INTERNATIONAL CANCER CONGRESS HELD IN MOSCOW

The Eighth International Cancer Congress, under the auspices of the International Union Against Cancer, was held in Moscow, July 22 to 28, 1962.

The aim of the Congress was to promote the diffusion of international scientific thought to aid progress in the study of cancer. The professional men of medicine and of allied sciences had an opportunity to pool their knowledge by the conferences, informal meetings, discussions, and social gatherings provided by the Congress.

Attending the meeting were approximately 5,000 representatives of medical and other sciences from most of the countries in the world. About 12 percent of these representatives were from the United States, including scientists from MDAH in attendance. Over 1,300 papers were on the program, which included 52 separate meetings on all aspects of cancer research, diagnosis, and treatment.

Topics which were discussed at the Congress included viruses in oncology, immunology and genetics of tumors, biochemistry of cancer and carcinogenesis, biology of tumor cells, epidemiological studies on cancer, tumor-host relationships and hormone status, occupational cancer, etiology and pathogenesis of liver cancer, precancerous lesions, cancer detection, biological approach to cancer surgery, supervoltage and high-energy radiation therapy, chemotherapy, care of patients with advanced cancer, and cancer education.

English, French, and Russian were the official languages used in presenting papers. J. Leslie Smith, Jr., assistant pathologist at MDAH, was one of the few Americans who delivered his paper in Russian. A large number of the representatives from the Iron Curtain countries and Red China presented their reports in English. Observers reported that, unfortunately, translations were not equal to those furnished during the preceding Congress held in London, when the British had obtained professional translators.

The Committee on Patient Care of the International Union Against Cancer has been active in enlarging the scope of the meetings so that an equal opportunity is given for the presentation of papers dealing with the clinical aspects of cancer as well as those dealing with fundamental cancer research. R. Lee Clark, Director and Surgeon-in-Chief of MDAH, has served as a member of this committee for the past four years, under the chairmanship of George T. Pack.

Those from MDAH attending the Congress received grant support from the U.S.A. National Committee on the International Union Against Cancer, the University Cancer Foundation, the National Cancer Institute, the Radiation Research Society, the Welch Foundation, and from gift funds.

Professor V. R. Khanolkar of India, president of the International Union Against Cancer, presided over the meeting. Other officers of the International Union Against Cancer include Professor A. Haddow, England, president-elect; Professor J. H. Maisin, Belgium, past president; Dr. Loutfy Aboul Nasr, United Arab Republic, vice-president; Professor R. Scarff, England, vice-president; Professor N. N. Blokhin, Union of Soviet Socialist Republics, vice-president; Dr. A. N. Canonico, Argentina, vice-president; Professor W. U. Gardner, United States, vice-president; Dr. H. F. Dorn, United States, general secretary; and Dr. P. Loustalot, Switzerland, treasurer.

The emphasis during the meeting appeared to be on expanding knowledge of areas already under investigation. Fewer new developments were reported at the Moscow meeting than in previous Congresses.

The previous meetings of the International Cancer Congress were held in Madrid, 1933; Brussels, 1936; Atlantic City, 1939; St. Louis, 1947; Paris, 1950; Sao Paulo, 1954; and London, 1958.

TREATMENT RESULTS ANALYSIS

"Analysis of Results of Treatment of 40,000 Consecutive Patients at a University Cancer Hospital" by R. Lee Clark, Director and Surgeon-in-Chief, and Miss Eleanor J. Macdonald, epidemiologist, was presented at the International Cancer Congress by Murray M. Copeland, assistant director for education. The results of treatment of 40,000 patients at MDAH were analyzed for such factors as the changing stage of disease on admission, the value of group decisions on type of treatment, the importance of combined therapy, and end results by life table analysis. The large number of recent, detailed autopsy reports were discussed as they relate to leads for research and clinical control.

The experience at MDAH has been unusually large in malignant melanoma (1,000 cases), thyroid cancer (450 cases), breast cancer (3,000 cases), and female genitalia (4,000 cases). Cancer of the head and neck, other than melanoma and thyroid, makes up one of the largest series and demonstrates that combined surgical treatment and radiotherapy improve prognosis.

PATIENT CARE IN ADVANCED CANCER

"The Care of Patients with Late Cancer" was presented at a Panel Session of the International Cancer Congress by Murray M. Copeland for R. Lee Clark, Director and Surgeon-in-Chief. The necessity for a planned, continuing program of care for the patient with advanced malignant disease was emphasized. Efforts must be made not only to relieve pain and maintain a constructive mental attitude on the part of the patient, but also to control infection and decrease tumor mass and metastatic volume. Community physicians should plan to include the use of visiting nurse associations, loan closets for hospital equipment, cooperation of (Patient Care, continued on page 2)
R. LEE CLARK, SURGEON-IN-CHIEF

Randolph Lee Clark, Director and Surgeon-in-Chief of M. D. Anderson Hospital since 1946, received his B.S. degree from the University of South Carolina, and his M.D. degree from the Medical College of Virginia. He interned at Garfield Memorial Hospital in Washington, D.C., and studied at the University of Paris Graduate School of Medicine. He obtained his M.Sc. degree in surgery from the University of Minnesota Graduate School of Medicine, and was with the Mayo Clinic for 5 years. In 1954, he was given an honorary D.Sc. degree by his alma mater, the Medical College of Virginia.

He is clinical professor of surgery at The University of Texas Dental Branch, lecturer in surgery at The University of Texas Medical Branch, professor of surgery at The University of Texas Postgraduate School of Medicine, and clinical professor of surgery at Baylor University College of Medicine. He is president of the Association of Cancer Institute Directors, and a member of the National Advisory Cancer Council, United States Public Health Service. He is directing medical editor of The Cancer Bulletin and medical editor of The Heart Bulletin, and co-editor of the Year Book of Cancer.

Dr. Clark has published over 75 articles on such subjects as resection of carcinoma of the rectum, chronic obstruction of the duodenum, treatment of pilonidal cysts, gastric cancer, perfusion techniques and results, and biological and clinical aspects of malignant melanoma.

Papers have been published in Postgraduate Medicine, Surgery, Archives of Surgery, New York State Journal of Medicine, Air Surgeons' Bulletin, Surgery, Gynecology and Obstetrics, Bulletin of the American College of Surgeons, Clinical Medicine, and other journals.

HERMAN D. SUIT, RADIO-THERAPIST

Herman D. Suit received his B.A. degree at the University of Houston, his M.D. degree at Baylor University College of Medicine, and his D.Phil. at Oxford University. He had a rotating internship and was resident in radiotherapy at Jefferson Davis Hospital, Houston, and was house surgeon in radiotherapy, research assistant in radiobiology, and registrar in radiotherapy at Churchill Hospital, England.

Dr. Suit is assistant radiotherapist and chief of the section of experimental radiotherapy at MDAH. Before joining the staff at MDAH, he was radiotherapist at the Radiation Center in Madison, Wisconsin, and at the National Cancer Institute in Bethesda, Maryland. He is assistant professor of radiotherapy at The University of Texas Postgraduate School of Medicine.

AUTOTRANSPLANTED ADENOCARCINOMA X-RAY RESPONSE

"Response of Anoxic Autotransplanted C3H Mammary Adenocarcinoma to X-Irradiation" was presented at the International Cancer Congress by Herman D. Suit, assistant radiotherapist and chief, section of experimental radiotherapy, at MDAH.

Dr. Suit reported that autotransplants of mammary carcinoma were prepared in the outer portion of each ear of 33 C3H mice. A considerable range of growth behavior was observed in each of the different sets of autotransplants, although the 2 autotransplants in any one animal were similar in behavior.

Anoxia was produced by placing a bull dog clamp across the base of the ear one minute before small beam 250 kv irradiation was started. Fourteen animals (28 tumors) received a single exposure of 3,750 r.

Dr. Suit analyzed the effect of this dosage on the growth curves of these autotransplants from spontaneous mammary adenocarcinoma, and compared these data to those obtained from first generation isotransplants.

COMBINED DRUG AND RADIATION THERAPY EVALUATED

"Combined 5-Fluorouracil and Cobalt-60 Therapy Evaluated by Double Blind Technique" was presented by Clifton D. Howe, chief, general medical service, and head, department of medicine, at the International Cancer Congress. The paper was authored by Dr. Howe, Herman D. Suit, assistant radiotherapist, and Melvin L. Samuels, assistant internist.

Effectiveness of 5-fluorouracil combined with cobalt-60 irradiation in the treatment of patients with previously untreated squamous cell carcinomas of the posterior and lateral pharyngeal walls was evaluated by Dr. Howe and his co-workers using a double blind technique.

Eighteen patients have completed treatment: 8 receiving combined therapy, and 11 cobalt-60 therapy alone. Six weeks after treatment, 6 of the 8 patients receiving combined therapy and 6 of the 11 patients receiving only cobalt-60 therapy were living with no evident primary tumors. Six months after treatment, 6 of the 8 combined therapy patients and 5 of the 11 cobalt-60 therapy patients were living with no evident primary tumors.

Observation end points were tumor mass regression during each week of therapy, and status of the primary site 3, 6, 9, and 12 months after therapy. Analysis of results by the Mann-Whitney rank test indicated that the probability that regression was not more rapid in the 5-fluorouracil cases was less than one in 10.

Patients in this series received 1,000 rads tumor dose per week for 6 weeks, treatment beginning on a Monday and ending Friday of the sixth week. Patients who received the drug were given 15 mg./kg. intravenously on Thursday, Friday, and Saturday, and 7.5 mg./kg. on Sunday and Monday. The cobalt-60 therapy started on the Monday of the final drug injection. Tumor regression was estimated by 2 radiotherapists who did not know the drugs were given. At the end of the 6-week period, additional irradiation therapy was usually prescribed for patients not receiving the drug.

He has published articles in the British Journal of Pathology, the Journal of Clinical Pathology, Radiology, and the Journal of the National Cancer Institute.

Dr. Suit received grants from the U.S.A. National Committee and the Radiation Research Society in support of his participation in the Congress.
PLAQUE-INHIBITION TECHNIQUES, BIOCHEMICAL DETERMINATIONS, AND OTHER TESTS SUPPLEMENTED MICROSCOPIC STUDIES.

Noninfected cultures and cultures inoculated with known concentrations of polyoma virus were treated with one of the halogenated pyrimidines. Control cultures were used in all experiments.

The cytopathic effect was usually seen between the fifth and eighth day after infection of cells with polyoma virus. Large intranuclear inclusions were observed in the early stages of infection. Cell death rapidly followed intranuclear inclusion formation, while uninfected control cells retained their characteristic form.

Dr. Sykes reported on the morphologic changes which followed treatment of cells with varying concentrations of the analogues under study. He stated that results indicate that the halogenated analogues used partially or completely inhibit polyoma virus development, since they interfere with utilization of DNA precursors.

POLYOMA-INFECTED CELLS STUDIED

"Fluorescence Microscopy of Polyoma-Infected Cells Treated with Halogenated Pyrimidine Analogues" was presented by John A. Sykes, assistant biologist, at the International Cancer Congress. The paper was written by James M. Bowen, postdoctoral fellow in biology, Dr. Sykes, and Leon L. Dmochowski, chief, section of virology and electron microscopy.

The effect of analogues on host-virus relationship was studied by fluorescence microscopy of cells grown in vitro and stained with diamino-acridines. Phase contrast and fluorescence microscopy were used to investigate the influence of 5-fluorouracil, 5-fluorodeoxyuridine, 5-bromodeoxyuridine, and 5-iododeoxyuridine on uninfected and polyoma-infected mouse embryo cells grown in Sykes-Moore tissue culture chambers.

Dr. Sykes has published papers in the Proceedings of the Society for Experimental Biology and Medicine, Acta Union International contra cancrum, Journal of the National Cancer Institute, Cancer Research, and other journals.

Dr. Sykes's participation in the Congress was made possible by gift funds.
inoperable adenocarcinomas of the fundus, carcinomas of the female urethra and vagina, and some ovarian or rectal tumors.

Approximately 1,400 patients were treated by this method over a six and one-half year period at MDAH. Of these patients, 900 had squamous cell carcinomas of the cervix, 300 had urinary bladder tumors, and about 200 had miscellaneous types of tumors.

Dr. Fletcher discussed the geometric patterns of irradiation for the various types of disease, the weekly and total dosage used, and described the results, complications and tolerance levels.

HAMSTER TUMORS INDUCED BY HUMAN ADENOVIRUS

"Tumor Induction in Hamsters by Human Adenovirus" was presented by John J. Trentin, formerly biologist, section of experimental pediatrics, MDAH, at the International Cancer Congress. Co-authors of the paper were Yoshiro Yabe, research associate, Baylor University College of Medicine, and H. Grant Taylor, chief, section of pediatrics, MDAH.

Tumor-inducing activity of human adenoviruses was tested by injecting newborn hamsters with the viruses. Ten hamsters were injected intrapulmonarily with type 12 adenovirus, and 8 of them developed tumors in the thorax. Of 35 hamsters injected with cell-free filtrate of type 12 adenovirus infected tissue-culture fluid, 33 developed tumors in the thorax, and 4 of these also developed tumors in the liver. Animals injected with control tissue-culture fluids did not develop tumors.

Six tumors were tested, and all were successfully transplanted into young adult hamsters. None of the 14 tumors and 30 control breeder hamsters tested had polyoma virus hemagglutination inhibiting antibody. Abundant virus particles of a single type were revealed by electron micrographs of tissue-culture cells infected with the virus. Location, size, arrangement, and morphology of these particles were the same as those of the adenovirus.

Seventy seven sera were selected at random from 1,870 patients at MDAH over a 6-month period and tested for neutralizing antibodies against adenovirus. Approximately 26% showed neutralization at a dilution of 1:4 or higher, while approximately 6% were positive at a dilution of 1:8 or higher.

John J. Trentin received his B.S. degree from Pennsylvania State College, and his A.M. and Ph.D. degrees from the University of Missouri. He is a member of the committee on tissue transplantation, National Academy of Sciences, National Research Council, and a member of the New York Academy of Sciences.

Dr. Trentin held the Jane Coffin Childs Postdoctorate Fellowship at Yale Medical School and taught in the department of anatomy at Yale Medical School. He was formerly biologist, section of experimental pediatrics at MDAH, and is now professor and head, division of experimental biology, department of surgery, Baylor University College of Medicine, and a member of the Committee for Medical Research, Veterans Administration Hospital, Houston.

He has published over 50 articles in Endocrinology, Proceedings of the Society for Experimental Biology and Medicine, Cancer Research, Science, and Proceedings of the American Association for Cancer Research.

NUCLEIC ACID EFFECT ON TUMOR CELLS

"Nucleic Acid Effect Upon Novikoff Ascites Tumor Cells" was presented by A. Clark Griffin, biochemist and American Cancer Society Professor of Biochemistry and formerly head of the department of biochemistry at MDAH, at the International Cancer Congress. The paper was co-authored by Margery A. O'Neal, fellow in biochemistry.

Preliminary studies by Dr. Griffin and Dr. O'Neal confirmed the findings that ribonucleic acid (RNA) isolated from normal tissues modified behavior of some malignant cells. Detailed experiments indicated that malignant growth inhibition by RNA in some cases was attributable to toxic impurities in RNA preparations. Tumor cells incubated with purified RNA retained their full malignant potential.

Dr. Griffin reported that he had investigated several possible causes of the differences between the protein synthesizing systems of normal and malignant cells in this study.

Dr. Griffin's recent work has also established that the activating systems and ribosomes of the tumor and normal liver cells are essentially interchangeable in terms of C 14 valine incorporation, and that small increments of increased incorporation occur when messenger RNA is added to the system. The messenger RNA's tested were prepared from tumor ribosomes, liver nuclei, tumor nuclei, and tobacco mosaic virus, as well as synthetic polymers.

The immediate goal of this work, according to Dr. Griffin, is to study the various parameters of this response when messenger RNA is added to the mammalian protein synthesizing system. Ribosomes obtained from various types of malignant cells will be assayed with as many types of messenger RNA's as are available. Normal and malignant protein synthesizing systems will be compared to ascertain differences that may provide insight into the origin and behavior of malignant cells.

A. CLARK GRIFFIN, BIOCHEMIST

A. Clark Griffin, biochemist and American Cancer Society Professor of Biochemistry at MDAH and formerly head of the department of biochemistry, received his B.S. degree from Utah State University, his M.S. degree from Michigan State University, and his Ph.D. degree from the University of Wisconsin. He did postdoctoral study at Stanford University. Before his appointment to MDAH, he taught at Michigan State University, the University of California, and Stanford University.

In 1961, Dr. Griffin received a Lifetime Professorship in Biochemistry from the American Cancer Society. He is a consultant to the Metabolic and Endocrine Research Unit and Clinical Laboratories, The Methodist Hospital, and a consultant to the Department of Biochemistry, Baylor University College of Medicine.

Dr. Griffin's publications include over 80 papers which have appeared in the Journal of the American Medical Association, Cancer Research, the Journal of Investigative Dermatology, and the Journal of Biological Chemistry.
ANTIFIBRIN ANTIBODY LOCALIZATION

"Localization of Antifibrin Antibodies in Human Tumors" was presented by William C. Dewey, associate physicist at MDAH, at the International Cancer Congress. Authors of the paper were Dr. Dewey, W. F. Bale, of the University of Rochester School of Medicine and Dentistry, and Raymond G. Rose, associate internist, and David Marrack, associate pathologist, of MDAH. Dewey's participation in the program was made possible by grants from the U.S. National Committee, the Radiation Research Society, and the National Cancer Institute.

ENZYMATIC CHANGES IN RAT LIVERS

"Correlated Chemical and Histochemical Study of Early Enzymatic Changes in Rat Livers during Azo Dye Carcinogenesis" was presented at the International Cancer Congress by Jeffrey P. Chang, chief, section of experimental pathology. Contributing authors were Darrell N. Ward, acting head, department of biochemistry, and K. Ichinoe, research fellow.

Dr. Chang discussed the results of experiments with rats that were fasted or fed synthetic diets with or without the carcinogen, 3'-methyl-4-dimethylaminoazobenzene. Data from the chemical and histochemical assays of the livers of these rats, and the relationship of azo dye and fasting to carcinogenesis in the liver, were discussed.

Dr. Chang concluded that: (1) The glycogen metabolism was altered in the same manner in fasted and dye-fed rats at the beginning, although glycogen was restored to normal level after 7 days of dye feeding. (2) Other enzymes studied gradually decreased during fasting; they did not change significantly in dye-fed rat livers, although 5'-Nase decreased and TPNH increased. (3) ATPase staining in bile canaliculi was markedly decreased in dye-fed rat livers, while it was somewhat intensified in the bile canaliculi of fasted rat livers toward the end of the experiment. (4) The behavior of chemical substances in fasted rat livers differed from that in livers of dye-fed animals. (5) Some histochemical and chemical data agreed remarkably well, while certain histochemical changes could not be detected by chemical assays. Thus, research of this nature is best carried out by correlated chemical and histochemical studies.

TISSUE CHANGES AFTER PERFUSION

"Histopathologic Changes in Malignant Melanoma and Normal Tissues Following Regional Perfusion with L-Phenylalanine Mustard (L-Sarcolysin)" was read by J. Leslie Smith, Jr., assistant pathologist, at the International Cancer Congress. The paper was written by Dr. Smith, John S. Stehlin, Jr., associate general surgeon, and R. Lee Clark, Director and Surgeon-in-Chief.

In reporting upon the results of treatment in 132 patients, Dr. Smith said that the majority of malignant melanomas were sensitive to L-phenylalanine mustard administered by regional perfusion. If the effect of this drug, which in standard doses is not (Tissue Changes, continued on page 6)
A total of 183 regional perfusions in the 132 patients in this series have been performed. Microscopic examination was made of 52 specimens removed from 31 patients after perfusion. Fourteen of 16 primary melanomas left intact after histologic diagnosis and perfusion were excised at a later time and examined histologically. In addition, 33 specimens with metastatic lesions from 18 patients were studied.

The definite and sometimes striking changes were exhibited by all but 3 of the primary tumors examined. There was complete regression of 1 tumor; a good response was observed in 5 (including 2 tumors with almost total degeneration); a fair response in 3; and a poor response in 2.

Dr. Smith described and illustrated the degenerative changes seen in these primary tumors. The changes were histologically similar to those observed following irradiation.

Of the additional 33 specimens containing metastases which were studied, a good response was seen in 12, a fair response in 6, and a poor response in 5, while 10 were unaffected by perfusion.

Dr. Smith stated that examination showed no significant alterations of normal tissues after standard doses of L-phenylalanine, other than an increase in the thickness of walls of some arteries and arterioles.

**STAGING AND END RESULTS REPORTING**

"Program of the American Joint Committee on Cancer Staging and End Results Reporting" was presented to the International Cancer Congress by Murray M. Copeland, assistant director for education.

Dr. Copeland emphasized the need for a uniform, standardized system of staging for treatment purposes and end results reporting. Effective evaluation of end results demands a uniform system of reporting. He outlined the method used by the Joint Committee to establish a system of clinical classification, and gave examples of stage classifications for cancer of the breast and larynx, as well as an explanation of the T N M System developed by the Committee on Clinical Stage Classification and Applied Statistics of the International Union Against Cancer.

The American Joint Committee, using the T N M System whenever possible, has emphasized simplicity, practicability, and credibility for each specific classification. Dr. Copeland said. A workable, relatively simple descriptive mechanism which allows natural grouping of cases and comparison of results is thought to be mandatory by the Joint Committee.

The Committee believes that clinical staging for treatment and end results reporting is appropriate for broad comparisons of like statistics, and that staging based on histopathologic extent of disease is appropriate for special studies on treatment evaluation and survival rates.

The many forms of cancer, as well as the great variety of treatment methods, necessitate diagnostic criteria and definitive terms which are understood and agreed to by physicians all over the world.

The American Joint Committee on Cancer Staging and End Results Reporting is sponsored by the American College of Surgeons, the American College of Radiology, the College of American Pathologists, the American College of Physicians, the American Cancer Society, and the National Cancer Institute. Members of the Committee are appointed by each sponsoring organization.

**MURRAY M. COPELAND, ASSISTANT DIRECTOR FOR EDUCATION**

Murray M. Copeland, assistant director for education, received his A.B. degree from Oglethorpe University, and his M.D. degree from Johns Hopkins University School of Medicine. He held fellowships at Johns Hopkins Hospital, the Mayo Clinic, and Memorial Hospital for the Treatment of Cancer and Allied Diseases, New York City. His residency in surgery was at Union Memorial Hospital, Baltimore, Maryland. He received an honorary D.Sc. degree from Oglethorpe University in 1955.

Dr. Copeland, who joined the staff at MDAH in 1960, was formerly professor of oncology and chairman of the department of oncology, Georgetown University Medical Center. At present he is professor of oncology, The University of Texas Postgraduate School of Medicine; professor emeritus, Georgetown University Medical Center; and clinical consultant, Clinical Center, National Institutes of Health, United States Public Health Service. He is Director-at-Large of the American Cancer Society; chairman of the Joint Committee for Cancer Staging and End Results Reporting; past president of the Southeastern Surgical Congress; vice-chairman of the Committee on Cancer, American College of Surgeons; member of the Committee on Pathology, American Academy of Orthopaedic Surgeons; member of the Committee on Clinical Stage Classification and Applied Statistics, International Union Against Cancer; member of the Clinical Studies Panel, Chemotherapy Board; CNCS Program NCI; Southern Surgical Association; American Orthopaedic Association (Honorary); American Radium Society; Society of Head and Neck Surgeons; Texas Cancer Coordinating Council; New York Academy of Sciences; and Diplomate, American Board of Surgery.

He has contributed over 80 articles relating to the diagnosis and management of neoplastic disease to scientific journals and medical books. Dr. Copeland received a grant from the U.S.A. National Committee in support of his participation in the program.