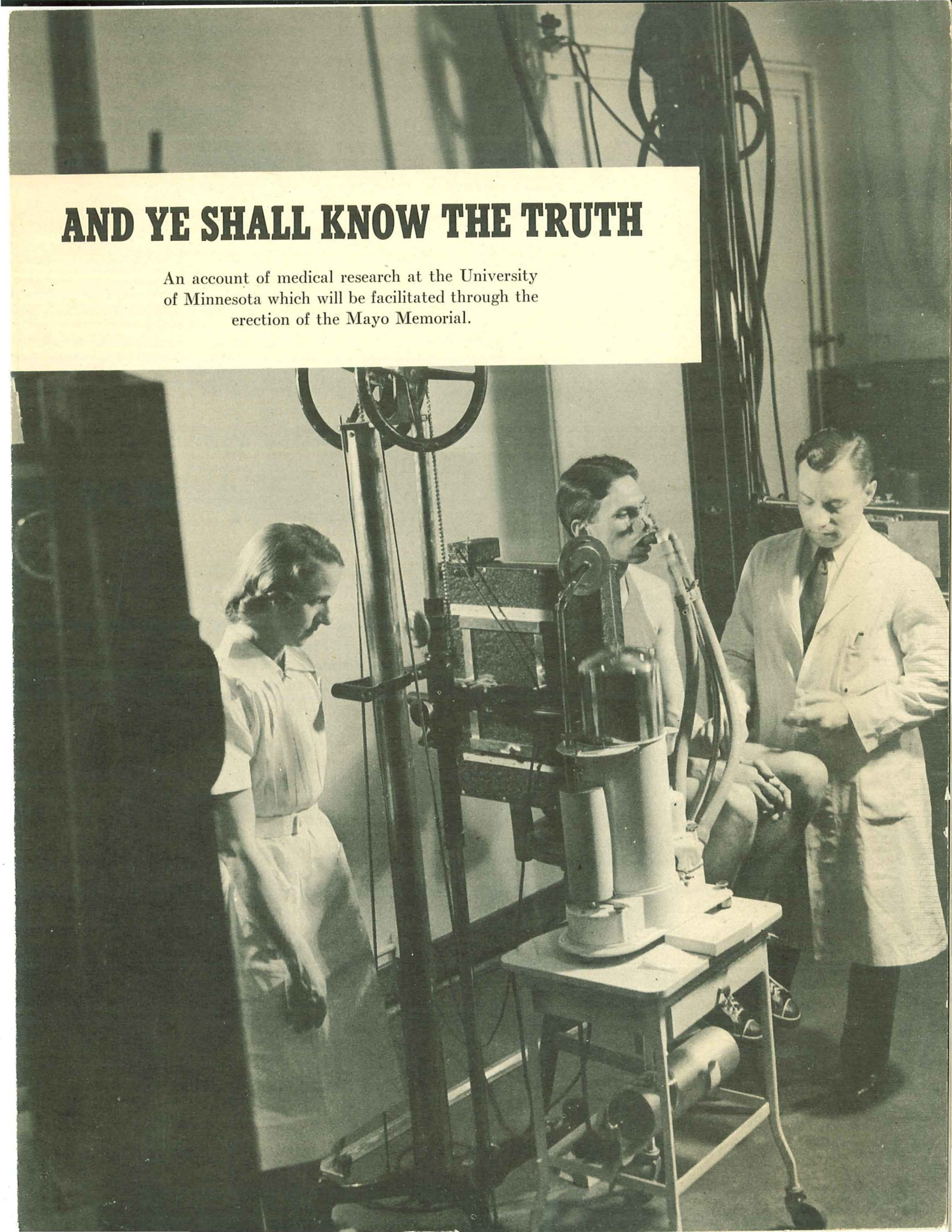


AND YE SHALL KNOW THE TRUTH

An account of medical research at the University of Minnesota which will be facilitated through the erection of the Mayo Memorial.

THE STORY OF RESEARCH AT MINNESOTA

"One- and two-year grants won't suffice. Medals and citations aren't enough. Time for long study and money for apparatus and helpers and the chance of steady employment — these are what first-rate men need and too rarely get from the society they would shower with the blessings of freedom from pain, relief from disability, and the knowledge by which human life is not merely prolonged but rendered happy, freed from fear and ignorance" — Dr. Alan Gregg, The Rockefeller Foundation, in "Science."

Upon the brains of our men in medical research depend the lives of our people. Knowledge is power and the fresh power that new knowledge in medicine brings means the difference not only between living and dying but also between useful living and unfruitful existing.

Medical research has led to the prevention and control of many diseases and infections which a generation ago took a heavy toll of life and health. Most of this research has been conducted in medical school laboratories. In this work, the University of Minnesota Medical School has played an active role, conducting important investigations of cancer, gastric ulcer, nutrition, high blood pressure, liver and blood diseases, the sulfonamides and penicillin, epilepsy, the common cold, heart diseases, tuberculosis and many other of the ills of mankind.

The medical research work done by Minnesota men has been widely used by the Army and Navy and has resulted in saving thousands of lives and in contributing materially to the speed with which our armed forces moved toward victory.

The essential need of medical research is men — men of attainment, men of promise. The University of Minnesota Medical School has a capable staff of comparatively young men, many of them already internationally known for their research work.

But men must have laboratories in which to work. They must have the facilities to search and search again for the truth. These facilities at the University of Minnesota are at present inadequate for investigation, for teaching and for the care of patients. The proposed Mayo Memorial will provide these facilities for Minnesota's outstanding scientists and will enable them to make a more effective contribution to the welfare of all mankind.

Representative researches of the University of Minnesota Medical School are described in the pages that follow.

Cover Picture

In the laboratory of Dr. Ancel Keys, human guinea pigs subject themselves voluntarily to fatigue and starvation to enable vital research in human nutrition to go forward.

Cover by Torkel Korling; other photos by George Miles Ryan

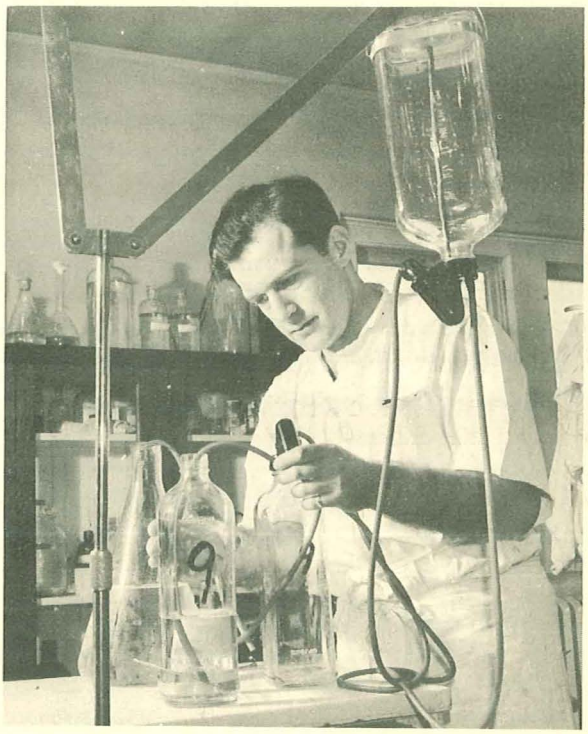
KIDNEY DISEASE AND HIGH BLOOD PRESSURE — Dr. E. T. Bell, professor of pathology, has spent years in the study of these two important diseases and is recognized as an authority on them. No specific cure, for either Bright's Disease or high blood pressure, has yet been developed, but their nature is better understood, their diagnosis more accurate and their treatment more intelligent as the result of this work. Much remains to be done. Nephritis buries 100,000 Americans a year. More facilities for this research are needed.

HUMAN NUTRITION — The work of Dr. Ancel Keys, professor of physiology, led to the development of the emergency K ration now used the world over by the armed forces. At present he has in progress important studies concerning the effects of various types of diet upon physical efficiency and upon the recovery from the effects of partial starvation. His research will enable doctors to save the lives of millions of starving war victims.

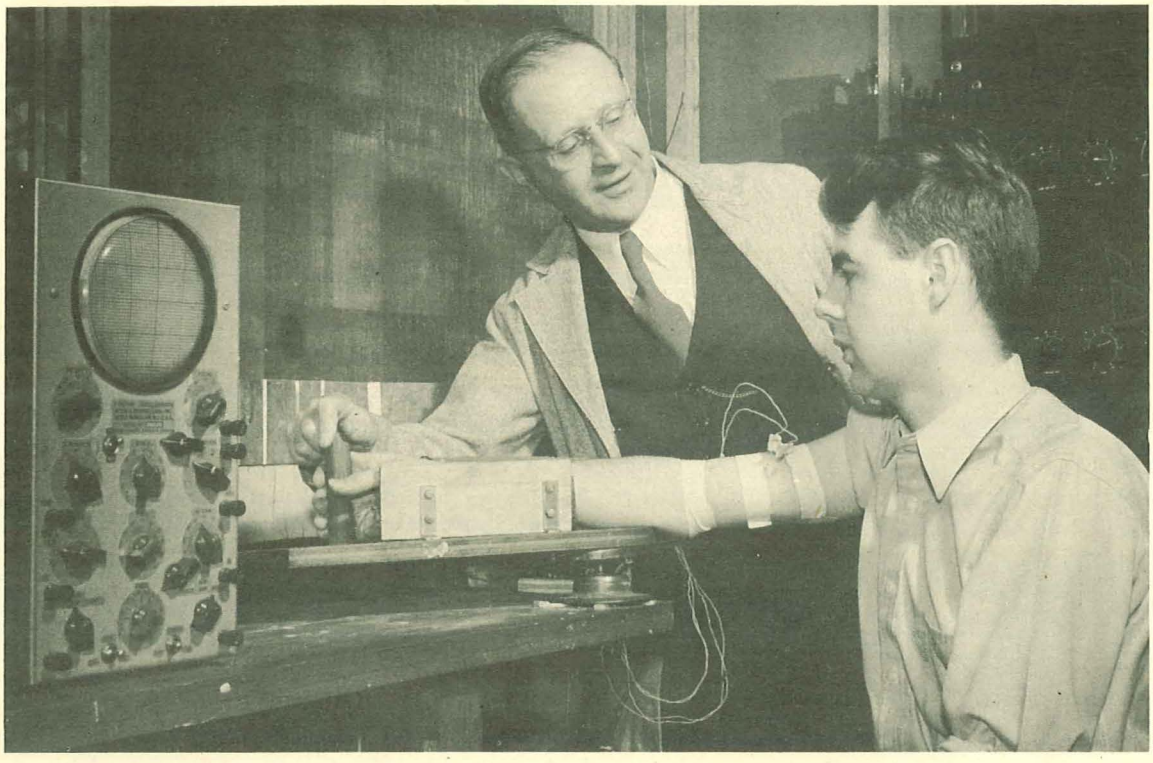
LIVER AND BLOOD DISEASE — Dr. Cecil Watson's research in these fields has made him a national authority. Of immediate military importance is his work on diseases of the liver because hepatitis, acute inflammatory disease of the liver, usually accompanied by jaundice, has been most prevalent in the western European and Pacific theaters of war. In some areas it incapacitated such a large portion of the personnel that military operations were seriously handicapped. Dr. Watson is serving as special consultant to the Surgeon General of the Army on this disease and is also director for the War Department of an important and confidential medical research project.

ABDOMINAL SURGERY — The work of Dr. Owen H. Wangensteen, professor of surgery, in ulcers, appendicitis and other intestinal obstructions, is famous the world over. His investigation of the cause and treatment of intestinal obstruction following wounds or operations is touched upon below. He and his associates have developed operative procedures which are giving relief and saving the lives of many persons with cancer or chronic ulcers of the stomach. He is continuously carrying on studies relating to the causes of cancer.

Dr. Wangensteen and his associates have been studying the possibility of utilizing bovine plasma as a substitute for human blood in the treatment of shock and burns, thus simplifying the problem of plasma supply. Significant progress has been made in this field.



Dr. Ivan Baronovsky, associate of Dr. Owen H. Wangensteen, with the apparatus for the new treatment involving the use of suction following abdominal injuries and operations, worked out after years of patient study by Dr. Wangensteen. Medical departments of the Army and Navy report that this work has revolutionized the treatment of abdominal wounds in military hospitals and rate it as the most important development in surgery in a generation. It has saved tens of thousands of lives and reduced the period of hospitalization for hundreds of thousands of patients.



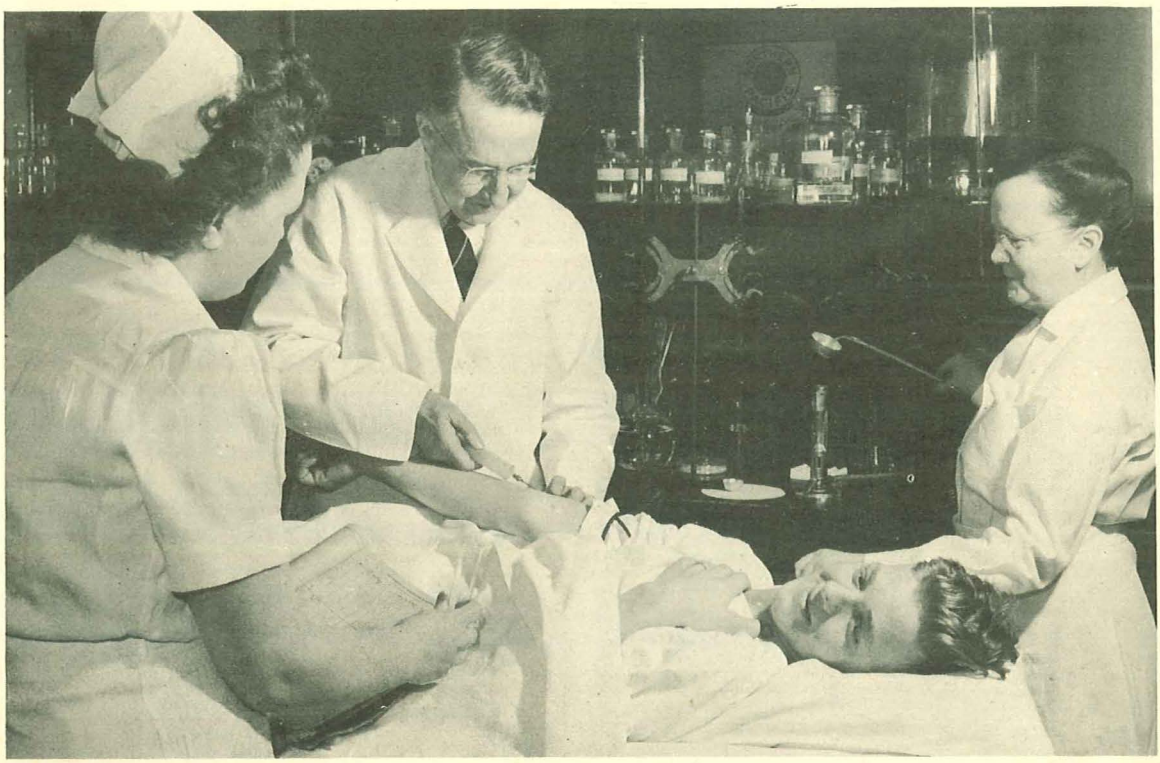
Dr. Ernst Gellhorn, engaged in electro-myographic studies, in which he is comparing the coordination of muscles in a normal subject with those stricken by infantile paralysis.

INFANTILE PARALYSIS — Dr. Ernst Gellhorn, professor of neurophysiology, is conducting an investigation of the cause and nature of the muscular impairment caused by this disease. He has recently made some previously unreported observations concerning the effect of pain on muscular coordination and activity. This program is concerned with various aspects of the infantile paralysis problem, including the Kenny treatment.

FATS IN NUTRITION — Dr. George O. Burr, professor of physiological chemistry and co-discoverer of vitamin E, a recognized authority on this subject and consultant to the National Nutrition Board, is conducting some of the most important work in this country on various types of fats in human nutrition.

GALL BLADDER DISEASE — Dr. E. A. Boyden, professor of anatomy, has conducted studies on the action of the gall bladder and bile ducts, leading to better understanding, diagnosis and treatment of diseases of this organ.

TUBERCULOSIS — Dr. J. A. Myers, professor of preventive medicine and public health, is nationally known for his distinguished work on the control of tuberculosis. The remarkable reduction in the prevalence of TB is the result of control measures based to a considerable extent on his work.

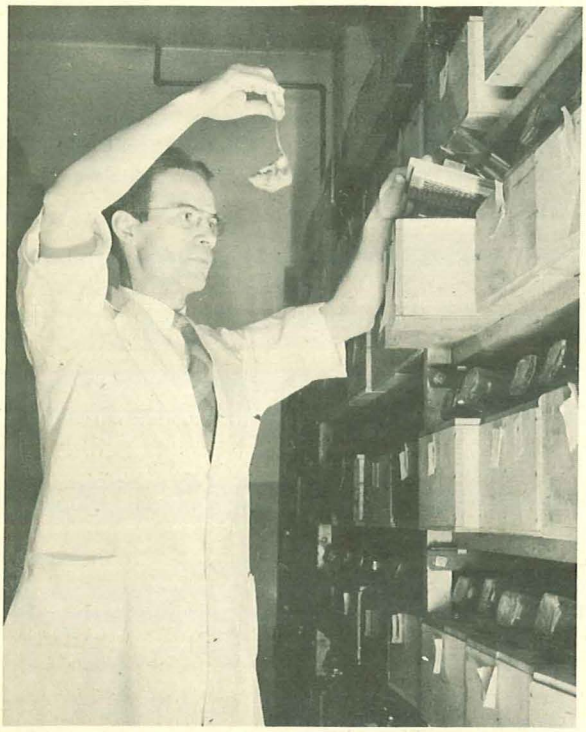


Dr. Irvine McQuarrie and Dr. Mildred Ziegler work with a young patient in one of the most dramatic experiments carried out in their department. Member of a Minnesota family afflicted with an unusual form of hereditary periodic paralysis which they have traced back through three generations, the boy is one of ten children, seven of whom are subject to this malady. Those afflicted may become temporarily paralyzed within a few hours after eating a heavy carbohydrate meal. One brother died during an attack of this paralysis. Dr. McQuarrie, after months of research, finally succeeded in devising a special diet which enables members of this family to lead normal lives free from the paralysis.

CONVULSIVE DISORDERS OF CHILDREN — Epilepsy represents one of the most depressing and serious diseases of children. Studies show that one to two per cent of all children are affected to a greater or less degree with this disorder and that about half of those so afflicted are incapacitated throughout life. Studies made in this field by Dr. Irvine McQuarrie, professor of pediatrics, have led to better understanding and more effective treatment of this disease.

SULFANOMIDES AND PENICILLIN — Important investigative work on these two "miracle" drugs is being done by Dr. Wesley Spink, associate professor of medicine. Serving as consultant to the Secretary of War on their uses in the armed forces, Dr. Spink spent three months last winter at Camp Carson, Colorado, investigating the effectiveness of these drugs in the control of rheumatic fever, most serious infectious disease in the armed forces during the present war.

THE COMMON COLD — Mankind's universal malady is the common cold, cause of more lost time in business and industry than any other illness. Studies of the prevention and treatment of the common cold made by Dr. Harold S. Diehl, dean of the medical sciences, and his associates are among the most important in this field. This research has led to the development of a most effective medication for their treatment.



Dr. John J. Bittner, holder of the George Chase Christian professorship of cancer research, in his laboratory with one of his 10,000 pure-strain inbred mice which provide one of the best opportunities for cancer research anywhere in the country. Dr. Bittner is one of the nation's outstanding men in the fight against cancer—the enemy that destroys 400 Americans every day.

CANCER — Dr. John J. Bittner's discovery of the "milk factor" in cancer has been hailed as one of the most important ever made in cancer research. Dr. Bittner transferred mice born to mothers of a highly cancerous strain to foster mothers highly resistant to cancer. The incidence of cancer was far lower than it should have been. When he transferred the newborn young of mothers not likely to die of cancer of the breast to mothers so disposed, some tumors appeared, but the incidence was not as high as in a susceptible stock. Further investigation showed definitely that an ingredient in milk is the fatal inciter and is probably a virus. Dr. Bittner, Dr. Robert G. Green, Dr. C. P. Barnum, Jr. and Dr. M. B. Visscher now are studying the nature of this "milk influence." When the inciter is determined, consequences probably will be of sensational importance. It is not too much to expect that a way of reducing its incidence in women will be indicated.

The University of Minnesota is the first university in the world to offer a doctorate in cancer biology. This has focussed national attention on Dr. Bittner's laboratory and his work. Since it is impossible to experiment with humans, cancer research must be done on laboratory animals. Mice used by Dr. Bittner have been inbred for many generations. At least 20 generations must be obtained before they may be used effectively—a process that requires about 10 years. Dr. Bittner now has been working more than 20 years in cancer research. His mice are named by a series of markings on their ears. Recently Mouse No. 100,001 was so marked—a 72nd inbred generation with an ancestry of 46 successive generations of breast cancer. These are the materials with which Dr. Bittner works. But his laboratory is badly crowded. He needs more space, more facilities for his vital work and for the work of the graduate students.

Dr. John L. McKelvey, professor of obstetrics and gynecology, has been studying the effectiveness of various types of surgical, x-ray, and radium treatments of cancer of the female genital organs, resulting in improved treatment methods which in many instances are saving, and in others prolonging, the lives of victims.

Cancer kills more than 400 Americans a day!

In Minnesota the cancer death rate has more than doubled in the past 30 years. Dr. E. T. Bell and his associates in the department of pathology have discovered that 19% of the deaths of females and 17% of the deaths of males past one year of age are due to cancer. Of persons beyond the age of 40, approximately 25% of the deaths of women and 20% of the deaths of men are due to cancer. The present chances are a little more than one in four women 40 years old and one in five men of that age in Minnesota will die of cancer—unless cancer research is stepped up immediately.

INFECTION — Recent investigations by Dr. W. P. Larson, professor of bacteriology, into the factors influencing infection have led to the development of a method almost 100% effective in the treatment of typhus fever in laboratory animals, all of which die if not treated. One of his former graduate students has been sent to Burma by the navy to try this treatment on patients who are ill with "scrub typhus," now affecting large numbers of troops and causing a considerable number of deaths among soldiers in the CBI theater.

MENTAL ILLNESS — Dr. J. C. McKinley and Dr. S. R. Hathaway have developed a "psychiatric inventory" — certain objective tests for the detection of personality abnormalities suggestive of actual or incipient mental illness. Now proving of great value to the armed forces and the civilian population, these tests are being utilized by the American Air Lines and the Chrysler Corporation. Perhaps our greatest enemy among the major maladies is the group of factors that disorder the human mind. The large number of neuropsychiatric cases coming out of the armed forces (approximately one-half of the total discharges for disability) emphasizes dramatically the great importance of fighting this ruthless enemy.

CORONARY DISEASE — Dr. George Fahr, professor of medicine, has done some of the most important work in this country on thrombosis and other diseases of the coronary arteries. Modern treatment of this important type of heart disease is based to a considerable extent on his studies. More than half a million Americans die each year from diseases of the circulatory system. More than half the Americans now 10 years of age will die of these maladies unless something vigorous is done about it.

NUTRITION OF SURGICAL PATIENTS — Through the concentrated dietary supplements worked out by Dr. Richard Varco, associate professor of surgery, to improve the vitality of weakened or aged individuals in need of major surgical operations, it is now possible to operate upon many patients previously considered "impossibly bad risks." These patients now recover in an unbelievably short time and leave the hospital in a fraction of the time previously required for convalescence.

HEALING OF FRACTURES — This field, most important in the war, is now being investigated by Dr. Wallace D. Armstrong, who did some of the most important work on fluorine in the prevention of dental decay.

LOCAL ANESTHETICS — Dr. Raymond N. Bieter, professor of pharmacology, has made important studies on the action of local anesthetics. He is now studying treatment of filariasis, serious tropical disease transmitted by the mosquito, and an important problem among our troops in the South Pacific.

OTHER MEMBERS OF THE MEDICAL STAFF recognized as authorities in their special fields are Dr. Hal Downey, on diseases of the blood cells and blood forming organs; Dr. Andrew Rasmussen, on the anatomy and physiology of the nervous system; Dr. Leo Rigler on x-ray diagnosis; Dr. Karl Stenstrom on radium and x-ray treatment; Dr. Joseph King on the growth of animal tissue cells in artificial culture media; Dr. Robert Green on the epidemic diseases of animals; Dr. H. Orin Halvorson, on industrial sanitation; Dr. Gaylord Anderson in public health and others.

THE MAYO MEMORIAL

The proposed $2,000,000 medical center for research, teaching and administration in medical science will be erected, it is planned, on the University of Minnesota medical campus to perpetuate the memory of Dr. William J. and Dr. Charles H. Mayo.

These two famous sons of Minnesota had an enormous thirst for knowledge and declared that "the crowning endeavor of a life in medicine would be to aid in the development of medical education and research." It is particularly fitting that their memorial will provide the facilities which will enable research scientists at Minnesota to work under conditions which will give them the opportunity to do their very best.

Important to every citizen is the fact that the Mayo Memorial will further the close cooperation now existing between the University Medical School and the Mayo Foundation in Rochester. The two institutions working together will build at Minnesota a medical center that will make important contributions to health and public welfare.

An appeal for funds to make possible the building of the Mayo Memorial is now being made. Further information and a brochure describing the memorial may be obtained from the fund headquarters, 1126 Northwestern National Bank Building, Minneapolis, Minn.

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