precise observations. Thus medical research today involves extensive and complex instrumentation by which volumes of complex quantitative measurements of ever smaller and detailed aspects of biological phenomena have been made possible.

These twin developments of the broadening and deepening of medical research emphasize the growing importance of means to record, manipulate and analyze large volumes of quantitative data. The formulation of ever more sophisticated statistical and mathematical concepts and approaches coupled with more powerful data handling equipment are essential elements of this continuing process of growth and change.

### Clinical Studies Increase

From these basic changes in the methods and means of medical research, new developments have emerged in an area which was once the birthplace of investigative medicine—clinical research. The observation of the human in a clinical setting as the central focus of medical investigation diminished over the years as research efforts were concentrated in the laboratory setting. Today there is what amounts to a renaissance in clinical investigation. Greater and more extensive effort and attention is now being given to the study of disease phenomena in carefully controlled clinical circumstances.

Four major developments are making this possible:

(1) The extent and precision of measurements possible with present day instrumentation. (2) The sophisticated statistical methods

for experimental design and control of random factors coupled with new mathematical concepts for problem solving. (3) The range of computer capability for data reduction, problem solving and simulation techniques. (4) Emergence of the concept of a multidisciplinary approach to the solution of research problems in which the clinician and other medical scientists can join with the biochemist, the biophysicist, the mathematician, and others in a unified attack.

### Clinical Work Supported

It is to be expected that as a consequence of these developments clinical research will become an increasingly significant component in the total array of medical research activities. In recognition of this, the Congress in F Y 1961 appropriated \$20.0 million to NIH to be used in the establishment and support of clinical research centers in both categorical and non-categorical fields throughout the Nation. This development has obvious relevance to the computer field.

### Other Factors Relevant

Not all of the problems of disease and ill-health relate solely to man's identity as a biological entity. Today there is increasing awareness that clues to the solution of major disease and health problems can only be discovered by studying man's social and demographic characteristics in the places and circumstances where he lives. There is also recognition of the significance of the social and behavioral factors in the epidemiology and etiology of disease and the relevance of the sciences concerned with such phenomena to medical research.

Large-scale but tightly controlled demographic studies aimed at displaying contrasting patterns of disease events in relation to personal and social characteristics, as well as geographical and environmental conditions, may well provide leads to the solution of problems which have hitherto stubbornly resisted laboratory and other traditional approaches.

These developments have particular meaning in the computer field in view of the basic role that data processing and analysis must play in such studies.

### New Facilities Needed

Such broadening approaches to the solution of health problems will have marked influence upon the future medical research scene in terms of its professional composition, facilities, equipment and its scope and focus. Looked at from the point of view of those who are interested in computers, it seems clear that these developments will have a number of important consequences. There will be continued pressure for large-scale investment in the physical resources for

# Bacterial Infection Studied In Patients With Leukemia

Two studies of the relationship between bacterial infection and immune mechanisms in leukemia patients have been reported by National Cancer Institute scientists in collaboration with colleagues of National Institute of Allergy and Infectious Diseases and Division of Biologics Standards.

The first report presents results of a study on infection in 42 patients with chronic lymphocytic leukemia admitted to the Clinical Center from July 1954 to June 1959. A total of 46 bacterial infections occurred in 22 of these patients.

Twenty-three patients (of 36 tested) were found to have low concentrations of serum gamma globulin, the antibody-containing component of serum. A fair correlation was observed between the frequency of bacterial infections and the low concentration of serum gamma globulin.

### Correlation Found

A group of 24 patients challenged with four antigens (typhoid, mumps, influenza, and diphtheria vaccines) displayed significantly less ability to produce circulating antibodies than did 13 control subjects. Eleven of the 24 patients developed bacterial infections within 12 months after antigenic challenge. A good correlation was found between bacterial infections and the impaired ability to produce circulating antibodies.

The investigators concluded from these data that, in chronic lymphocytic leukemia, the ability to produce circulating antibodies (antibody response to antigenic stimulation) provides a better measurement of host resistance to bacterial infections than the antibody level (gamma globulin concentration). Reduced ability to produce circulating antibodies appears to

be a major factor in the increased susceptibility of these patients to bacterial infections.

There will be particular awareness of the need to provide for essential supportive facilities in the way of instrumentation centers and biomathematical and computing facilities. Additional emphasis will be given to attracting larger numbers of competent people into the biomedical field and providing training with adequate quantitative orientation. A premium will be placed upon the exchange of knowledge, concepts, and techniques between the scientists who are biologically oriented and those oriented to quantitative or computer approaches. Means must be found to provide greater opportunity and support for experimentation in the approaches, techniques and possibilities presented by the powerful capabilities of present day information handling machines. In these terms, I see a remarkably important and useful role for BIO.

Information on the gamma globulin concentration is useful to the clinician in two ways. A finding of hypogammaglobulinemia in an adult should suggest the possibility of the presence of a lymphoma. The administration of large doses of gamma globulin may be beneficial in preventing and controlling bacterial infections in patients with chronic lymphocytic leukemia.

This report appears in a recent issue of *Archives of Internal Medicine*. The authors are Dr. Richard K. Shaw (now with the University of Washington Medical School, Seattle), Dr. Dane R. Boggs (now with the University of Utah Medical School, Salt Lake City), Dr. John L. Fahey, and Dr. Emil Frei, III, all of the NCI's General Medicine Branch; Clarence Szwed and Dr. John P. Utz, of the National Institute of Allergy and Infectious Diseases; and Eleanor Morrison, of the Division of Biologics Standards.

The second report presented results of a study of infection in 10 acute leukemia patients. A total of 17 bacterial infections occurred in seven patients. Comparison of the antibody response to five antigens (typhoid-paratyphoid, influenza, and mumps vaccines, and diphtheria and tetanus toxoids) showed that the response of the patients to any one antigen did not differ significantly from that of normal control subjects. However, the patients showed a significantly poorer overall antibody response to all the antigens than did the controls. There was no significant correlation between the degree of antibody response and the initial level of, or subsequent change in, serum gamma globulin concentration.

### Second Report Made

In contrast to findings in patients with chronic lymphocytic leukemia, no correlation was observed in acute leukemia patients between the frequency of bacterial infection in the individual patient and the degree of antibody response to the antigens employed.

This report, which is published in a recent issue of the *Journal of Laboratory and Clinical Medicine*, was written by Dr. Richard T. Silver (now with the New York Hospital-Cornell Medical Center) of the NCI's General Medicine Branch, and Drs. Utz, Fahey, and Frei.

## Dr. Kety Will Repeat NIH Lecture at GU

Dr. Seymour S. Kety, Chief of the Laboratory of Clinical Science, NIMH, has accepted an invitation to repeat his lecture, "The Biologist Examines the Mind and Behavior," at Georgetown University on Friday, February 3.

The lecture, originally delivered here on May 18 last as the eighth in the NIH Lecture series, will be presented in the University's Gorman Auditorium at 4:30 p.m.

Sponsored by the Beta Xi chapter of Phi Delta Epsilon fraternity, it will be the fifth in the Annual Aaron Brown Lecture series.

Under the title, "The 'True Nature of a Book, an Allegory,'" a large portion of the lecture was published in the Science Section of the June 7, 1960, issue of the *NIH Record*.

## Third Concert Features Instrumental Quartet

A program of baroque and contemporary music will be presented at the third concert of the R&W sponsored 1960-61 concert series at NIH. The performance will be held at 8:30 p.m., January 30, in the CC auditorium.

George Steiner, violin, E. Earnest Harrison, oboe, Walter Maciejewicz, bassoon, and Evelyn Swarthout, harpsichord, will play in quartet and in various combinations of instruments. All are musicians from this area.

Admission to the concert is free, and no tickets are required.

## Young Jimmy's Baseball Is in International Class

Jimmy Nadel, 10-year-old son of Dr. Eli M. Nadel, Assistant Director of NCI, spent his Christmas vacation playing in an international baseball league and eating fried bananas in Puerto Rico.

As a member of the Little Giants, one of the teams in the International Wee-Men's Association, Jimmy played a total of five games in as many days and as many towns in Puerto Rico. The Little Giants won two games in the early part of the series.

The trip was partially financed by the Puerto Rican Government Recreation Department.

## Harvard P.R. Director Describes Duties There

Herbert Shaw, Public Relations Director of the Harvard Medical School, was the guest speaker at a DGMS-sponsored meeting of the NIH Information Office staffs at Stone House, December 15.

He spoke on the functions and responsibilities of his office.

# Electrician Bridgman Doubles As Minister of the Gospel

In a dual vocational sense, James G. Bridgman might be termed a "circuit" preacher.

He's not only a first-rate electrician but a full-fledged ordained minister of the Gospel.

As an electrician, Mr. Bridgman puts in a good 40-hour week at NIH in the Electric Shop, PEB-DRS, in Building 13, where he has worked since 1953.

The amiable and able young man (he's only 33) is highly regarded by his fellow workers. They refer to him as "vigorous and hardworking" and "friendly and easy to work with." And his supervisor, Gilbert E. Ballinger, foreman of the Electric Shop, calls him "outstanding in his trade as an electrician."

During his off-the-reservation hours, the Rev. Mr. Bridgman devotes many uncounted working hours to his duties as pastor of the Calvary Apostolic Church in Gaithersburg, Md. He was the founding pastor of the church, one of the first United Pentecostal Church congregations in the area.

Built by Mr. Bridgman and the members of his congregation, the 170-seat church building is a testimonial to the industry and do-it-yourself abilities of the young minister and his 45-member flock.

The church members and the pastor worked for more than a year to complete the building.

The new church was dedicated on Veteran's Day, November 11, and plans are now underway for construction of a parsonage.

It was not by accident that Mr. Bridgman became both an electrician and a preacher. During his

early youth he lived in Logan, W. Va., and like many a young man there became a worker in the coal mines. But he had other interests and aspirations.

While working in the mines by day, he enrolled in a correspondence course and began studying at night to qualify as an electrician. Upon successful completion of the course he landed a job in the coal company's electrical repair shop.

By means of a second correspondence course, he then began studying for the ministry. And it was during this time of study that he further prepared himself by serving as an associate minister for congregations of his denomination.

Mr. Bridgman and his wife, Lola Faye, live in Rockville with their 13-year-old daughter, Joyce Lou, and their 10-year-old son, James.

The minister and his family also provide musical accompaniment for the congregation's singing. Mr. Bridgman plays the trombone, his wife the piano and organ, his daughter the clarinet, and his son the trumpet.

Mr. Bridgman served for 15 months in the Navy during and after World War II, and with his family moved here in 1953.

The United Pentecostal Church formally ordained him in 1954.

Mr. Bridgman also makes sure that the electrical system of his church is kept in good condition.

## Dr. Olivier to Appraise Schistosomiasis Status For WHO, Indian Gov't

Dr. Louis J. Olivier, Acting Chief of the NIAID Laboratory of Parasitic Diseases, is en route to India at the request of the World Health Organization and the Indian Government. He will make a comprehensive appraisal of the present status of bilharziasis (schistosomiasis) in that country.

Treatment of this widely disseminated parasitic disease, estimated to affect more than 150,000,000 people in tropical and subtropical climates, is difficult, expensive and relatively ineffective. Control is more successfully approached at the present time through education of exposed populations and through efforts to



Dr. Olivier

control the numbers of snails that are host to the blood fluke that transmits the disease. Newer molluscicides have been used in some areas (in Egypt, for example) with encouraging results.

### Base Is Bombay

Enroute to India, Dr. Olivier will visit the London School of Tropical Medicine for several days and will stop in Geneva for a day or two. At his destination he will confer with officials at the WHO Regional Office in New Delhi.

His base of operations will be Bombay where he will work in collaboration with Dr. R. K. Gadgil of the Grant Medical College.

He hopes to complete the survey in approximately 40 days, returning to the United States the middle of March.

## Mary E. Chisholm Dies

Mary E. Chisholm, 63, a former NIH employee, died suddenly on December 13, at her home in Washington.

At the time of her retirement in 1952, after 33 years of Federal service, Miss Chisholm was Placement Officer in the then Personnel Branch of NIH. She first served with the Public Health Service when it was a bureau of the Treasury Department.

When NIH moved to Bethesda she was in charge of its budget, fiscal, and personnel sections, and became Placement Officer in 1948.

Miss Chisholm is survived by a sister, Jennie, of the home address, 5420 Connecticut Ave., N.W., and a brother, Robert Alvin, of Tupelo, Miss.



The Calvary Apostolic Church in Gaithersburg, Md., built by the Rev. James G. Bridgman and the members of his congregation, was dedicated on Veterans Day, November 11. Standing in front of the pulpit is the happy Bridgman family, holding some of the musical instruments they play during church services. They are son James, 10; Mr. Bridgman, who plays the trombone; his wife, Lola Faye; and daughter Joyce Lou, 13.—Photo by Bob Pumphrey.

## CLINICAL CENTER

(Continued from Page 1)

do everything possible to benefit their patients.

CC physicians are most concerned with the more common serious diseases which affect the greatest number of people, such as cancer, heart disease, and mental illness. Patients with rare and unusual diseases or those with conditions which doctors have been unable to diagnose are rarely admitted. The Clinical Center is not a diagnostic clinic and its research facilities are not used for this purpose.

Contrary to popular notions, "medical miracles" are not the order of the day. Because the long-term conditions, for which no specific treatment has been found, are of principal interest here, fantastic cures should not be expected.

### Many Tests Given

CC patients receive a greater number and variety of examinations and tests than are usually given, and followup examinations are often required for several months or even years.

No tests or treatments are ever given which cause unnecessary hazard to the patient. However, some of the tests may cause discomfort, and certain patients may be asked to eat special diets which they may not like, or to take tiring exercise, which may be needed in order to obtain new medical knowledge.

The complex organization and the research mission of NIH require that the clinical program be organized somewhat differently from that usually found in a university or other large general hospital.

### Services Are Varied

For example, instead of one, there are several separate services for endocrinology, metabolic studies, childhood diseases, etc. Similarly, a given diagnosis may be of potential interest to investigators in two or even three Institutes.

When a referring physician is not certain which Institute or individual investigator is likely to be interested in his patient, he should address his communication to the Office of the Director of the Clinical Center for circulation among the potentially interested research groups.

If he is certain where the interest is likely to be, his communication should be directed to the Office of the Director, CC, marked for the attention of the appropriate person or Institute. Telephone calls should be directed to the Preadmissions Office, Ext. 4891.

There are certain considerations for eligibility in addition to the first requirement that the patient's specific disease or other condition

## Dr. Andervont Retires as Lab Chief; To Continue Research, Edit Journal

Dr. Howard B. Andervont, a member of the original research staff of NCI and former president of the American Association for Cancer Research, has relinquished his post as Chief of the Institute's Laboratory of Biology. Although eligible for retirement, he will continue his research in the laboratory he supervised for 15 years.

Dr. Andervont has also been named scientific editor of the *Journal of the National Cancer Institute*, succeeding Dr. Michael B. Shimkin, who was recently appointed Associate Director for Field Studies, NCI.

Dr. Walter E. Heston, who has been Head of the General Biology Section of the Laboratory of Biology for eight years, has been named Acting Chief of the laboratory by Dr. Kenneth M. Endicott, NCI Director.

Thirty years of Dr. Andervont's 35-year research career have been spent continuously in the U. S. Public Health Service, primarily in the field of virology studies.

### Makes Important Discoveries

Early in his career he showed that the herpes virus of man could be transmitted to mice by intracerebral inoculation, and thereby provided the means of studying this human virus in an animal.

His interests centered on viruses related specifically to cancer, and he developed a method of concentrating by adsorption on charcoal the Rous sarcoma virus that infects fowl.

Following discovery of the mammary tumor agent in mice by Dr. John Bittner at the Jackson Memorial Laboratory, Dr. Andervont converted a strain of mice that

must be under active investigation.

Factors which may vary with different studies are age, weight, sex, general health, and length of existing waiting list of qualified patients. Possibilities for long-term inpatient status or extended followup observations, or both, may be important criteria. And the patient must have a reasonable understanding of his role in a research study and be willing to participate.

The cooperation and assistance of physicians in private practice and those associated with hospitals and clinics is essential in the proper selection of patients to participate in studies at the CC, and every effort is made to keep them informed of the current programs.

One of the most important instruments for providing this information is PHS Publication No. 284, "Current Clinical Studies and Patient Referral Procedures," which is revised once or twice a year and distributed to interested

rarely develop breast tumors to a high-incidence strain by fostering them with milk containing the Bittner agent. This strain, maintained for almost 20 years, is used throughout the world in extensive studies of the agent.

Dr. Andervont demonstrated the transmission of the mammary tumor agent through the seminal fluid of mice, showed that the agent is prevalent in low concentration in wild mice, and demonstrated passive immunity to the agent in mice.

### Studies Cancer Causes

The chemical causation of cancer has been another of Dr. Andervont's major research interests. He carried out systematic investigations of tumors induced by chemical carcinogens in different inbred mouse strains, the inheritance of cancer susceptibility to various agents, and the possible correlation of the incidence of spontaneous and induced tumors.

Dr. Andervont's reports of experiments have appeared in more than 130 scientific publications. He has often been called on to summarize and evaluate the proceedings of scientific conferences.

Dr. Andervont received the B.S. degree in 1923 from Mount Union College, Alliance, Ohio, and the D.Sc. degree from Johns Hopkins University in 1926. After graduate study at Johns Hopkins and Carnegie Institution of Washington, he was appointed instructor of epi-

physicians throughout the country.

A companion to this brochure is available for general distribution. It is PHS Publication No. 500, "Clinical Center Patient Admission Procedures."

It must be clearly understood by all concerned that admission to the Clinical Center is for research purposes only, and that the patient will be returned to the care of his referring physician or institution, or to his family when his participation in a study has been completed and his medical condition permits.

To the research patients, themselves, probably the most unique feature of the Clinical Center is the fact that it imposes no charges for medical, surgical, or other hospital services rendered.

Visitors who tour the CC often leave with this comment: "If I ever get sick I hope I'll be lucky enough to have the disease of the month so I can come here."



Dr. Andervont

## USPHS Officers Club Announces Results of January 3 Election

The USPHS Commissioned Officers Club, formed in March 1960, elected its first permanent slate of officers and board members at a meeting January 3. The officers were elected to three-year terms. Terms of five of the six board members are for one year.

The Club has headquarters on the recently acquired property at the corner of Old Georgetown Road and Cedar Lane, across from the NIH reservation.

Officers are Henry N. Doyle, Bureau of State Services, PHS, president; Dr. Leslie W. Knott, Bureau of State Services, vice president; Pope A. Lawrence, NCI, secretary; and Dr. Harvey Scudder, NCI, treasurer.

Board members elected at the meeting are Louise Carlson Anderson, CC; Dr. Roger M. Cole, NIAID; Chris A. Hansen, DRS; Dr. Samuel Herman, DGMS; Dr. Samuel C. Ingraham, NCI; and Eugene Jensen, BSS.

No alterations are planned in the clubhouse for the coming year, although it is hoped that tennis courts may be added some time in the future. An active social program of dinners, dances, bridge, stag nights, and classes in slimnastics, bridge, and hobbies has been in effect since fall.

demology and preventive medicine at Harvard.

When the first cancer research group was organized within the Public Health Service in 1930 and established at Harvard, Dr. Andervont was selected biologist of the team. As one of the first permanent members of the newly created National Cancer Institute, he became staff biologist in 1939, and in 1945 was appointed Chief of the Laboratory of Biology, now one of the largest laboratories at NIH.

Dr. Heston's major area of interest has been the genetic aspect of cancer. He has sought to identify and locate specific genes influencing the occurrence of the various kinds of tumors in mice. In a recent study, he confirmed that one or more of several genes control the propagation of the mammary tumor agent in crosses between high and low mammary tumor strains of mice.

Dr. Heston earned his Ph.D. in genetics from Michigan State College in 1936 and was appointed an NCI Research Fellow in 1938. He was named Head of the Genetic Unit of the Biology Section, NCI, in 1946, and Head of the General Biology Section in 1952. He is a former scientific editor of the *Journal of the National Cancer Institute*.