The Bertner Foundation Award was established in 1950 in honor of the late Dr. E. W. Bertner, first acting director of M. D. Anderson Hospital and the first president of the Texas Medical Center. It is presented annually at the Fundamental Cancer Research Symposium for outstanding contributions to cancer research.

SHOPE GIVEN BERTNER AWARD

Highlight of the three day symposium on Genetics and Cancer was the presentation of the Ninth Annual Bertner Foundation Award to Richard E. Shope of the Rockefeller Institute, New York, for his contributions to cancer research. R. Lee Clark, Jr., Director and Surgeon-in-Chief of MDAH, presented the bronze medalion to Dr. Shope for his basic discoveries concerning the part played by viral agents in neoplastic diseases.

Dr. Shope, a research physician since 1925, presented the Ninth Annual Bertner Foundation Lecture. His lecture is reviewed on page 5 of the News Letter.

APPOINTMENT ANNOUNCED

Dr. Paul R. Hawley, director of the American College of Surgeons, has announced the five-year appointment of R. Lee Clark, Jr., as chairman of the College's Committee on Cancer. Dr. Murray M. Copeland, professor of oncology at Georgetown University was named vice-chairman.

As chairman, Dr. Clark will supervise the activities outlined in the objectives of the Committee: To develop the educational programs of the College in the field of cancer; to develop professional standards for cancer programs; to assure the most effective management of cancer patients; to advise the profession and public of the approved cancer clinical activities.

A continuing project of the Committee, in cooperation with other agencies, is standardizing nomenclature and staging of disease as they relate to cancer. Another project Committee members supervise is the technique used to establish and maintain cancer registries at tumor clinics. The "Handbook for Tumor Clinic Secretaries", prepared at MDAH, was distributed under the auspices of the Committee, to all tumor clinics in the U. S. and abroad. They also provide a means for workers in basic research each year.

In 13 years, the symposium has grown from local to international stature. For instance, the ten speakers invited in 1947 represented The Rice Institute, Baylor University College of Medicine, and The University of Texas. This year, five speakers came from Europe, seven from Texas, and 12 from out of state.

At the first symposium, the attendance was principally local. This year, 188 members of the audience came from out of state—30 states, including Hawaii—and 14 members came from outside the U.S.—England, Italy, Peru, France, Canada, Mexico, and Japan. Heavy registration caused the meeting to be transferred to the larger auditorium at the Dental Branch, with some sessions being televised into the auditorium at MDAH.

The symposia provide a way for scientists to acquaint themselves with current fundamental cancer research in the U. S. and abroad. They also provide a means for workers in basic research and medical research to coordinate their efforts toward a solution to the problem of cancer. Designed to help investigators keep abreast of the information evolving from the various disciplines, the symposium program takes up a different phase of cancer research each year.

GENETICS and CANCER

13th Annual Symposium

More than 500 doctors and research scientists attended the 13th Annual Symposium on Fundamental Cancer Research, Feb. 26, 27, and 28, sponsored by The University of Texas M. D. Anderson Hospital and Tumor Institute. Co-sponsors were the Postgraduate School of Medicine, Texas Division of the American Cancer Society, National Cancer Institute, and Texas State Department of Health. Contributions of genetic studies to fundamental cancer research formed the core of the three day session.

In the succeeding pages of the News Letter, the papers presented at the symposium will be briefly reviewed.

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(Symposium, Continued on page 2)
SYMPOSIUM REVIEW

Introduction
R. Lee Clark, Jr., Director and Surgeon-in-Chief of MDAH, welcomed the symposium audience, mentioning the timeliness of a symposium on genetics, since in 1958 two coveted awards in medicine were presented to geneticists—the Nobel Prize and the Lasker Award.

Dr. Clark stated that from results of research on bacterial genetics and animal viruses, the viral theory and the somatic mutation theory of the origin of cancer do not appear to exclude one another. He said, "... these developments suggest that perhaps we are on the brink of discovering a common etiology for many neoplastic diseases".

Cytogenetics

George Klein, Karolinska Institute Medical School, Stockholm, Sweden, presented "Cytogenetics of Experimental Tumors". Cytological evidence obtained by studying phenotypic marker characteristics of mouse tumors indicates that an individual remodeling of the chromosome set occurs in each tumor. This supports the concept that certain experimental tumors develop by a series of unpredictable cellular changes that lead to a unique reassortment of unit characters in each tumor. Although remodeling of the genome may be involved in neoplastic change, preliminary evidence suggests that nuclear changes can be by-passed during the development of certain tumors, particularly those induced by viruses.

Viral Nucleic Acid

Leon L. Dmochowski, MDAH virologist and electron microscopist, presented "Nucleic Acid Studies of Mammalian Tumor-Inducing Agents". These agents have been referred to as the "clever virus", playing a part along with heredity and hormones in the development of some mammary tumors of mice. Dr. Dmochowski discussed the studies that are underway to characterize the agent. In pellets obtained from agent-carrying and agent-free milk, ribonucleic acid was found, but no deoxyribonucleic acid was detected. Electron microscope examination of pellets prepared from mouse milk revealed characteristic virus-like particles. Dr. Dmochowski pointed out that a considerably smaller number of the particles was found in pellets prepared from supposedly agent-free milk. Studies indicate that the agent may act by influencing nucleic acid metabolism.

Plasmogenes

C. D. Darlington, Oxford University, Oxford, England, presented "The Plasmagene Theory and Cancer Genesis". The hypothesis outlined by Dr. Darlington, arising from many experiments with plants and animals, stresses the importance of the cytoplasm in cancer genesis. The first step is to attribute the character of the cytoplasm to self-propagating nucleoproteins—plasmogenes—some of which are transmitted in heredity and some of which arise during development from interaction between the cytoplasm and the nucleus. The second step is the assumption that viruses, proviruses, and plasmogenes can arise from each other. Then, according to this hypothesis, cancer arises by a genetic change in a plasmagene.

Gene Action

W. E. Heston, National Cancer Institute, Bethesda, Maryland, presented "Site of Gene Action and Carcinogenesis". By organ transplants, the location of gene action in carcinogenesis has been found. Influence of some genes appears to be limited to the organ. Other genes may act physiologically to influence reactions to a carcinogenic stimulus. For example, some genes may affect pulmonary tumors in mice through mechanisms related to normal growth. Likewise, preliminary observations seem to indicate that the women most likely to develop breast cancer are those with good muscular and skeletal development. Dr. Heston brought out the fact that in no case yet have all the steps linking the primary gene action to the neoplasm been identified.

Lysogeny and Transduction

Elie L. Wollman, Institut Pasteur, Paris, France, presented "Lysogeny, Transduction, and Cancer Genesis". He said it appears that the mutation and viral theories of cancer genesis may be reconcilable. Temperate bacteriophages that are released by lysogenic bacteria can infect sensitive bacteria and multiply in them, and also can establish new lysogenic systems. These temperate phages may include fragments of the host's genetic material within their protein coat, and thus can transfer genetic characters from one host to another by transduction. Dr. Wollman proposed the term episomes for genetic elements with these properties. They lie between classical genetic determinants and classical viruses.
Drug Resistance

John J. Biese, The University of Texas, Austin, presented "The Chromosomal Status of Drug-Resistant Sublines of Mouse Leukemia L1210". Chromosomes were studied in an ascites parent line and in nine variously drug-resistant sublines of mouse leukemia. Dr. Biese reported that there was a moderate amount of variability in chromosome number and form in the parent line and in each of the sublines. The most striking change was the occurrence of a large metacentric chromosome and a minute chromosome in two of the sublines, each of which resembled each other in resistance to 6-mercaptopurine, combined with sensitivity to A-methopterin and to 5-fluorouracil. The implication is that the chromosomal or genetic changes may underlie metabolic changes involved in the development of some drug-resistant sublines of leukemia L1210. No consistent cytological changes were noted in resistance to 6-mercaptopurine, azaserine, 5-fluorouracil, or mytomycin.

Somatic Mutation

Jack Schultz, Institute for Cancer Research, Philadelphia, presented "The Role of Somatic Mutation in Neoplastic Growth". Outlining the characteristics of the neoplastic cell, Dr. Schultz pointed out that no specific changes in cell heredity would be required to produce such a phenotype. Studies on somatic tissues have demonstrated that changes in chromosome number and arrangement, and in individual genetic loci, may be involved in the production of genetic variation. Also, changes in the cytoplasm may be involved. However, if nuclear differentiation normally exists, the somatic mutations have to take place in cells that may differ originally in their nuclear constitution. To understand the initial carcinogenic change, more must be known about the nature of nuclear differentiation in the cells from which the neoplastic cell lines originated. Dr. Schultz discussed various hypotheses concerning the nature of nuclear differentiation.

Chromosomes

Albert Levan, Institute of Genetics, Lund, Sweden, presented the "Relation of Chromosome Status to the Origin and Progression of Tumors: The Evidence of Chromosome Numbers". Dr. Levan showed graphs that indicated the chromosome number extremes and the stemline chromosome numbers for some 300 normal and cancer cell populations. The data on stemline numbers of in vitro cell strains point to cytogenic adaptations from the normal genotype, living as a member of a multicellular soma, toward life as a parasitic or saprophytic microorganism. The development of malignancy in cultures of normal cells sheds some light on what may take place during cancerogenesis in the body. Chromosomal and genic variation in a normal tissue, together with explantation of the cell to a new environment, which places the normal genotype at a disadvantage, should be significant factors during cancerogenesis in tissue cultures. Chromosome observations in viral cancers, where full malignancy may develop with little chromosome reorganization, show that different mechanisms may operate in cancerogenesis.

In Vitro Cells

T. C. Hsu, cytologist at MDAH, presented the paper "Genetics of in Vitro Cells." Preliminary results show that variants (or, loosely speaking, "mutants") with inheritable metabolic differences can be obtained from mammalian cell cultures. Studies were carried out on mouse cells of strain L-P55 cultured in glucose, xylose-galactose, galactose, and xylose media. To determine response of cell populations to the various sugar media, Dr. Hsu used cell counts to estimate growth. No definite chromosome patterns in the various strains that grew in the sugars were found to correlate with their different metabolic abilities. However, many sugar strains possessed lower chromosome number but a higher number of metacentrics. The methods and results of these preliminary studies can serve as a model for exploring the biochemical genetics of mammalian cells.

Antimetabolites

George W. Woolley, Sloan-Kettering Institute, New York, presented the paper, "Tumor Cell Resistance to Antimetabolites and Its Possible Genetic Implications". Tumor cell resistance to antimetabolites following initial sensitivity to a variety of anticancer agents has been observed. Dr. Woolley cited experimental evidence for the inference that eventual failure of chemotherapy in treating cancer patients may be attributed to the emergence of drug-resistant populations of neoplastic cells. Various mechanisms that could be responsible for drug resistance were suggested. Dr. Woolley pointed out that two kinds of mutation must be considered: mutation induced by the drug itself, and spontaneous mutation.

Precancerous Nodules

K. B. DeOme, The University of California, Berkeley, California, presented "The Precancerous Nature of the Hyperplastic Alveolar Nodules Found in the Mammary Glands of Old Female C3H/He Crgl Mice". Dr. DeOme described a new technique that makes it possible to transplant normal, preneoplastic, and neoplastic mammary tissues into the gland-free mammary fat pads of young female C3H mice. The precancerous nature of hyperplastic alveolar nodules was demonstrated: When transplanted, the nodules gave rise to tumors more often and in less time than normal mammary tissues from the same donor mouse. Electron microscope studies revealed that both the precancerous nodules and the tumor tissues were rich in virus-like particles. Endocrine studies demonstrated that the preneoplastic nodules were more sensitive to hormones than was the normal mammary tissue.
Gene Replication

Felix L. Haas, MDAH biologist, presented "Genetic Replication and Carcinogenesis". In discussing various models that have been proposed for the structure of cellular deoxyribonucleic acid (DNA), Dr. Haas pointed out that genetic information may not always be carried in the DNA alone. The sequence of events in ultraviolet-induced mutagenesis suggested by Dr. Haas' experiments indicates that ribonucleic acid (RNA) synthesis may be involved intimately in genetic replication. Perhaps the mutagenic changes occur primarily in the RNA and are transferred to the new gene during DNA synthesis. Dr. Haas said that results from a number of sources indicate that etiological agents of cancer bring about specific changes in newly synthesized genetic DNA.

"Cancer Eye"

David E. Anderson, MDAH geneticist, presented "Genetic Aspects of Bovine Ocular Carcinoma". To provide clues to cancer in man and information for control of cancer eye in cattle, a random sample of 953 Hereford cows was studied. Susceptibility of cells of the eyes to neoplastic transformation was found to be heritable. The potential for development of pigment in skin around the eyes was also found to be heritable, but lesions did not develop in pigmented areas. The gene loci for pigmentation apparently are independent of the loci for susceptibility to cancer eye. However, pigment may hinder or prevent the manifestation of susceptibility.

Radiation

Raymond Latarjet, Laboratoire Pasteur de l'Institut du Radium, Paris, France, presented "A Few Points on Radiation in Relation to Carcinogenesis and Mutation". A main feature of cancer cells is their ability to divide under conditions where normal cells stop dividing. Dr. Latarjet said, "It is not accelerated growth; it is uncontrolled growth". The controlled growth of normal cells implies that genes go in pairs—a producer and a repressor. The repressing compounds evidently diffuse from cell to cell. Dr. Latarjet discussed possible ways in which radiation may act to originate mother cells of cancer—radiation-induced mutation, induction of lysogenic types, incorporation of genetic material released from cells modified by irradiation—and the role that radiation may play in permitting the malignant cell population to grow in normal tissue.

Statistical Methods

Newton E. Morton, University of Wisconsin, Madison, Wisconsin, presented the paper, "Methods of Study in Human Genetics". Dr. Morton outlined a model that can be used to analyze data on human genetics. In this model, the fundamental equations are functions of three parameters. In discussing the model, Dr. Morton said that it may not be possible to tell whether or not an isolated case is sporadic, but the model makes it possible to determine what the probabilities are. Interpretation of genetic data in terms of the model was illustrated for genetic factors, empirical risks, and concordance in twins.

Families

Clarence P. Oliver, The University of Texas, Austin, Texas, presented "Genetic Studies on Families with High Cancer Incidence". Dr. Oliver discussed various methods that can be used to study the genetics of cancers in humans—statistical analyses of cancer occurrence among relatives of cancer patients, comparisons with control groups, twin studies, and family histories or pedigrees. Results of Dr. Oliver's pedigree study of the genetic basis for breast cancer showed that frequency of breast cancer was no higher among relatives of patients with bilateral breast cancer than among relatives of patients with unilateral breast cancer. The concentration of breast cancer that can be found in branches of families by pedigree studies may make it possible to interpret the method of inheritance and the environmental agent.

Breast and Gastric Cancer

Madge T. Macklin, Ohio State University Health Center, Columbus, Ohio, presented "Genetic Considerations in Human Breast and Gastric Cancer". Comparing breast cancer incidence in relatives of breast cancer patients with incidence in control groups, she found that these relatives face significantly higher risk of breast cancer than does the population as a whole. No evidence was found for a milk agent being an environmental factor, but parity seems to have an influence. The more children a woman has, the less risk of having breast cancer. Similar comparisons were made in studying the heritability of gastric cancer. Male and female relatives of the group of gastric cancer patients were found to have a significantly greater number of gastric cancers than relatives of the controls.

Symposium Chairman F. L. Haas, left, with C. D. Darlington.

Gene-Enzyme Relation

David M. Bonner, Yale University School of Medicine, New Haven, Connecticut, in presenting "Gene Action", discussed the relationship between genes and enzyme formation. He reported that all major information relating to the formation of the enzyme tryptophan synthetase in Neurospora crassa was found within a restricted region of a chromosome. It appeared to be a complex region with many potential mutational sites. Experimental data suggested that mutation in the control region resulted in qualitatively and quantitatively altered enzymes. Possibly, the enzyme molecules consist of a number of independent polypeptide molecules, each of which may be controlled separately by a locus on the chromosome. Dr. Bonner pointed out that no definite suggestion is available at present as to what type of mutation and altered enzyme might result in neoplastic growth.

Immunogenetics

Theodore S. Hauschka, Roswell Park Memorial Institute, Buffalo, New York, presented "Sex-Linked Incompatibility of Male Skin and Primary Tumors Transplanted to Isologous Female Mice". In experiments discussed by Dr. Hauschka, three types of response resulted from male to female skin grafts: (1) consistent rejection; (2) varying frequencies of compatibility; or (3) complete compatibility. Since the "Y-linked antigen" was present in all three types of mice, tolerance was attributed to transplantation or disjunction during spermatogenesis that resulted in the presence of the Y-antigen in compatible females. These experiments provided a model of antigenic differentiation in normal tissues and antigenic instability in malignant cells.
DNA

Saul Kit, MDAH biochemist, presented the paper, "The Deoxyribonucleic Acids of Normal and Malignant Tissues". Considerable cytological evidence of an abnormal chromatin complex in neoplastic cells stimulated investigations of deoxyribonucleic acids (DNA) — presumably master molecules of chromosomes. Investigations on the chemical nature of DNA indicate that hereditary differences exist between normal tissues and tumors, thus supporting cytological evidence of this difference. To investigate a possible relationship between chromosomal imbalance ("abnormal DNA") and an abnormal metabolism, the metabolism and enzyme content of diploid and tetraploid lymphomas and carcinomas were studied. The ratio between DNA and respiration, glycolysis, and the activity of several enzymes was found to be fairly constant in related tumors.

Virus and Host

Richard E. Shope, The Rockefeller Institute, New York, presented the Ninth Annual Bertner Foundation Lecture, "The Roles of Virus and Host in Determining the Host Reaction to the Fibroma-Myxoma Virus Complex". The hosts employed were adult and baby domestic rabbits, cottontail rabbits, and tarred domestic rabbits. Virus strains used were the fibroma virus from its natural host (the North American cottontail rabbit), a variant fibroma virus that apparently arose spontaneously, the myxoma virus from its natural host (a South American rabbit), and the neuromyxoma virus that was obtained experimentally. Dr. Shope established that fibroma and myxoma viruses are variants of the same virus, one benign and the other malignant.

1960 SYMPOSIUM

"Cell Physiology of Neoplasia" will be the topic for the Fourteenth Annual Symposium on Fundamental Cancer Research, to be held February 25, 26 and 27, 1960 at The University of Texas M. D. Anderson Hospital.

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

Symposium Summary

Howard B. Andervont, National Cancer Institute, Bethesda, Maryland, in the summary of the symposium discussed the papers within the framework of three major contributions that geneticists have made to fundamental cancer research. The first of these basic contributions was the development of inbred strains that showed pronounced variations in susceptibility to different types of cancer. The second was the demonstration that genetic factors control the growth of transplanted tissues. The third major contribution by geneticists was the discovery of the mouse mammary tumor virus, which added another influence to the roles played by heredity and hormones in cancer of the mammary gland in mice. Dr. Andervont said, "The important thing here is that the virus theory and the mutation theory of cancer genesis are converging". Studies on nucleic acids have been intensified because they are now considered essential components of viruses and chromosomes. Dr. Andervont discussed the remaining symposium papers in two groups: (1) experimental work that is fundamental to the entire field of genetics, such as the possibility that a cytoplasmic particle can mutate into a virus or provirus and give rise to cancer; and (2) practical problems of heredity and cancer.

Session Chairmen

Five chairmen presided over the various sessions of the Thirteenth Annual Symposium. Wilson S. Stone of the University of Texas, Austin, and M. Demerec of Carnegie Institution, Cold Spring Harbor, New York, directed the two sessions on "Fundamental Aspects of Genetics in Carcinogenesis". T. S. Painter of The University of Texas, Austin, presided over the session "Gene Interaction in Neoplastic Growth". Walter E. Heston of the National Cancer Institute, Bethesda, presided over the session "Genetic Basis of Cell Resistance"; James F. Crow of The University of Wisconsin, Madison, "Heredity and Human Cancer".

STAFF ACTIVITIES

Alando J. Ballantyne, William S. MacComb, and Richard H. Jesse, department of surgery, attended the annual meeting of the Society of Head and Neck Surgeons, held in Washington, D. C., March 30 and 31. Dr. Ballantyne presented, "A Study of Distribution of Carcinoma in the Larynx and Peri-Laryngeal Tissue as Seen in Subserial Whole Organ Sections"; and Dr. Jesse, "Tumors of Salivary Gland Origin". Dr. MacComb discussed Dr. J. Samuel Binkley's paper "Pitfalls of Jaw Resection and How to Avoid Them".

R. Lee Clark, Jr., Director and Surgeon-in-Chief, and E. C. White, department of surgery, attended the meeting of the Texas Surgical Society in Austin, April 6 and 7. Their paper, "Total Thyroidectomy for Carcinoma of the Thyroid: Significance of Intraglandular Dissemination", was presented by Dr. Clark.

Gilbert H. Fletcher, radiotherapist, was elected a Fellow of the American College of Radiologists at the annual meeting in Chicago, Feb. 6. At the New York Roentgen Ray Society Meeting, Feb. 16, he lectured on "Radium Dosage" and led a panel discussion on "The Palatine Arch and Oropharynx". He also spoke at the Bronx Veterans Administration Hospital and at Montefiore Hospital. He presented "The Analysis of Sites and Causes of Failure in the Squamous Cell Carcinoma of the Oral Cavity" at the American Radium Society meeting in Hot Springs, Virginia, April 6 to 8.

Roy C. Helfebower, consultant on grants and executive secretary of the Southwestern Cancer Chemotherapy Study Section left on a two month tour of Japan. While there he will speak on the "Organization and Procedures of the Study Group".

Robert B. Hurlbert, Bruno Jirgensons, Saul Kit, Erin Moore, and Darrell N. Ward, department of biochemistry, attended the meeting of the Federation of the American Society of Experimental Biology, held in Atlantic City, April 13 to 17. Dr. Jirgensons and Dr. Ward also attended the American Chemical Society meeting in Boston, April 5 to 11.

Robert A. Kolvoord, medical communications department, attended the First Invitational Conference on Television and Post-graduate Medical Education. The meeting was held at the National Institutes of Health in Bethesda, Maryland, February 27 through March 2.

(Staff Activities, continued on page 6)
CLINICAL CONFERENCE

The fourth annual clinical conference has been scheduled for November 13 and 14. The M. D. Anderson Hospital Conference for Texas physicians and dentists will be on "Head and Neck Tumors". W. S. MacComb, Chief of Head and Neck Service, is general chairman of the conference.

RESEARCH CONFIRMED

Reports of two scientists speaking at the American Cancer Society Seminar, Excelsior Springs, Missouri, in March, confirmed an MDAH scientist's findings on the presence of virus particles in human, mouse, and chicken leukemia cells.

During the Eleventh Annual Symposium on Fundamental Cancer Research, held at MDAH in March 1957, Leon Dmochowski, virologist and electron microscopist at MDAH, described virus-like particles found in human leukemic tissues and characteristic changes in the cell constituents of the affected cells. Dr. Dmochowski also reported on these findings last July at the International Cancer Congress in London.

At the American Cancer Society meeting this year, Dr. Joseph W. Beard of Duke University and Dr. Seymour Cohen of The University of Pennsylvania reported confirming results.

STAFF APPOINTMENTS

John E. Healy, Jr., has been named associate experimental surgeon, department of surgery. He received his B. S. degree from St. Joseph's College and his M. D. from Jefferson Medical College, where he later was assistant professor of anatomy. He was consultant in surgical anatomy at the U. S. Naval and Valley Forge General Hospitals. Since 1953 he has been in private practice, and associated with Price Diagnostic Clinic, Philadelphia, St. Joseph's Hospital, Reading, and the Albert Einstein Medical Center.

E. R. Gilley has been named business manager. He received his B. S. from Southern Illinois University, and served with the U. S. Army Air Force from 1941 to 1945. He formerly was supervisor of the payroll division at the main University and director of Workmen's Compensation Insurance.

NEW OXYGEN GAUGE

A new instrument, an oxygen gauge, constructed at M. D. Anderson Hospital, makes it possible to measure the presence of oxygen in gases and in solutions in very small amounts, to 1/1000 of a microliter. The instrument is being used in radiation experiments in which the effects of oxygen on radiation damage are being investigated. Studies with lysozyme reveal that the presence of oxygen enhances the effect of gamma rays on the dry enzyme.

The detecting element in the apparatus is a battery, consisting of a lead and a silver electrode. The amount of current delivered is sensitive to the presence of oxygen. In designing the new oxygen gauge, Robert J. Shalek, associate physicist, adapted and improved the design of a similar instrument which is in use at Hammer-smith Hospital in London.

FROZEN SECTIONS

For the past two and one-half years all tissues from operating rooms at MDAH on which a rapid section diagnosis was requested have been processed with the cold chamber frozen section technique.

Rapid section diagnosis is requested in 45 per cent of cases. Cold chamber sections have been utilized for the final diagnosis in 80 per cent of the specimens sent from the operating room. The procedure is time-saving, and makes it possible for the pathologist to submit a diagnosis rapidly. Work on this project has been supported in part by a grant from the U. S. Public Health Service.

NEW LIBRARY HOURS

The Texas Medical Center Library in the Jesse H. Jones Library Building has announced a new schedule of evening hours on weekdays. From Monday through Friday it will now be open from 8 a.m. to 11 p.m. The hours on week ends will remain the same; 8 a.m. to 5 p.m. on Saturday, and 1 p.m. to 5 p.m. on Sunday. For doctors who need to use the library at times when it is closed, a key is available on application to the Medical and Dental Service Bureau, Hermann Professional Building, JA 2-1144.

The MDAH library hours are 8 a.m. to 6 p.m. Monday through Friday, and 8 a.m. to 12 noon on Saturday. It is closed all day Sunday. When the library is closed, doctors may obtain a key from the guard.