PERFUSION THERAPY
For Patients with Malignant Disease

During the past year and a half, intra-arterial perfusion, reported originally by Dr. Oscar Creech of New Orleans in 1958, has been used at MDAH as an adjuvant to the surgical treatment of patients with malignant melanoma and other malignant neoplasms.

In this procedure, the affected region of the body or an extremity is isolated by occlusion of blood vessels. Large doses of phenylalanine mustard in fresh whole blood are delivered to the isolated extremity or regions by means of an extracorporeal circulator. Tourniquets are applied proximally to minimize leakage into the systemic circulation. It is thus possible to deliver massive doses of the drug into the affected region without seriously damaging other parts of the body. The amount of the leakage of the drug from the perfused area into the systemic circulation is determined with the use of radioactive albumin.

John S. Stehlin, Jr., assistant surgeon, reports that "additional time and study will be necessary for an accurate evaluation of perfusion as a therapeutic weapon." To date 110 perfusions have been performed.

The specificity of drug action against malignant cells and the cellular and chemical changes which take place postoperatively are being investigated.

Liver Isolated for Perfusion Therapy

Preliminary studies are underway in the experimental surgery section at MDAH to perfect a perfusion technique for use in treating patients with cancer of the liver. John E. Healey, Jr., associate experimental surgeon, has developed a method whereby the liver can be isolated from the general circulation in experimental animals.

Dr. Healey is now investigating the length of time the liver can be kept isolated before irreversible physiologic changes take place. Another phase of the pilot study is devoted to determining the tissue tolerance of the liver to various chemotherapeutic agents so that appropriate doses of these drugs might be used in liver perfusion.

PERFUSION THERAPY UNDERWAY IN OR AT MDAH
At left is the extracorporeal circulator used to deliver large doses of phenylalanine mustard in fresh whole blood to the isolated region.
TUMOR VIRUS CONFORMS TO KOCH'S LAW

For the first time, Koch’s law on the specificity of a microorganism—the polyoma virus—is being confirmed by direct observation of the virus itself, reports Leon Dmochowski, MDAH virologist and electron microscopist.

The polyoma virus was demonstrated in 1957 by Sarah Stewart and her co-workers. Her studies of biologic phenomena showed that virus in cell-free extracts of leukemic mouse tissues induced a variety of tumors in mice and even crossed the species barrier to cause tumors in hamsters, rats and rabbits.

In fulfillment of the first of Koch’s postulates, Dr. Dmochowski and his associates state that, “virus particles have been observed through the electron microscope in tissues infected with polyoma.” The virus, measuring only 270 A, seems to be the smallest tumor-inducing virus. The virus particles have been carried successfully in tissue culture of mouse embryos and seen in these tissues through the electron microscope. Mice and hamsters inoculated with the cultured Sarah Stewart virus have developed a variety of tumors, and the virus particles have been observed in these tumors.

Further studies to reobtain the virus and grow it in pure culture are underway at MDAH. Dr. Dmochowski says, “in demonstrating the final step of Koch’s law, we have already succeeded in demonstrating that animals infected with this virus have antibodies against tissue culture fluids containing the virus.”

Virus in Human Leukemic Tissue

In other current studies in the section of virology and electron microscopy, carried out in collaboration with the department of medicine, virus particles measuring approximately 900 A in diameter have been seen in ultrathin sections of lymph nodes from three patients with acute lymphatic, one with acute myeloid leukemia and one with lymphosarcoma. Previously, the virus had been seen only in one type of human leukemia. No virus particles were observed in lymph nodes of five nonleukemic patients (controls).

It is of particular interest that in one of the leukemia patients, virus particles had been found in the lymph node sections, and were also seen in the lymph node grown in tissue culture. Virus particles have not been found as yet in patients with acute monocytic leukemia, chronic monocytic leukemia or with Hodgkin’s disease.

When inoculated in monkey kidney cell cultures, cell-free extracts of lymph nodes from eight leukemic patients induced changes that could be transmitted serially.

Changes suggesting the presence of a virus have been observed in tissue culture of lymph nodes from 15 out of 24 patients with leukemia and lymphosarcoma. No changes have been found in lymph nodes grown in vitro from four nonleukemic patients.

ALCOHOL BLOCK For Pain Control

A recently published manuscript indicates that a technique adapted by the MDAH anesthesiology staff, reported in the March 1957 News Letter, has its place among the tools used to fight intractable pain. The detailed paper, “Control of Intractable Pain in Advanced Cancer by Subarachnoid Alcohol Block”, is in the March 21, 1959, J.A.M.A. The authors are Richard C. Hay, Takeshi Yonezawa and William S. Derrick.

Of 106 patients who received 174 subarachnoid alcohol blocks at MDAH, 50% obtained complete relief of pain, and 33%, partial relief. Although the remaining 17% of the patients still needed narcotics regularly for comfort, they obtained some alteration of the pain pattern and required smaller amounts of narcotics.

The technique consists of blocking the nerve root at its cord level. It is inexpensive and can be performed by anesthesiologists or neurosurgeons trained in the technique.

GRANT AIDS GASTROSCOPIC RESEARCH

Warner-Chilcott Laboratories of New Jersey have awarded a $2,000 grant in support of MDAH gastroscopic research. It will be utilized to purchase an electronic flash apparatus. The new apparatus is to be used to illuminate the interior of the stomach for color photographs of gastric lesions.

Color photographs have been made of all gastric lesions seen during gastroscopic examination for the past year and one-half at MDAH. The procedure has been used in examining approximately 700 patients. Pictures have been taken of stomachs affected by all types of malignant diseases, including carcinomas and lymphomas. Photographs of approximately 50 gastric ulcers have been obtained in an effort to determine the physical characteristics of malignant and benign ulcers. Robert S. Nelson, associate internist, is supervisor of the research aided by the new grant.

MDAH SHOWN TO RUSSIANS

Architectural photographs of MDAH were selected for display at the American National Exhibition in Moscow which opened July 24. The exhibit is sponsored by the U. S. government.
### STAFF APPOINTMENTS

James J. Butler has been named assistant pathologist, department of pathology. He received his M.D. degree from the University of Michigan Medical School. He was assistant and then instructor at the University of Iowa Medical School. Since 1957 he has held the appointment of junior pathologist at the Armed Forces Institute of Pathology.

Leonard C. Doubleday has been appointed assistant radiologist, part time, department of radiology. He received his medical degree from the University of Sydney Medical School. He has held appointments as assistant professor of radiology and chief of the diagnostic section at Baylor University College of Medicine, Houston; and as radiologist at Memorial Hospital, Houston. Since 1957, he has been attending radiologist, Neurological Institute, Columbia-Presbyterian Medical Center, and assistant professor of radiology, Columbia University, New York City.

Erin C. Moore has been appointed assistant in biochemistry, department of biochemistry. She received her M.A. degree from The University of Texas and her Ph.D. degree from the University of Wisconsin. She has held various research appointments at The University of Texas Bureau of Industrial Chemistry, the Carnegie Institute of Washington, an industrial firm and the University of Wisconsin. Since 1958 she has been associated with MDAH as a fellow in biochemistry.

Clifton F. Mountain has been appointed assistant in the office of education, part time. He received his M.D. degree from Boston University School of Medicine. Prior to his medical education, he held various administrative appointments at Boston University and was consultant research analyst for the Department of Public Health in Massachusetts. He has been with the University of Chicago since 1955 for his internship and residency training; and during 1958-59 was instructor in surgery.

Herman D. Suit has been named assistant radiotherapist, department of radiology. He received his M.D. and M.Sc. degrees from Baylor University College of Medicine and his Ph.D. degree from Oxford University. He served as house surgeon, research assistant and registrar at the Churchill Hospital in Oxford, England. Since 1957 he has been staff radiotherapist at the National Cancer Institute, Bethesda.

### 1960 SYMPOSIUM

“Cell Physiology of Neoplasia” will be the topic for the Fourteenth Annual Symposium on Fundamental Cancer Research, to be held February 23, 26 and 27, 1960 at The University of Texas M. D. Anderson Hospital.

General chairman of the symposium is Dr. T. C. Hsu, section of cytology.

### THIRD YEAR BOOK OF CANCER PUBLISHED

The Year Book of Cancer, 1958-59 series, compiled by staff members of MDAH, will be published in August. Publishers are The Year Book Publishers, Inc., of Chicago. Editors are R. Lee Clark, Jr., and Russell W. Cumley, who were assisted by an editorial board of 128 authorities in the various disciplines relating to cancer.

The book brings together the essence of 298 significant articles that were published during the preceding year. They cover all the disciplines associated with cancer and neoplastic diseases. The article abstracts pertain to diagnosis of cancer, and the care and treatment of cancer patients; also included are a number of basic science articles that eventually may have a bearing on diagnosis and treatment. The original authors abstracted most of the articles.

For this Year Book, the editors have made a concerted effort to obtain abstracts of outstanding work being done in non-English speaking areas of the world, since foreign language journals often are not readily available to the practicing physician.

To achieve this, a number of outstanding cancer specialists were asked to serve as foreign representatives. The final selection of articles came from 116 journals, of which 63 were American, 37 foreign language journals and 16 British journals. Two thirds of the abstracts are of articles that appeared in the American journals.

Compared with the second volume of the Year Book, the current volume was served by 54 more individuals; it contains 63 additional abstracts, and represents the work published in 32 more journals (116 as compared with 84).

The first volume of the Year Book of Cancer was published in 1957. The work on the volume has been made possible through the support of the William Heuermann Fund.

### STAFF ACTIVITIES

Jane B. Blizard and William C. Dewey, assistant physicists, showed an exhibit on “Dosimetry of Interstitial Needles of Cobalt-60, Radium, and Cesium-137” at the Society of Nuclear Medicine meeting in Chicago, June 18-20.

On August 6, R. Lee Clark, Jr., Director and Surgeon-in-Chief, testified in Washington, D. C., before the House Interstate and Foreign Commerce Committee regarding aspects of the International Medical Research Bill, which passed the Senate May 20 and is pending approval by the House of Representatives.

Gerald D. Dodd, Jr., chief of the section of diagnostic radiology, reports that a new tube hanger—crane-suspension type and extremely flexible—has been installed in the special studies room, making possible a shorter exposure time for roentgenograms.

Gilbert H. Fletcher, radiologist, spoke on “Precision in Radium Therapy” and on “Supervoltage Therapy in Pelvic Cancer” at the Oregon Cancer Conference, University of Oregon Medical School in Portland, July 16-17. At the same meeting, Dr. Fletcher also participated in a panel discussion of “Tumors of the Skin.”

Lillian M. Fuller, assistant radiologist, represented Dr. Fletcher at the International Congress of Radiology, Munich, July 23-30, presenting Dr. Fletcher’s paper, “Supervoltage Roentgen Therapy in Oropharynx Cancers.”

Roy C. Heflebower, consultant on grants and executive secretary of the Southwestern Cancer Chemotherapy Study Section, spoke on the chemotherapy attack on cancer at a June 26 meeting of the Corpus Christi Division of the American Cancer Society.


Margaret J. McGann, chief x-ray technician, participated in the Annual Board Meeting of the American Society of X-Ray Technicians, Denver, Colorado, July 1-12. As chairman of the education committee, she conducted the Annual Work Shop, July 4.

Lowell S. Miller, associate radiotherapist, presented “Supervoltage Irradiation in Carcinomas of the Urinary Bladder” at the International Congress of Radiology, Munich, July 23-30.

(Staff Activities, continued on page 4)
NEW SCHOOL APPROVED

William O. Russell, pathologist, has announced approval by the Board of Registry of the American Society of Clinical Pathologists, of the M. D. Anderson School of Exfoliative Cytology. Dr. H. W. Neidhardt is the director of the school, the only one presently approved in Texas. There are approximately 26 such schools in the U. S. Facilities are presently available for training of six technologists.

STAFF PAPERS

Recent papers published include the following by:


SUMMER COURSES OFFERED AT MDAH

Six students have completed two courses offered at MDAH through the Graduate School of The University of Texas main campus. Three students were from the main University in Austin, two from the Dental Branch, and one from MDAH.


Staff members of the departments of physics and biology conducted the two courses.

GUEST SPEAKERS

Three seminars were presented recently at MDAH by out-of-town speakers. On June 9, Albert Levan, Institute of Genetics, the University of Lund, Sweden, spoke on “Chromosomal Changes in Neoplasia.” Also on June 9, John E. Fitzgerald, New England Institute for Medical Research, Ridgefield, Connecticut, spoke on “Biophysical Studies of Protein.” Johan H. Stuy, Biology Division of Oak Ridge National Laboratory, gave a seminar on July 3, entitled, “The Behavior and Biological Activity of Deoxyribonucleic Acid in Irradiated and Unirradiated Bacteria.”