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PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

Employee Health Service Is Model For Government, Private Industry

By Peg O'Brien

The Employee Health Service at NIH takes a positive approach to good health.

Directed by Dr. John M. Lynch, with his staff of 14, EHS puts its emphasis on Preventive Medicine, aiming at two major objectives—the highest possible level of health for each employee, and the lowest possible occurrence of occupational injuries and diseases throughout the reservation.

In its main quarters on the B-2 level of the Clinical Center, EHS is the focal point for all matters relating to the health of employees.

Occupies 12 Rooms

A 12-room suite houses treatment rooms, offices, and a staff consisting of two doctors, eight nurses, one laboratory technician, three clerks, and one attendant. Together, this staff makes every effort to provide day-to-day health services to all employees on a personalized basis.

The employee is introduced to EHS even before he reports for duty at NIH. He receives a pre-employment physical examination, at which time he learns of the many health services available to him while employed here.

Well oriented during his first meeting with the personnel of EHS, the employee knows thereafter that he can depend on them to safeguard his health.

Health Advice Given

He knows that this will be accomplished through such accepted preventive health measures as immunizations, health advice and guidance, periodic physical examinations (which he may request), and the prompt and effective treatman of occupational injuries and diseases.

EHS ranks high in the nationwide effort to improve the practice of Occupational Medicine. It is recognized as a model for other employee health programs in government and in private industry.

In the area of occupational injuries, EHS remains constantly alert, ready to handle any emergency. With the help of the NIH Fire Department Rescue Squad, acutely ill or injured employees are quickly transported to EHS for emergency treatment.

After 5 p.m. and on weekends, such emergencies are handled by the Medical Officer of the Day. The main health unit in the CC

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One of the services offered employees by the Employee Health Service is a test to determine early signs of glaucoma, a disease of the eye which can lead to blindness. Top: Dr. Patrick J. Sullivan and Nurse Mary Jane McMahan, both of the EHS staff, are testing an employee's eyes. Lower: a physician applies the testing device to the anesthetized eye. New employees are being given the test in conjunction with their pre-employment physicial examination, and plans are now under way at EHS to begin a full-scale program of glaucoma testing for all employees over 35.

Translation Is Speeded By Dictating Machines

Dictating equipment with many potential uses for speeding up the preparation of scientific translations at NIH has recently been acquired by the Translating Section of the Library.

The section is equipped to provide faster service to scientists and all others who request scientific translations.

The new service can eliminate the production of written translations for which a scientist occasionally finds he has no real need. It will provide spoken translations, dictated on records that become the permanent property of the requisitioning scientists. The records can be listened to at the scientist's convenience, in the laboratory, at home, or elsewhere.

Eliminates Multiple Copies

Previously, a full or partial translation of a scientific paper was prepared in rough draft, typed in final form, and reproduced in multiple copies. If the scientist needed certain information immediately he could request an oral translation, but then had to rely on his memory or notes to recall the main points.

Now a translator can quickly record an oral translation containing all the necessary information the scientist needs to assess the significance of a research paper. The translator may dictate rapid

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ACPRA Section Meets at NIH Next Tuesday

The Medical Affairs Section of the American College Public Relations Association, composed of public relations and public information officers in medical schools throughout the country, will be the guests of the NIH Information Officers at a day-long program in Wilson Hall next Tuesday, July 12.

The group, numbering from 30 to 40 members, will be in Washington to attend the American College Public Relations-American Alumni Council joint general conference at the Sheraton-Park and Shoreham Hotels, July 10-14.

Scientists to Speak

The NIH program begins at 10 a.m. with a welcome and introduction to NIH.

At 10:45, Dr. Kenneth M. Endicott, Director, NCI, will speak on "NIH and the Medical Schools"; and at 11:30, Dr. Ernest M. Allen, Chief of DRG and NIH Associate Director for Research Grants, and Dr. Ralph Knutti, Chief, Extramural Programs, NIAMD, will discuss the "NIH Grants Programs."

The participants will have lunch in the CC cafeteria at 12:45 and return to Wilson Hall at 2 p.m. The subject of the afternoon

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William H. Everhardy, senior staff member of the NIH Library's Translating Section, and Hilda Wexler, NCI biologist, use the Library's new dictating equipment to record a translation of a scientific paper.

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NEWS from PERSONNEL

Health Plans Reminder

All employees who are enrolled in one of the Health Benefits Plans for themselves and their families are reminded that children, on reaching the age of 19, will automatically be dropped from the Plan as family members. Present information indicates that parents will not receive notification to this effect.

It will be the parents' responsibility to contact the insurance company if they are interested in converting the hospitalization coverage for the child to a non-group contract. This must be done during the 31 day "temporary extension of coverage."

Exceptions are children over 19 who are incapable of self-support due to physical or mental incapacities. Cases such as these necessitate a medical certificate which must be filed with the employing office on or before the child's 19th birthday.

Car Pools

PMB is constantly receiving requests from employees who are interested in joining car pools. The addition of summer employees to the NIH staff has greatly increased this interest.

Employees who would like to share their car space may contact the Employee Relations and Services Section, extension 707, for further arrangements.

Training Announcement

The Civil Service Commission has announced its 1960-61 Middle Management Intern Program and Orientation in Automatic Data Processing. Names of candidates selected for the seven-month internship should be submitted by July 11; for the five day orientation program, by July 15. Contact your Administration Officer or the Training Officer, extension 2147, for details.

TRANSLATION

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translations of the title and beginning paragraphs; he may include translations of the discussion section, summary, and tables; or he may dictate the paper in its entirety, depending upon the scientist's need.

This new service is available on request to the Translation Section of the Library, extension 2257. Rosemary Roberts is chief of the section.

Dr. Heller, NCI, Honored At Testimonial Dinner

Dr. John R. Heller, Director of NCI, was honored at a reception and dinner at the Naval Medical Center on Wednesday evening, June 22.

Dr. Heller has been Director of the Cancer Institute for the past twelve years, and on July 1 assumed new duties as President and Chief Executive Officer of the Memorial Sloan-Kettering Cancer Center in New York City.

Over two hundred persons were assembled at the dinner to pay tribute to Dr. Heller as "a distinguished public servant." Among those present were DHEW Secretary and Mrs. Arthur S. Flemming; Surgeon General and Mrs. Leroy E. Burney; the Honorable John E. Fogarty, U. S. Representative from Rhode Island; Dr. Joseph E. Smadel, NIH Associate Director for Intramural Research, and Mrs. Smadel; Dr. and Mrs. C. J. Van Slyke; Dr. Heller's successor, Dr. Kenneth M. Endicott, and Mrs. Endicott; and members of the National Advisory Cancer Council.

Associates of Dr. Heller at NIH honored him at a reception Wednesday afternoon, June 29, on the Clinical Center terrace. Dr. Heller was presented gifts on both occasions.

Small Building Designed to "Explode"

A unique addition to the NIH reservation, now under construction, is a building designed especially to "explode" under pressure.

The new facility, which is part of an L-shaped extension of the Isotope Laboratory (Bldg. 21), will be known as the Hydrogenation Building.

Also included in the construction is a radioactive waste processing room which will be located behind the existing loading platform.

Completion is scheduled for mid-August.

The building will house equipment used in high-pressure catalytic hydrogenation experiments, high-pressure neuro-physiological experiments, Diels-Alder reaction experiments, and other research efforts in which the possibility of explosion exists.

Rear Wall Expendable

The experiments will be conducted in a cell of which three side walls, the ceiling, and floor will be constructed of 16-inch reinforced concrete. The fourth and rear wall of this cell is also one of the exterior walls of the building but is designed to be non-load-bearing.

Termed a "blow-out panel," it will be constructed of ¼-inch cement-asbestos board, a material with no structural strength. In the event of an explosion from accumulated gas, the panel will give way, thus relieving pressure on the building itself.

An important additional safety factor is provided by the location of the building. The blow-out-panel wall faces the high earthen bank of an adjoining hillside, which would serve as a barrier to shock waves and debris from a possible blast.

To further protect workers in the building, all electronic equipment controlling the high-pressure experiments will be located outside the cell in an instrument room. Here experiments involving pressures exerted upon organic chemicals at the rate of 2,000 or more pounds per square inch may be remote-controlled and observed without endangering the safety or the life of the operator.

Safety Features Incorporated

Other features include an exhaust system to remove highly toxic chemical vapors, and shower baths for decontamination of workers if needed.

Formerly, high-pressure experiments were conducted in Institute laboratories, but were discontinued in 1959 at the direction of Dr. Joseph E. Smadel, NIH Associate Director for Intramural Research, after the Plant Safety Branch had called attention to the hazards involved.

Institutes which will use the facilities of the building and which have contributed to the cost of its construction are NIAMD, NIDR, NCI, and NHI.

Designed by PEB

The building was designed by the Plant Engineering Branch, DRS, under the direction of Lawrence F. Gaffney, Chief, Engineering Design Section, with the advice and consultation of Dr. Lewis J. Sargent, Assistant to the Chief, Laboratory of Chemistry, NIAMD; James B. Black, Safety Officer, Plant Safety Branch, OD; and the Squibb Institute for Medical Research, New Brunswick, N.J. It is being constructed by the firm of Whitener and Skillman, Arlington, Va.

Surgeon General Leroy E. Burney pays tribute to Dr. John R. Heller, Director, NCI, at a dinner honoring him at the Naval Medical Center, June 22. Dr. Heller assumed new duties as President of Memorial Sloan-Kettering Cancer Center, New York City, on July 1. Among those seated at the head table are (left to right): DHEW Secretary Arthur S. Flemming, Mrs. Heller, Dr. C. J. Van Slyke, Dr. Burney, Dr. Heller, and Mrs. Flemming.

Science Section

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.

PHS Awards Contract For Agents to Detect Human Cancer Viruses

The University of Kansas Medical Center in Kansas City has been awarded a Public Health Service contract to develop detection agents to identify viruses that may cause human cancer.

No type of human cancer is known to be caused by a virus, although viruses have been found in malignant tissue removed from patients. Identifying these viruses is a vital first step in research to learn whether they cause the disease in man. Virus infection has already been established as the cause of many forms of cancer in laboratory animals.

Under the one-year, $400,000 agreement effective July 1, a research team under Dr. Herbert A. Wenner will intensify studies under way for the past several years to develop virus detection agents. The scientists will produce large quantities of antisera (virus detection agents) against 60 common human viruses found in the digestive tract, including some known to cause disease and many not yet associated with illness.

Part of NCI Program

The contract with the University of Kansas Endowment Association is part of the National Cancer Institute's expanding virology program, which already includes more than 100 grants in virus-cancer research as well as numerous similar studies in its own laboratories in Bethesda, Maryland.

An antiserum against a specific virus is prepared in Dr. Wenner's laboratories by injecting pure virus solution into monkeys, which then develop antibodies against the virus. Later, a sample of the monkey blood is processed by highly complex laboratory techniques, and the blood element (serum) containing the antibodies is separated from the red and white blood cells.

When the serum is mixed with virus from human malignant tissue, it kills only the type of virus against which the antiserum was produced. This method gives a positive identification of viruses.

Some scientists believe that cancer may be caused by one or more of the well known viruses, which for some reason may be acting in an unusual way. This is why it is necessary to identify the viruses found in malignant tissue as an initial step in research to learn whether they cause cancer.

Snail Egg Fecundity Reduced By NaPCP Concentrations

This snail (Australorbis Glabratus) is host for Schistosoma Mansoni, a blood fluke, during one stage of its life cycle.

In many areas of the world the cost of eradicating schistosomiasis in the usual manner is not economically feasible because of the comparatively large quantity of chemical needed for destruction of the snail vector. However, a series of laboratory experiments by scientists of the National Institute of Allergy and Infectious Diseases indicates that very low concentrations of sodium pentacholorphenate (NaPCP) will drastically diminish the fecundity of the snail, *Australorbis glabratus*, and result in lowered viability of the eggs produced.

Results Published

Results of the investigation by Drs. Louis Olivier and Willard T. Haskins of the Laboratory of Parasitic Diseases were published in the *American Journal of Tropical Medicine and Hygiene.*

Experiments were conducted using NaPCP concentrates of .05 and .1 ppm (parts per million). Although this contrasts with the 10 ppm usually employed in running water and the customary 5 ppm in still water, striking effects on both fecundity and egg viability were observed.

According to the investigating scientists, the effect was especially impressive when the double action of the chemical, i.e., reduction of snail fecundity plus the weakening of egg viability, was considered additively.

For example, in one of the experiments, the recovery of viable eggs on the day the test period started was found to be 14.5 e/s/d (eggs per snail per day). During the subsequent test period the recovery of viable eggs varied from .12 to .78 e/s/d. In another test, .1 ppm of the chemical reduced the production of viable eggs from 11.9 e/s/d before the addition of chemical to from 0 to 1.03 e/s/d during the test period.

Effect Is Striking

When destruction of the adult snails by .1 ppm of the chemical is considered along with the other action, the over-all effect becomes even more striking. Indeed, the viable egg recovery was reduced to .11 and .81 egg per original snail in the above tests. These are, respectively, 132 and 15-fold reductions from the pre-test levels.

All previous field experiments with NaPCP have been designed primarily to kill the adult snails, and the measure of the chemical's efficacy has usually been in terms of adult snail mortality after a short-term treatment with the chemical.

Cost Will Be Low

The scientists conclude, however, the interference with the reproductive capacity of the snails by the use of very low concentrations of the chemical, even if the adult snails are not destroyed, might reduce or interrupt transmission of schistosomiasis at relatively low cost.

Criteria Devised For Detection Of Eye Tumor

Isotope tracer methods for detecting malignant ocular tumors have been implemented by National Institute of Neurological Diseases and Blindness investigators who have devised criteria for successfully applying these methods to tumors in the posterior half of the eye.

Tracer methods that are used to locate tumor sites in the front of the eye have previously been ineffective in locating posterior malignancies, although radiophosphorus is known to accumulate in these tumors.

Method Reported

The improved method for localizing tumors in the posterior choroid has been reported by Dr. J. O'Rourke, formerly of the NINDB Ophthalmology Branch, now at Georgetown University, and Eleanor Collins, NINDB, in the *A.M.A. Archives of Ophthalmology.*

Eight patients, each with evidence of a tumor beneath the retina in the posterior half of the eye, were studied. Radiophosphate was administered intravenously to the patients 24 hours before uptake measurements were made. Beta-emissions were counted for one minute in each of four posterior and anterior quadrants of the eye. After the tumors were excised, pathologic sections were examined to determine the cell type and volume of each tumor.

Results showed that the routine anterior counting procedure localized the posterior malignancy correctly in only one of eight cases, and the average radioactivity of the tumor was only 25.3 percent above the mean of individual quadrant counts.

Tumor Located Correctly

In six cases where the new criteria were used for posterior countings, the tumor was located correctly in all instances. The average increase in tumor radioactivity was 74 percent above the mean.

The investigators also found that tumors larger than 300 cu. mm. and those with epithelioid cells (which are associated with high malignancy) retained greater amounts of radioactivity. However, factors such as density of overlying tissue made it difficult to

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Obesity Unrelated To Joint Disease Evidence Shows

Scientists at the National Institute of Arthritis and Metabolic Diseases have found that excess body weight bears little if any relationship to the cause of osteoarthritis in mice. The research, which was reported to the annual meeting of the American Rheumatism Association has shown that osteoarthritis has a much more complex cause than simply that of extra weight-bearing by the joints of the body.

Osteoarthritis is a "wearing away" disease of the joints which is much more common than rheumatoid arthritis but, as a rule, less damaging. The disease seems to result from a combination of aging, damage and normal wear and tear and afflicts older persons most frequently.

Belief Long Held

Although it has long been supposed that obesity aggravates osteoarthritis in man—presumably by burdening the joints with additional weight—there is little evidence of this, and so the present study was done to determine more clearly the relationship between obesity and osteoarthritis.

The NIAMD scientists performed several groups of experiments. In the first one, mice which did not normally become obese were fattened on a diet containing 60 percent vegetable shortening. The mice became 75 percent fatter than litter mates fed a normal diet, but pathological studies of their hind limbs done after 16 months showed that, for the most part, even this severe a degree of obesity did not harm the joints.

Rats Also Used

The same fattening procedure was also used on rats, which are generally less susceptible to joint disease. In these experiments the obese animals did show slightly more arthritis than normally-fed litter mates, but their joint disease was very mild.

The most conclusive studies were done with mice belonging to the STR/1N strain. This strain is naturally fat and, in addition, has a high incidence of osteoarthritis. All STR/1N mice develop osteoarthritis by about one year of age. To determine whether the animals' weight was directly related to their joint disease, the scientists restricted their weight gain by feeding them a low calorie diet. It was found that the weight restriction had no effect on either the occurrence of osteoarthritis or its severity.

Further proof of the lack of association between obesity and osteoarthritis came from studies of hybrid mice which had resulted from the mating of STR/1N mice (fat, arthritis-susceptible mice) with mice from a thin, arthritis-resistant strain.

The hybrids were practically as fat as their arthritic fathers but had almost as little arthritis as their thin mothers, thus confirming the dissociation between weight and arthritis.

"Under the conditions of these experiments there was no consistent effect of obesity on the development of degenerative joint disease," Dr. Sokoloff reported.

Cause Is Subtle

Although the obesity-producing diet did slightly influence the development of joint disease in the rats, the results of the other experiments make it unlikely that the effect was simply the mechanical consequence of excessive weight borne by the joint. Possibly, certain metabolic alterations are involved, although no single metabolic abnormality has yet been found.

The NIAMD scientists concluded that the cause of osteoarthritis is a much more subtle and complex biological problem than simple mechanical stress.

TUMORS

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equate tumor size with radioactivity emitted.

As a result of these findings, the authors propose that different methods be used to detect posterior malignancies than are now used for locating ocular tumors. They suggest that one minute counts of quadrants in both the front and back hemispheres of the eye be made, and that posterior counts be taken from bare sclera, following surgical exposure and muscle detachment.

A positive diagnosis of a posterior tumor can be made if the total radioactivity in the back hemisphere exceeds the total anterior values by more than 40 percent. Radioactivity detected over the tumor site should also exceed the mean of posterior counts by more than 40 percent. In addition, the point of highest radioactivity should correspond with the site of retinal detachment.

This method of detecting posterior malignancies is highly accurate since more radioactivity can be counted, thereby reducing the chances of error. In addition, the actual area which the tumor has invaded can be more accurately determined.

The technique will also be of value in advancing operating time, since the difficulties previously encountered in detecting posterior malignancies often delayed surgery.

Value of Gold Salts Shown In Treatment of Arthritis

A large, carefully controlled study of the value of gold salts in treating rheumatoid arthritis has shown that gold-treated patients definitely improve to a greater degree than those who are given only aspirin or other simple supportive measures.

This study, the most comprehensive one yet done, was carried out in 24 treatment centers in Great Britain under the sponsorship of the Research Sub-Committee of the Empire Rheumatism Council. It was reported by Dr. E. G. L. Bywaters, Professor of Rheumatology at the University of London, to the recent meeting of the American Rheumatism Association.

Dr. Bywaters, one of the participants in the study, has just returned to England after spending several months as a Visiting Scientist at the National Institute of Arthritis and Metabolic Diseases.

Injections of gold salts were first used in the treatment of rheumatoid arthritis in 1927 and since then have been widely employed by many physicians with varying degrees of success, but few well controlled studies have been made of this form of treatment.

Disease Is Variable

Such studies are not easy to perform; since the disease is extremely variable it is very difficult to obtain two similar groups of patients, one which can be given gold therapy while the other serves as a control. This has now been accomplished in the present study and has provided apparently conclusive proof of the value of gold therapy in rheumatoid arthritis.

Two hundred out-patients were involved in the double blind study and were divided equally into two groups, the treated or "gold" group, and the control group. All efforts were made to have the groups comparable in age, sex and duration of disease. Since the disease has a tendency to undergo natural remission in the first year of its course, only those patients who had had rheumatoid arthritis for more than one year and less than five were included in the study. None had been previously treated with gold salts.

The gold group was given weekly injections of 50 milligrams of metallic gold (as sodium aurothiomalate) over a period of twenty weeks, while the control group received weekly injections of similar appearance but containing virtually no gold (1/100,000 the quantity given the gold group). Neither the patients nor their physicians knew to which group the patients belonged, and all were given simple supportive measures such as rest, splints, aspirin and physical therapy.

The study showed undoubtedly that the clinical condition of the gold-treated group improved over a period of a year after completing the course of treatment. The improvement in the gold group became noticeably greater than that seen in the control group after the first three months and was measured in a variety of ways. These included:

(1) Functional capacity—More patients became and remained able to carry on normal work and physical recreation.

(2) Joint involvement—Fewer joints became newly affected or reactivated with the disease, while more joints became quiescent and remained that way.

(3) Blood tests—Hemoglobin levels and red cell sedimentation rates improved by the sixth month in the gold group and the sheep cell agglutination test for rheumatoid arthritis became less positive.

(4) Number of analgesic tablets taken daily—At the start both groups were taking an equal number of aspirin tablets or equivalent per day. A marked reduction was seen in the gold group at the sixth month from the start of the treatment and continued to the 18th month.

X-rays Taken

X-rays of both groups were also taken at intervals during the study but these did not reflect the clinical improvement noticed in the gold-treated group.

One of the biggest problems with gold therapy has always been the production of side effects and these occurred to a significant degree in this study also. Toxic effects, largely dermatitis, were three times more common and were more severe in the gold-treated than the control group. Complications were noted in about 25 per cent of the gold group and 12 per cent of the control group. However, although the skin reactions were troublesome in a significant number of the cases, various new drugs such as British antilewisite (a gold-binding compound) and the steroids can reduce the severity of such side effects and lessen the dangers of this form of therapy, Dr. Bywaters reported.

"A later assessment will be made after a further one year's follow-up, but to date the advantage clearly lies with the gold-treated group," he concluded.

Allergy Reaction Time Influences Choice Of Treatment Used

Many important aspects of allergic phenomena hinge upon the type of reaction developing in human beings following contact with allergens. Therapy for allergic diseases may be considerably influenced by the nature of the reaction present in patients.

Laboratory experiments directed toward unraveling the relation between delayed and immediate types of hypersensitivity are in progress at the Rocky Mountain Laboratory, field station of the National Institute of Allergy and Infectious Diseases in Hamilton, Montana. Only recently has it been possible to demonstrate a relation between immediate and delayed types of sensitivity in experimental animals.

It has been suggested that delayed hypersensitivity is a step in the formation of circulating antibody. This raises the question of whether or not delayed sensitivity has a more primitive type of specificity than do Arthus reactions and circulating antibody.

This is among the concepts being explored by Drs. S. B. Salvin and R. F. Smith at the Rocky Mountain Laboratory. Their first paper in a series on specificity of allergic reactions appears in the *Journal of Experimental Medicine.*

Contradictions Recognized

The investigators recognize that two contradictions may seem to invalidate the hypothesis that delayed hypersensitivity is a stage in the production of circulating antibody. First is the difficulty of producing circulating antibodies to denatured proteins, such as gelatin, although delayed hypersensitivity develops; the second, the inability to detect delayed hypersensitivity to purified polysaccharides, although circulating antibody may occur.

Both of these facts may be explained on the basis that recognition of antibody by antigen in delayed hypersensitivity is directed toward a broad area of the antigen molecule, and in Arthus reactions and circulating antibody toward a more narrow, finite area.

By employing various types of avian albumins and different conjugated proteins prepared from them, it was possible to show that the delayed reaction is produced in guinea pigs in response to a broad general area of the antigen molecule. Activities of circulating antibody, however, are directed by small, specific antigen groupings.

When conjugated proteins, such as picrylated hen albumin, are used as antigens for guinea pigs, the animals develop delayed reactions to the protein portion, and antibodies and immediate reaction to the haptenic portion of the complex.

NIDR STUDIES CONGENITAL DEFECTS

Miss Lee Feild, Biology Technician, NIDR, places clamp on left uterine horn of anesthetized pregnant rat. The clamp temporarily interrupts oxygen supply to rat fetus, providing dental investigators with a unique laboratory technique for investigation of fetal anoxia as a possible cause of such congenital anomalies as cleft lip and palate. Fetus in the other (non-clamped) uterine horn provides normal control.

Neurological Syndrome Associated With Orthostatic Hypotension

Certain lesions of the nervous system, in association with an extreme drop in blood pressure when standing erect, have been observed at National Institute of Neurological Diseases and Blindness in two patients having no systemic disease.

Supported by other reports of similar cases, the study suggests that a primary "degenerative" nervous system disorder appears to be a recognizable clinical syndrome as a cause of at least some types of orthostatic hypotension.

The investigators, Dr. G. Milton Shy, Medical Neurology Branch, and Dr. Glenn A. Drager, formerly with NINDB, found the most common initial symptoms of this condition to be impotence, incontinence, and loss of sweating; "dizziness" and blurred vision occurred on rising to a standing position followed later by fatigability and the sense of muscular weakness.

The signs and symptoms observed in these patients were compatible with automatic nervous system involvement and a Parkinson-like syndrome. The report appears in the *A.M.A. Archives of Neurology.*

Any of the above signs and symptoms may be the presenting ones, according to the authors, and the hypotension may be a relatively late finding. Orthostatic hypotension may be present in some degree from the beginning of the illness, but usually is not detected until the patient has experienced extreme "dizziness" or syncopal attacks.

The age of onset is usually in the fifties to seventies. The duration of the illness, from these cases as well as others cited in the literature, shows the disorder to be of relatively slow progession. The disorder appears to be more frequent in the male.

Similarities Noted

Within the past five years, the investigators have seen four clinically similar patients with orthostatic hypotension and signs and symptoms referable to the central nervous system. In the present study, pathological findings of one case are described in detail and do not appear to agree closely with pathological findings of hypoxia in the adult primate. A somewhat similar pathology has, however, been reported in hypoxic states in neonatal primates.

The authors conclude, therefore, that it is not possible, with evidence now available, to state whether the changes found in the central nervous system of this case procede the hypotension or are secondary to repeated episodes of hypoxia, but the difference in the sites of pathology suggests the former.

Rise in Atrial Pressure Pathogenically Related To Myocardial Edema

Studies at the National Heart Institute on the mechanism of myocardial edema—the accumulation of water and electrolytes in the heart muscle that often accompanies congestive heart failure—indicate that the major pathogenic factor is the elevated right atrial pressure also frequently found in this condition.

Excessive serum levels of aldosterone, a hormone which promotes water and salt retention, and low serum protein levels may also play a role in the process.

The studies were performed on 46 dogs—21 normals and 25 with experimentally produced lesions causing chronic congestive heart failure or chronic ascites (accumulation of fluid in the peritoneal cavity). After periods ranging from 6 to 189 days, the animals were anesthetized, sacrificed, and samples of heart tissue immediately taken for determination of water, fat and electrolyte content.

The experimental data were then analyzed to evaluate the importance of the following factors in myocardial edema: the duration

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Polyoma Virus Antibody Found Not Related To Mouse Leukemia

National Cancer Institute biologist, Dr. Lloyd W. Law, has collaborated with Drs. Wallace P. Rowe and Janet W. Hartley, of National Institute of Allergy and Infectious Diseases, in a study of the relation of polyoma virus infection to lymphocytic neoplasms in mice.

Leukemic and non-leukemic mice of four high leukemic strains were tested at intervals for antibody to polyoma virus. No correlation was found between the presence of detectable antibody and the appearance of leukemia at various times throughout life. No evidence was observed that mice with circulating antibody against polyoma had an increased risk of developing leukemia.

The relationship between antibody status and recovery of virus from organs of leukemic mice was found to be similar to that previously observed by Dr. Rowe and others in non-leukemic mice of infected colonies.

The results suggest that any association of polyoma virus and experimental transmission of leukemia is fortuitous.

A report appears in the *Journal of Experimental Medicine.*

Inducible Enzyme Theory Supported

Further evidence to support the contested view that penicillinase is an inducible enzyme of *Staphylococcus aureus* was cited at the meeting of the Federation of American Societies for Experimental Biology, in a paper read by Dr. Harry Steinman of National Institute of Allergy and Infectious Diseases' Laboratory of Clinical Investigation.

In this study Dr. Steinman used an organic mercury derivative to inactivate the bacterium without affecting its penicillinase activity, thus permitting exact analysis of the enzyme. Enzyme activities were demonstrated by testing samples removed from a reaction mixture at periodic intervals. Curves plotted from these data were similar to those obtained by continuous observation of the same reaction system.

The greater accuracy obtained by this method allows more precise evaluation of the experimental curves. Thus the formation of new enzyme was apparent in a synthetic medium within 15 minutes after exposure of the organism to penicillin and the rate of increase was linear with time. This method also permitted studies on variation of the inducing concentration of penicillin, without interference by the high levels of penicillin required in the subsequent assay procedure. In this way it was established that very high concentrations of penicillin were required for this reaction by the particular strain of *S. aureus* examined.

Evidence Obtained

More direct evidence for the induced formation was obtained from studies on cell-free preparations wherein concentrated suspensions of *S. aureus* broken up by bombardment with fine glass beads were found to possess good penicillinase activity.

By means of adsorption and elution of the cell-free enzyme preparation, and fractional precipitation with ammonium sulfate, followed by isoelectric precipitation—a method not hitherto applied to staphylococcal penicillinase — concentration and partial purification of basal penicillinase from organisms not exposed to penicillin was achieved. The increased activity obtained in cell-free extracts from penicillin treated cultures persisted through the purification procedures, indicating that new, induced protein had been actually formed. However, the preparations were still relatively impure since the specific activities were not identical with each other.

A comparison of the physicochemical properties of partially purified penicillinase from S. aureus with purified penicillin from *B. cereus* indicates that the two enzyme proteins are not identical.

Environmental Cancer

By James F. Kieley

Information Officer, National Cancer Institute

In the eighteenth century a London physician named Percival Pott advanced good evidence that cancer of the scrotum in chimney sweeps was related to occupational exposure to soot. This opened a whole new field of research to seek out environmental conditions that may be responsible for cancer.

Although we do not know what actually causes cancer, we know that it can be induced by exposure to certain environmental conditions which have been identified. These range from such a simple thing as too much sunlight, which can cause skin cancer, to air pollution, accidental exposure to excessive radiation from sources like X-ray machines or atomic reactors, and perhaps the cigarette habit. Modern research on environmental cancer therefore concerns itself with both the nature of cancer hazards encountered in our daily living and ways in which exposure to them can be reduced or prevented under public health measures.

In Hagerstown, Maryland, for instance, the National Cancer Institute is conducting a long-range research project to study background radiation. Good health records on a stable population going back some 75 years make it possible to study the localities where cancer patients have lived and even the houses and the very rooms they have occupied for long periods. In the Colorado plateau region, where a lot of uranium ore mining is going on, a long-range health study is being made among miners to determine what effect occupational exposure to radiation may have on their susceptibility to cancer.

Food additives and contaminants, about which we have been hearing a good deal lately, are also a part of the environmental cancer situation. One thing to bear in mind is that evidence of the cancer-causing properties of certain agents observed in animal experimentation does not necessarily apply to human beings. Scientists, legislators and public health administrators are becoming more and more cautious, however, about human use of substances that have been demonstrated to be carcinogenic in animals.

Smoking, which the Public Health Services believes to be the principal factor in the increased incidence of lung cancer, is also an environmental cancer hazard. Statistical studies made in different parts of the world over a long period have shown that the heavy cigarette smoker (two packs a day) has one chance in ten of developing almost invariably fatal lung cancer compared to one chance in 300 for the non-smoker. The chances of lighter smokers and reformed smokers fall between these extremes.

Cancer is a formidable scientific and medical problem, but in coping with it we follow the same procedure as with any disease: if we can't prevent it we try to cure it; if we can't cure it we try to arrest it; if we can't arrest it we try to palliate it. One out of three cancer patients is being saved today compared to one out of four 20 years ago. With present knowledge of cancer it should be possible to save one out of two. This opportunity lies partly in the area of prevention.

EDEMA

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of heart failure, enlargement of the ventricles, serum aldosterone and protein levels, and elevation of right atrial pressure.

All of the experimental lesions produced moderate to marked increases in heart muscle content of water, sodium, and chloride. The observed increases in myocardial chloride suggested that the edema was the result of accumulation of extracellular fluid.

Comparison of data from dogs dying from heart failure within 6 days with data from another group surviving for 3-6 months ruled out duration of heart failure and ventricular enlargement as significant factors in myocardial edema. Other data suggested that high serum aldosterone and low serum protein levels, while not determining factors in themselves, do play supporting roles in the process.

The factor that appeared to be most important in myocardial edema was elevation of right atrial pressure. The degree of increase correlated well with the severity of the edema. Increased right atrial pressure appears to result in passive venous congestion, which, when combined with high serum aldosterone and low serum protein levels, leads to the accumulation of water, sodium, and chloride in heart muscle that constitutes myocardial edema.

These experiments were reported by Drs. N. A. Yankopoulos, J. O. Davis, Ernest Cotlove, and Mary Trapasso of the Laboratory of Kidney and Electrolyte Metabolism in the *American Journal of Physiology*.

NCI Scientists Report Results of Studies Of Leukemia Victims

Continuing their detailed studies of the natural history of acute leukemia, particularly neurological complications, National Cancer Institute scientists have reported results of a postmortem study of the central nervous system of 117 patients admitted to the Clinical Center.

Twenty-three (19 percent) of these patients showed the clinical syndrome of meningeal leukemia. Any patient with acute leukemia may develop the meningeal syndrome, but it is more frequently noted among boys with acute lymphocytic leukemia.

The pathological findings showed that this syndrome is related to the leukemic infiltration of the arachnoid, particularly along the brain stem, and to internal hydrocephalus. The leukemic infiltration within the arachnoid probably interferes with the flow of cerebrospinal fluid and results in increased intracranial pressure.

The degree of leukemic infiltration of the arachnoid is reflected in the cerebrospinal fluid. This finding suggests that examination of the C.S.F. should allow for early recognition and treatment, with the possible prevention of hydrocephalus and other irreversible neurological lesions.

The report appears in a recent issue of *A.M.A. Archives of Internal Medicine*.

Growth of Metastases Slowed by Radiation

In a search for more effective means of dealing with the dissemination of viable cancer cells during surgery, scientists of National Cancer Institute's Surgery Branch have conducted a laboratory study of the efficacy of small amounts of radiation in decreasing the production of metastases.

Amounts of radiation ranging from 170 to 2,000 r produced an apparent change in the cells of 4 transplanted mouse tumors without significantly altering the growth of the tumor themselves. The cellular change prevented the growth of the majority of cells as lung metastases, when the cells were artificially disseminated from the host tumor 24 hours following radiation.

The mechanism reponsible for this change in growth potential of disseminated cells is not yet known.

The work is summarized by Drs. Robert C. Hoye and Robert R. Smith in a recent issue of *Surgical Forum*.

Directory-Biblography For 1960 Is Distributed

Distribution of approximately 6,500 copies of the 1960 edition of the *NIH Scientific Directory and Annual Bibliography*, prepared by the Office of Research Information, was completed last week.

The 111-page booklet is a reference guide for scientists within and outside the Government.

This second annual edition contains information on the organization, professional staff, and scientific and technical publications of the NIH program of direct research, both laboratory and clinical, at Bethesda and in the field.

The Directory section lists the names of key individuals as well as all staff members with doctorate degrees. Visiting scientists with tenure of a year or more are also listed.

The Bibliography section lists scientific and technical papers published by NIH members during 1959.

For ease of reference, the index lists all names of staff members appearing in either the Directory or Bibliography.

Copies of the booklet were distributed within NIH, PHS, and DHEW, including the NIH advisory groups; to other Federal agencies, medical schools and medical libraries, scientific and professional societies, foundations, voluntary health agencies, and other organizations concerned with medical research.

Copies are also available upon request from ORI, Ext. 896.

Bloodmobile at NIH

The Red Cross Bloodmobile unit will be in Wilson Hall Wednesday, July 20, from 9 a.m. to 1 p.m., to receive blood donations from NIH employees.

In an all-hands memo Dr. Shannon said, "Every minute of each day lives are saved by those who donate blood. Now you can help assure the constant availability of blood by pledging your donations in advance, thus preventing periodic shortage crises with serious consequences for doctor and patient.

"The need for blood," Dr. Shannon added, "is especially great during the summer months."

Additional AIN Members

The names of two NIAMD scientists recently elected to membership in the American Institute of Nutrition were omitted from the *NIH Record* of June 21. They are Dr. Paul di Sant' Agnese, Pediatric Metabolism Branch, NIAMD, and Dr. Jesse N. Williams, Jr., Laboratory of Nutrition and Endocrinology, NIAMD.

NIH Administrative Training Program Designed to Prepare for Leadership

By Nick Goldsborough
NIH Administrative Trainee

Now beginning its fourth year of operation, the NIH Administrative Training Program is rated a highly successful undertaking.

It is an integral part of a government-wide effort sponsored by the Civil Service Commission, designed to prepare promising administrative candidates for positions of responsibility and leadership in a field that places a premium on these qualities.

Fourteen graduates of this program are presently employed at NIH, while six others are now in training.

The program is administered by an eight-man NIH Administrative Training Committee currently headed by Kenneth H. Brown, Executive Officer of NIAID.

All candidates for appointment must undergo a rigorous screening process. This includes the usual Federal Service Entrance Examination and a hearing before the Training Committee in which the candidate is measured critically in terms of his potential value in positions requiring tact, maturity of judgment, and responsible leadership.

Course Is 12 Months

Upon acceptance the appointee's 12-month training schedule usually provides for three months in each of two Institutes or Divisions and an additional three months in each of two Central Service offices.

He works directly under selected supervisory personnel who evaluate his progress step by step in their respective areas. He is also assigned a counselor who confers with him periodically concerning his progress and serves as a friendly advisor on any personal problems that may arise.

As a part of his course, the trainee attends monthly seminars conducted by outstanding authorities in the field of government and business administration. He is also encouraged to attend night school on one of the scholarships offered by nearby universities, including George Washington and American Universities.

Graduates of the training program are doing well in responsible middle management positions, and because of the increasing necessity for skilled personnel to serve the managerial needs of scientific research here, the program has been accorded highest priority.

A. F. Siepert Speaks At Training Seminar

Albert F. Siepert, Director of Business Administration for the National Aeronautics and Space Agency, returned to NIH last month as guest speaker at an administrative training seminar. A former executive officer at NIH, Mr. Siepert addressed an audience which included key members of the NIH administrative staff.

Discussing differences in program operation between an independent agency such as NASA and a departmental agency component such as NIH, Mr. Siepert outlined problems in personnel management, budget operations, and supply procurement common to the research programs of each agency.

The recent establishment of an Office of Life Sciences as one of the five main program areas in NASA, Mr. Siepert said, indicates the importance of the biosciences in the national space program.

Dr. E. P. Offutt Named To DRG Branch Post

Dr. Edward P. Offutt, Jr., who served at NIH from 1950-56, returned June 28 as Associate Chief of the Grants Review Branch, DRG.

In his new post Dr. Offutt will share responsibilities with the Branch Chief. His duties will include the primary breakdown and assignment of research grant applications. He will also have full responsibility for a number of other activities such as the coordination of conferences supported by PHS funds.

For the past three years Dr. Offutt has been Executive Secretary of the Committee on Grants for Science and Medicine of the Smith, Kline & French Foundation.

During his prior association with NIH, Dr. Offutt served the extramural program in various capacities: as Grants Branch Chief of NINDB and Executive Secretary of four study sections—Hematology and Pathology, Microbiology and Immunology, Virus and Rickettsial Diseases, and Dental.

PUBLIC RELATIONS

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session will be "Trends in Medical Research."

Under this topic, Dr. G. Burroughs Mider, NIH Director of Laboratories and Clinics, will speak on "Viruses and Cancer"; and Dr. Robert W. Berliner, Associate in Charge of Research, NHI, will discuss "Cardiovascular Diseases."

Washington University Honors Dr. Rolla Dyer, Former NIH Director

Dr. Rolla Eugene Dyer, former Director of NIH, was cited for outstanding leadership in public health on receiving an honorary Doctor of Science degree from Washington University, St. Louis, at the annual graduation exercises, June 6.

The citation honors Dr. Dyer as a scientist, physician, and scholar "who has devoted his life to protecting the health of our nation's people." It states:

"In his distinguished research career," Doctor Dyer has made important discoveries pertinent to the control of some of the most virulent infectious diseases known to mankind. Doctor Dyer has also shown invaluable leadership in the development of major Federal medical research policies and in the development of the medical research program of the National Institutes of Health. In so doing he has contributed immeasurably to the advancement of medicine in the world today. The nation owes a debt of profound gratitude to Dr. Dyer for his outstanding work in safeguarding the public health."

Dr. Dyer

Dr. Dyer's research career began with a Public Health Service commission in 1916 and immediate assignment to field work on bubonic plague in New Orleans.

His major contributions to medical research were in the field of infectious diseases. The most notable contribution was the discovery that murine typhus is spread by fleas from rat to man. He also discovered that Australian Q Fever was present in the United States.

HEALTH SERVICE

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is open from 8 a.m. to 5 p.m. Monday through Friday, and an auxiliary unit in the Robin Building is open from 8:30 a.m. to 10:30 a.m., Monday through Friday.

Although NIH personnel are exposed to certain health and accident hazards, as are all employed people, EHS, working in conjunction with the NIH Safety Department, is continually developing better medical controls to cope with the problem.

Employees are encouraged to consult EHS for advice and guidance on any question relating to health. EHS is in full accord with the adage, "An ounce of prevention is worth a pound of cure."

Baldwin Granted Leave To Attend Seminar; Wins Jump Award

Calvin B. Baldwin, Jr., Administrative Officer, DGMS, has won the Meritorious Award for exemplary achievement in public administration given by the William A. Jump Memorial Foundation. This is the second time that a DHEW employee has been so honored.

The award, which acknowledges excellence in the younger group of administrative personnel in Federal Government, took the form of a certificate and citation "in recognition of outstanding public service for major contributions to the effective administration of programs involving several diverse professional-scientific disciplines, and for exemplary personal qualities of leadership."

Mr. Baldwin will go on a nine-month leave of absence from September of this year until June 1961. He will participate in a research and training program on science and public policy at the Graduate School of Public Administration, Harvard University, Cambridge, Mass.

The program, entitled Seminar on Science and Public Policy, is being inaugurated this year at Harvard. Mr. Baldwin will be one of the first 15 students, having been selected on the basis of public service experience, academic record, and recommendations from NIH.

Mr. Baldwin will be eligible for the degree of Master of Public Administration in June 1961. His training is provided under the Government Employees Training Act.

4 Bulgarian-Speaking Technicians Needed

At the invitation of the Bulgarian government, the United States will present an exhibit entitled "Medicine, USA," at the annual International Fair of Plovdiv, in Plovdiv, Bulgaria, September 18 through October 2.

The Office of International Trade Fairs, Department of Commerce, is urgently in need of four Bulgarian-speaking technicians to represent the United States at the fair and to explain the exhibit to fair visitors. If necessary, Russian or German-speaking technicians will be considered.

Of the four technicians, one expert is needed in the field of cancer, one in dentistry, and one in general medicine. The best qualified expert in one other field of medicine will be chosen as the fourth technician.

Interested persons may obtain further information by contacting Maurice F. King, Office of International Trade Fairs, Rm. 1034, Department of Commerce, Annex #1, 2nd and D Sts., S. E., telephone code 186, ext. 401.

INSTRUMENTATION EXHIBIT PLANNED

Members of the Committee of Manufacturers Representatives, together with Exhibit Manager James B. Davis, Chief of SMB, pour over applications for display booth space at the 10th Annual Research Equipment Exhibit to be held at NIH in October. Left to right: Mary Louise Humphreys, secretary; Harry Gunnison, Mr. Davis, and Louis Heiss. During exhibit week, prominent speakers will present papers of a symposium on recent developments in research methods and instrumentation.

Dr. E. L. Jackson Dies; Formerly with NIAMD

Dr. Ernest Lee Jackson, 68, a retired NIAMD chemist noted for his extensive contributions to the chemistry of carbohydrates, died Tuesday, June 14, at the Clinical Center following a long illness.

Dr. Jackson began his 30-year scientific career with the PHS Hygienic Laboratory in 1928. His discovery and pioneer development of a technique for the periodic acid oxidation of sugars is considered one of the most valuable tools for structure determination ever devised in sugar chemistry. He also worked on the development of chemo-therapeutic agents for use against tuberculosis, and on the synthesis and structure of antibacterial agents.

During the past few years Dr. Jackson investigated various approaches to the synthesis of an analogue of thyroxine in which the ether bridge is in metaposition to the alanine side chain. A paper prepared by Dr. Jackson in which he described his latest investigations will appear shortly in the *Journal of Organic Chemistry.*

Dr. Jackson was a Fellow of the American Institute of Chemists. He also belonged to the American Chemical Society, the American Association for the Advancement of Science, the Washington and New York Academies of Sciences, the American Association of University Professors, the Phi Beta Kappa Association of Washington, and the Harvard Club of Washington.

Dr. Jackson is survived by his wife, Mrs. Maude F. Jackson, of 5408 30th St., N.W., and a son, Ernest, Jr., of Chicago.

Credit Union Announces Dividend, Policy Changes

The Board of Directors of the NIH Federal Credit Union has announced the payment of a 4½ percent annual dividend, to be compounded semi-annually, on all shares on deposit as of June 30. The dividend will be credited early in July and will start earning dividends during that month.

According to O. J. Wood, Credit Union manager, recent changes will also permit faster service on any loan applications and will permit the raising of the maximum account limit.

Loans fully covered by shares, and loans that do not exceed $750 usually will be made within 24 hours, he said. Loans for car purchases, loans over $750, and those requiring extended credit and employment-checking frequently will take a little longer.

In order to encourage saving, Mr. Wood said, the Board has removed the $100 maximum monthly deposit limit and has increased the maximum account limit to $3000, including accrued dividends.

Survey to Plan Growth Of Library Services

A survey to plan the future growth and development of research library services for NIH will begin this month. It will be conducted by Dr. Ralph R. Shaw, Dean of Rutgers University Graduate School of Library Service.

Dr. Shaw is a former director of the United States Department of Agriculture Libraries (1940-54), Past President of the American Library Association (1956-57), and a consultant to national and international organizations.

Although Dr. Shaw will not formulate the details of the survey until early in July, he has told John J. Clopine, NIH Librarian, that he plans to hold personal interviews with Institute representatives and scientists and seek additional information through questionnaires.

Recommendations concerning the NIH Library's acquisition policy, the scope of its collection of books and periodicals, and the usefulness of its services to scientists and technicians can be expected from the survey, according to Mr. Clopine.

A further objective will be to develop information leading to clarification of the library's working relationship with the National Library of Medicine after the latter is located in its new building, now under construction on the NIH grounds.

CC Physical Therapists Scheduled for Training

The Clinical Center Rehabilitation Department will sponsor a one-week course for physical therapists, July 11-15 at NIH. The course will be conducted by Miss Margaret Knott, Head Physical Therapist at the California Rehabilitation Center.

In addition to CC physical therapy staff, those invited to attend include one representative from each of the university and Service hospitals, as well as other major hospitals in the Metropolitan Washington area.

Miss Knott, widely known instructor-lecturer in the field of physical therapy, is a leading proponent of one of the newer methods of treatment in this field—the use of proprioceptive neuromuscular facilitation techniques for stimulating and strengthening the response of the neuromuscular mechanism.

The course will include demonstrations of facilitation techniques from 1 to 5 p.m. Evening sessions (6 to 8 p.m.) will be devoted to lectures and non-patient demonstrations.