THE MEDICAL AND BIOLOGICAL

RESEARCH CENTER

AT

THE UNIVERSITY OF CHICAGO

To all men, the limits of medical knowledge must one day become a poignant reality. Regardless of the discoveries which have been made, life is still a tenuous thing.

Rich or poor, child or adult, boy or girl -- all stand alike before the unknown. When, unhappily, one of these is attacked by a disease beyond our control, no amount of care, no amount of money can halt its progress. Not even the gold of Midas can help a small child with cancer.

But research can help those who come after. Today, the anxious watching and waiting with pneumonia are no more. Children who once were forced to undergo long and painful treatment to straighten limbs twisted by disease, can now be helped quickly by surgical operations. Insulin, sulfa, penicillin -- these are the fruits of research. For them, our grandfathers would have given a king's ransom.

If our children lead healthier, more useful lives, it will be because research discoveries have made it so. But the pace at which medical research is going forward today means that we, and not only our children, will benefit from what is done. There is every possibility that we shall see the conquest of cancer, of polio, of certain types of heart disease. A hundred leads toward the solutions are known. They all must be explored.

The support of medical research is an investment in the future. It is the best investment a man can make. Given the tools, the workers in our research centers will repay a thousand-fold the men and women whose support has made their work possible.

A RESEARCH CENTER WITH A PURPOSE -- AND A PLAN

The discovery of causes and cures for disease will ultimately do more for people than the increases in size of hospitals and the multiplication of the number of doctors. More hospitals are needed, more doctors are needed; but if, through research, we can find cures for cancer, for heart disease, for polio, for rheumatic fever, or for any of the other untamed scourges which still afflict the human race, we can save the need for hundreds of millions of dollars for building construction, for thousands of hospital beds, and most of all, for the hours and days of suffering.

In its research activities, the Medical and Biological Research Center at the University of Chicago has been responsible for a substantial part of the progress which has been made toward overcoming these human afflictions. Yet greater achievements are within reach. By concentration upon research, by broadening the frontiers of knowledge, this Center can be of greatest benefit to mankind.

Its underlying purpose is the broadening of knowledge in the field of medicine and biology. To this end its chief job is research.

Its medical school, therefore, aims to provide the very highest quality of medical instruction, so that its graduates may be fitted not only for the practice of medicine but for the exacting scientific work which modern research requires.

Its hospitals must provide the very highest quality of care for patients in order to maintain teaching and research standards -- and at the same time to give patients the benefit of the best of care and the most advanced proven treatment. But its purpose in doing these things is the advancement of knowledge.

Since the Research Center is devoted to the principle of medical progress, it has no desire to build large hospitals merely for patient care. The Center does need additional buildings. It needs them to provide adequate laboratory space, and to increase the number of patients available to the doctors, scientists and students. Its desire is to become better, not merely bigger.

A SOLID FOUNDATION

The Medical and Biological Research Center of the University of Chicago has three well-established advantages:

1. It has a full-time staff of eminent doctors and scientists.

2. It brings together the work with patients and the underlying scientific work in chemistry, bacteriology, physiology, pharmacology, pathology, zoology, botany and genetics on which the science of medicine must ultimately rest.

3. The hospitals are owned and operated by the University, and not merely affiliated with it.

THE FULL-TIME STAFF

The University of Chicago Medical Center is unique. There is no other like it in America.

The important distinguishing characteristic lies in the fact that it has a staff of 375 doctors and more than 275 other qualified scientists who are engaged on a full time basis. These men do not have private patients. Their income is not dependent upon their seeing patients nor upon how many they see. They are free to devote a very large proportion of their time to research work, some of it clinical work with patients, much of it in laboratory work of a basic nature. They have available to them laboratories, technical assistants (more than 300 of them) and the scientific equipment which they need.

The demands upon the high calling of the regular practice of medicine make it difficult to devote much time to research. The practicing doctor is dedicated to serving his patients. He is at their service night and day. A great many of them devote many hours to the care of charity patients. Many of them give lectures and other instruction in medical schools, frequently devoting several hours each week to this service, often without pay.

Today the good practitioner has an additional load of keeping abreast of new developments. He must spend a considerable amount of time in reading, in attending meetings, in clinics, all in order that he may be fully informed as to what is new and good for his patients. In the face of these demands practicing doctors have made a number of contributions

to the science of medicine.

But the research of today is also a demanding service. If the practicing doctors are to have a continuing flow of new techniques they must get them in very large measure from basic research, which others must do. Insulin, penicillin, the sulpha drugs, streptomycin, and the other new antibiotics have all been made available for the better practice of medicine by full time research men. The research men are thus in a kind of partnership with those whose primary calling is the practice of medicine. The Medical and Biological Research Center at the University of Chicago is unique because it is organized to meet this research need. Fortunately, there are many men of very high ability who are interested in research work and who find in the freedom to do research and in the availability of research assistants and facilities rewards which offset the opportunity to earn greater fees in private practice.

There are already some medical institutions which have set up or are setting up departments or institutes organized on a full time basis in order to accomplish important research results. More and more of the leading medical schools are moving in this direction. At the present time, however, the University of Chicago Medical and Biological Research Center is the only medical school in America devoted to research and having every department and every man engaged on a full time basis.

The practice of medicine is important. Medical research is important to the improvement of the practice of medicine. Both research and practice deserve the full-time attention of competent men.

THE MEN WHO DO THE WORK

But good research does not depend merely upon a full-time plan of organization. It depends upon the excellence of the men who are doing the work. Excellence is a difficult quality to portray. We have selected as illustrations a relatively few men to exemplify the wide variety and scope of the research work which is being carried forward. Some of these men are engaged in clinical work, surgery, and medicine; others are engaged in basic biological work, finding out how cells live and grow. The selection we have made is entirely arbitrary. It is quite likely that the next important discovery will be announced not by one of these men but by someone whom we have not listed. It is impossible, of course, to describe the work and the excellence of all of the 375 doctors or the 275 other biological scientists. The men whose work we describe are merely examples.

DR. J. GARROTT ALLEN

The telephone rang in the doctor's laboratory. When he answered it, a stranger in Columbus explained that he had read the doctor's preliminary reports on toluidine blue, and he pleaded with the doctor to send him some of the preparation. The stranger was a physician, and one of his patients was dying. She was a fifteen-year-old girl, the president of her high-school class, and she was bleeding to death.

The doctor hesitated. His tests were not yet complete, but he could hardly refuse the physician's plea. He shipped a bottle of the chemical to Columbus by air mail.

it is less important than the fact that it plays a tremendous role in normal body functions.

There are enough leads in this heparin-toluidine blue discovery to keep a hundred investigators busy for years. The preliminary signs are exciting. But years of patient research will have to be done before we will know the whole story about these fantastic compounds.

THORFIN R. HOGNESS

The Professor pushed his helmet a little tighter onto his head, and gripped the edge of the jeep just a little more intently as it hurtled down the dusty German Road. The fact that the advance units of the American Army were some thirty miles to the rear didn't add much to his peace of mind. But up ahead lay something he wanted -- the chief atomic research scientists of the Nazi government. The Professor was Thorfin R. Hogness. He was in a hurry -- because he knew that other scientists were also racing towards that spot. Hogness was only one of the people who would sleep a little better in the years to come if someone wearing an American uniform could talk to those men first.

Thorfin Hogness won't admit that his sleep has been completely untroubled since, but he did get there first. He won the race. He did get the information which he wanted.

There was a good reason why Hogness was in that jeep that day. He had been the Director of the Chemistry Division of the Army's "Metallurgical Project" -- the project which built the first chain-reaction pile, and which discovered the chemical properties of plutonium. He had been the Scientific Liaison Officer attached to the American Embassy in London. He was Director of the Research Laboratories for OSS. He had played an important part in the development of atomic energy.

Today he is Director of the Institute of Radiobiology and Biophysics of the University of Chicago. His job is to direct and unify the work of the many scientists in the Institute who are working for a clearer understanding of the living cell and of the effect of radiations upon all forms of life. His own work on the respiratory enzymes and on radioactive materials gives him a solid background for his present job.

DR. EUGENE M. K. GEILING

The doctor picks up his hypodermic and injects the morphine into the arm of the patient. Soon the patient's breathing becomes easier, his face relaxes. He feels much better. He doesn't know why the morphine eases the pain, but he knows that it does. The doctor doesn't know why either. No one knows.

One of the most baffling medical mysteries is the action of drugs on the human body. Although we have today a multitude of compounds which we know will cure a multitude of diseases, we don't know why they do. The body cools, or the muscles relax, or the heart beats a little faster. But why do these things happen? Where does the action take place? What part of the complex compound is actually doing the work?

These things we do not know. But we have a new tool with which we may be able to find some of the answers. The atomic age has given us the radioactive isotope -- those forms of the elements whose radiations make them as easily identifiable as if they had large tags tied on to them. If we make a drug radioactive, we can feed it to an animal and trace its course through the whole body, finding out where it goes, whether it changes its form before it produces the healing effect.

Today, Dr. Geiling's laboratory is often referred to as "Geiling's Greenhouse". He is growing digitalis, the heart stimulant -- growing it in an atmosphere of radioactive carbon dioxide. When the drug digitalis is prepared, it too will be radioactive. For the first time, Dr. Geiling will be able to follow the drug as it goes to work. If we can find out how drugs work, then we should be able to make more efficient ones.

In his career as a pharmacologist, Dr. Geiling has had to practice many trades. At the present time, he is something of a botanist. A few years ago he became quite an authority on whaling. At that time, Geiling wanted pituitary glands, the comparatively simple pituitary glands of whales. He knew that the only way to get them before deterioration set in was to move his laboratory to the whaling stations in northern Canada. For many years he spent his summers near the docks where the whales were unloaded. The results of his investigations have given us a more complete understanding of the action of these important glands which control growth.

The next afternoon, the physician called again. Half of the bottle had been administered, and the bleeding had already stopped. Three weeks later the girl was back in school.

The doctor was young J. Garrott Allen. The discovery he had made was only the first in a remarkable series which may revolutionize our control over several often fatal diseases.

Not many years ago, while he was still a medical student, Dr. Allen became interested in Heparin and similar compounds which will prevent the blood from clotting. Suspecting that it was a release of heparin into the blood stream which caused the death of animals exposed to large doses of radiation, Allen searched for a substance which would neutralize any heparin which might be present. The recollection of a medical school experiment turned his attention to toluidine blue. Experimenting, first with heparium and toluidine blue in the test tube, and then by injecting the dye into an animal bleeding to death, Dr. Allen tested his hypothesis. Miraculously, the bleeding stopped almost instantly. Because fatal bleeding has always been a limiting factor in the use of x-rays, radium rays and other radiations, his discovery of toluidine blue should increase the value of x-ray therapy.

Since that time, the laborious, still uncompleted testing with human patients has been carried on. Dr. Allen has found that toluidine blue will control the bleeding in hundreds of instances which have nothing to do with radiation. It has been used successfully, for instance, in certain childbirth cases which have heretofore required extensive surgery - if they could be controlled at all. The substance has been used with remarkable success in the control of bleeding associated with leukemia.

But even more exciting are the indications which lead Dr. Allen to believe that the amount of heparin and heparin-like compounds in the body may be one of the most vital factors in a person's life.

If there is too little heparin in the body fluids, the blood will clot inside the body with often fatal consequences. Injection of heparin has been used successfully to save the lives of persons with coronary thrombosis. Knowledge of the low level of heparin in a patient's system may even predict the occurrence of a dangerous coronary.

But heparin has an influence on body liquids other than the blood. It will prevent the congealing of the fluid within the individual cells. Since cells will not divide and multiply unless their fluid has thickened, heparin seems to be a controlling factor in this process of cell growth. "Cell growth" makes one think of cancer. Dr. Allen does not yet know whether heparin does have a bearing on the control of certain types of cancer, but whether or not it does,

JAMES FRANCK

In 1900, a brilliant young German physicist named Max Planck did a very rash thing. He published a theory of dynamics refuting the classical laws of Newton. Today we accept Planck's Quantum Theory as the only acceptable explanation of certain physical phenomena. But during the first two decades of this century, it was a very controversial subject. One of the men who settled many of the arguments was James Franck. And for his proofs, he received the Nobel Prize.

James Franck received his Nobel award in 1926. In other times he might have stayed quietly at Gottingen, pursuing his investigations. But Franck disagreed violently with the theories and practices of the Nazis. The day after Hitler came to power, he resigned his position as Director of the Physical Institute, University of Gottingen, in protest. Not only was this an overt act of non-compliance, but it was aggravated by the publication of his reasons for resigning. Fortunately for the world, before the Gestapo "liquidated" this non-conformist, he left Germany forever.

In spite of the impressive advances we have made in scientific knowledge, very little is yet known of the fundamental action of living matter. One of the most baffling problems is the process by which plants absorb energy from the sun and utilize that energy in the production of starch and sugar. No one knows what a complete understanding of plant growth would permit us to do. But in a period when the feeding of the world's population is becoming an increasingly difficult problem, men are avidly searching for the solution.

Dr. Franck heads one of the most active groups studying this problem of photosynthesis. The use of radioactive carbon has given great impetus to this work. He hopes that it will help to unravel the tremendously complicated plant cycle, in which two directly opposite processes take place -- respiration, in which food stuffs are utilized in cells, and photosynthesis, in which food stuffs are manufactured.

Slowly, the gaps in our knowledge are being closed, and eventually we shall know the mechanism by which plants, the most complicated chemical factories in nature, are able to provide the foods necessary to preserve life.

LEO SZILARD

Leo Szilard is a short, stocky Hungarian. This "father of the atomic bomb" is the immigrant who, more than any other man, was responsible for our government's decision to support the atomic energy project during the war. He is the physicist turned biologist who is now spending all of his time working with bacteria and viruses.

Dr. Szilard helped build the first atomic pile. His interest in atomic energy led him from the investigation of the fundamental nature of matter, to the study of the fundamental nature of life.

Life is usually seen as an orderly process. But occasionally an abnormality occurs for which there seems to be no explanation. In the human body there are billions of cells each performing a particular function in a systematic way. Then, for no apparent reason, a cell starts to divide and multiply rapidly. Incessantly its crazy, aimless growth continues until it strangles the whole organism.

The original cancer cell may result from a "mutation" or abnormal birth from a normal cell within the body. We see examples of mutation everywhere -- the whole process of evolution may be an example of it. But we do not know how or why it happens.

Dr. Szilard is working on the problem of mutations. Because they are relatively simple organisms, he is studying the formation of mutations in viruses and bacteria. One of the things he is trying to determine is whether these mutations take place under controllable circumstances. He is trying to learn whether mutations occur in bacteria only when the bacteria multiply, or whether they continue to occur when the bacteria are kept alive but are not allowed to multiply.

DR. LESTER R. DRAGSTEDT

Ulcers, he thought, seemed to be spots on the stomach wall actually eaten out by some powerful acid. But when he analyzed the fluids present in the stomachs of people who had ulcers, he found only the normal gastric acids. Young Dr. Dragstedt was baffled. It had always been assumed that the gastric acids, powerful though they are, were unable to dissolve living tissue. But if this hypothesis were wrong, then why didn't they always dissolve the stomach itself?

Dr. Dragstedt continued his experimentation. He found that living tissues transplanted into the wall of the stomach were not digested away. They were, however, quickly destroyed when they were exposed to the action of pure gastric secretion. And then he found that only in ulcer patients were gastric acids present in large amounts when no food had been eaten. This seemed to be the clue he was looking for. The normal acids were strong enough to dissolve the stomach itself, but under normal conditions, they did not do so because they were diluted by food.

Dr. Dragstedt had been trained as a physiologist. But he was also a surgeon, and the remedy which he discovered was a surgical one. By cutting the vagus nerves from the brain to the stomach, he found that he could decrease the abnormal flow of those dangerous acids. And as he hoped, once the flow was stopped, rapid healing of the stomach wall soon followed.

Even before he discovered the vagus nerve operation, Dr. Dragstedt was well known for his discovery of the hormone lipocaic, a product of the pancreas. He believes that this hormone and insulin are the two substances produced by the pancreas which are needed for normal body function. It is already known that the incidence of arteriosclerosis (hardening of the arteries) is much higher in diabetics than in the population at large. Dr. Dragstedt's experiments lead him to believe that lipocaic might prevent the deposits of fat in the arteries characteristic of this disease. If the tests which he is conducting confirm his preliminary conclusions, an important step will have been made toward the conquest of a disease which is often classified as the "captain of the men of death."

ALL SCIENCE IS ONE

The increasing complexity of our scientific knowledge makes it almost impossible for any one man to be an expert in very many of the scientific fields. And yet, the same increase in knowledge is making it more and more apparent that all the scientific fields are closely related.

It is no longer true that botany deals with living things while chemistry deals with the non-living. Many of the processes which take place in the human body can be explained only in terms of chemistry, or physics, or mathematics.

As the scientists became more aware of this, they invented new terms to describe their fields of special interest. Today we have departments of "biophysics" which study the physics of biological systems, or "mathematical biology" which are applying mathematical theory to living things. Everywhere it is apparent that botany, chemistry, physics, bacteriology and all the others are no longer completely distinct branches of knowledge.

For a research program to be completely effective, the artificial barriers which have separated scientists from one another must be broken down. At the University this has been accomplished by the organization of interdepartmental committees and Institutes. The Committee on Cancer, for instance, is composed of twenty-one scientists from thirteen different departments, working together on a common problem.

The Institute of Radiobiology and Biophysics is another example. One of the three fundamental science Institutes organized at the University to supplement the knowledge which was gained during war-time research,

it is exploring the action of all types of radiation on all types of living matter. Its staff is composed of chemists, physicists, bacteriologists, biophysicists, botanists, anatomists, zoologists, and biologists.

This type of cooperation is essential if we are to increase our basic knowledge. And basic knowledge, the discovery of fundamental natural laws, is the cornerstone upon which the advancement of science depends.

Lister's discovery of the importance of antiseptics in surgery depended upon Pasteur's observation that bacteria are normally present in the air. And Pasteur was a chemist, not a doctor. Leeuwenhoek was not a physician, but a craftsman; yet his perfection of the microscope, and his careful observations of living matter, have enabled thousands of scientists since his time to improve the practice of medicine.

When there is cooperation among scientists, advances can be very rapid. Without it, knowledge of tremendous value goes unused. Fleming noticed the anti-bacterial action of penicillin in 1929. But he was a bacteriologist; he had no facilities for making clinical tests. So for ten years this discovery went unheeded. It was not until Florey and his associates went to work on the drug from the clinical standpoint that the world knew the importance of what Fleming had discovered.

No one knows where the great discoveries will be found. Therefore the University of Chicago believes that a comprehensive medical research program demands the encouragement of the basic as well as the clinical sciences, and that the cooperation of scientists working in all fields is essential to progress.

THE PRESENT FACILITIES

The Medical and Biological Research Center at the University is composed of fifteen buildings plus two now under construction. These buildings are fitting memorials to the faith and vision of the donors who have made them possible. They will stand for all time as landmarks in the history of man's conquest of the unknown.

The buildings of the Research Center, owned and operated by the University, are:

ALBERT MERRITT BILLINGS HOSPITAL, named in honor of one of Chicago's early financial giants. A substantial portion of the building cost was donated by his children and heirs. Billings Hospital is the main hospital of the Center. It contains admitting offices, beds for 222 patients, operating rooms, and laboratories. Also included are the MAX EPSTEIN OUT-PATIENT CLINICS, which were the gift of Mr. Max Epstein, an Honorary Trustee of the University. Patients of every description converge on these clinics to the extent of 176,000 visits a year.

CHICAGO LYING-IN HOSPITAL, founded by Dr. Joseph B. DeLee, is devoted solely to the study and care of obstetrical and gynecological patients. It contains 165 beds as well as many research laboratories.

BOBS ROBERTS MEMORIAL HOSPITAL was a gift to the University from Colonel and Mrs. John Roberts in memory of their son. It contains 73 beds and complete facilities for the care and investigation of childhood diseases.

GERTRUDE DUNN HICKS MEMORIAL HOSPITAL and NANCY ADELE McELWEE HOSPITAL are operated by the University for the Home for Destitute Cripplied Children. The McElwee Hospital was a gift of Mrs. Elizabeth Spalding McElwee in memory of her daughter. The Hicks Hospital was named in honor of the donor. These two buildings contain laboratories, playrooms, schoolrooms and beds for sixty-eight patients. The University hopes to build a new Hicks Hospital and release the present structure to the Chalmers Home for Convalescent Children, formerly located near West Chicago, Illinois. This move will bring all of the University's facilities for child care together on the campus.

In addition to these hospitals, the Division of the Biological Sciences occupies the following buildings:

THE INSTITUTE OF RADIOBIOLOGY AND BIOPHYSICS will continue to occupy temporary quarters until its new laboratory is completed later this year. It is one of the three Institutes which were established to supplement the knowledge which was gained during war-time research. The Institute of Radiobiology and Biophysics is exploring the fundamental action of all types of radiation on all types of living matter.

ABBOTT MEMORIAL HALL, containing the research laboratories of the departments of Physiology, Pharmacology and Biochemistry,

was named in honor of Dr. and Mrs. Wallace C. Abbott.

THE HULL BIOLOGICAL LABORATORIES were given to the University in memory of [redacted] by his cousin [redacted] The four-building group consists of the Anatomy Building, Zoology Building, Botany Building, and Culver Hall (housing the Bio-Medical Library).

RICKETTS LABORATORIES were named by the University in honor of one of its professors, Howard T. Ricketts, the discoverer of the cause of Rocky Mountain Spotted Fever. These two buildings, constructed as "temporary" quarters for the Bacteriology Department more than twenty-five years ago, are quite inadequate for the present program of the Department. The University hopes that more useful facilities can be constructed in the near future.

WHITMAN LABORATORY, the gift of Dr. and Mrs. Frank R. Lillie in memory of [redacted], contains facilities for experimental zoological research.

BARNES LABORATORY was named in honor of Charles Reid Barnes, a distinguished member of the faculty of the young University. It houses additional laboratories of the Botany Department.

THE IMMEDIATE NEEDS

With these facilities, the scientists at the University have made important contributions to the advancement of medical science. But in all three areas -- care of patients, teaching, and research -- the physical plant is inadequate.

At the present time, the Medical Center is forced to refuse admission to at least 100 persons a week. In addition, there is a constant waiting list of more than two hundred. Even though the primary function of the Medical Center is not identical with that of a community hospital, it does have a responsibility to the persons in this area. It should be able to give medical care to the largest number of persons possible so long as its operation as a teaching and research center is not hindered.

Actually, the University Medical Center cannot do the most effective type of teaching with the number of patients now available. Competent medical authorities believe that a ratio of ten patients to each student is desirable for teaching purposes. At the University of Chicago, the ratio is three to one.

From a research standpoint, it is essential that the individual scientists have under their care patients who will cooperate in the definitive tests which must always precede the general announcement of a medical discovery. Dr. Allen knew that toluidine blue was harmless -- but only its use on a patient suffering from uncontrollable bleeding could give him the final proof that it was an extremely

important and useful drug. Dr. Charles B. Huggins could not have announced his discovery of his test for cancer had not a large number of patients cooperated with him in the final determinations. No patient becomes a cooperating agent in a research test without his permission. No patient's well-being is ever compromised as a result of this experimentation. But without this cooperation, there can be no medical progress.

For the research scientists, the greatest need in the Medical Center today is additional beds so that a balanced program of research can be followed. At the present time, the study of heart disease, of certain contagious diseases, and certain surgical problems, are hampered by this need.

Department	Beds now Available	Additional beds Required
Medicine	132	79
Surgery	140	91
Obstetrics & Gynecology	163	none
Pediatrics	65	none
Special	none	46

In order to shape a well-balanced program in which teaching, research and patient care will all play their part, the University hopes to be able to construct the buildings described on the following pages.

THE GERTRUDE DUNN HICKS HOSPITAL

The construction of a new seven story building, to be named The Gertrude Dunn Hicks Hospital, will satisfy the needs of the Medical Center in several areas.

As has been indicated, the construction of the new Hicks hospital will allow the University to bring all of its facilities for child care to the campus; for when the new building is constructed, the present Hicks Hospital will be transferred to the Chalmers Home for Convalescent Children.

This hospital will also provide those facilities which are needed for accident cases, for tuberculosis and general medicine and surgery patients.

The hospital will contain the following facilities:

Research Facilities: The entire sixth floor will be devoted to research laboratories.

Patient Facilities: The first floor will be devoted to offices and rooms required for the emergency care of accident cases which must be accommodated and which are now scattered through other buildings, to their detriment. It will contain special facilities for the X-ray study of fractures and for their treatment by the application of casts and by other surgical methods. The building will also contain one floor devoted to orthopedic and medical out-patient clinics, two for medicine and surgery patients, and one for tuberculosis patients.

FINANCING: It is expected that the new Hicks Hospital will cost approximately $2,100,000 to construct. In addition, a share of the proposed food service building is chargeable to the Hicks Hospital. Funds available are:

a) To be received when the present Hicks Building is transferred to the Chalmers Home for Convalescent Children	$ 360,000
b) The Hicks Plant Extension Fund	365,000
Total available	$ 725,000
Funds needed to begin construction	$1,375,000

THE CHARLES GILMAN SMITH HOSPITAL

More than 600,000 Americans each year become the victims of heart disease. In spite of this staggering figure, relatively little time, effort and money have been spent on research for the cause and cure of this group of diseases.

The work which the University has been doing in this area has been hampered by inadequate facilities and the limited number of heart patients in the hospitals.

The scientists in the Medical Research Center are also anxious to devote more time to the study of infectious diseases. Lack of facilities where absolute isolation can be obtained has prohibited the study of many maladies.

In order to overcome these deficiencies in the research program, the University desires to construct a six-story hospital. The building will be named in honor of Mr. Charles Gilman Smith, who, several years ago, gave a large sum of money for the construction of such a building. The proposed structure will contain beds for 78 patients, and two floors for research laboratories.

FINANCING: It is estimated that the Charles Gilman Smith Hospital will cost approximately $1,250,000 to construct. Part of the cost of the proposed food service building is also chargeable to the Smith Hospital.

Funds available are:

The Charles Gilman Smith Fund	$ 550,000
Grant from the U.S. Public Health Service	485,000
Total	$1,035,000

Funds needed to begin construction: $ 215,000

THE HOSPITAL - HOTEL

In order to improve the quality and reduce the cost of its medical care, and to provide a teaching center for graduate physicians, the University desires to construct a 500-bed hotel adjacent to and connected with its hospitals. Its primary purpose will be to house patients who do not need expensive nursing and hospital care, i.e., patients awaiting surgery or in the convalescent period, or out-patients coming from distant points who must remain at least overnight in the city.

The proposed structure will contain 250 double rooms, each with its own bath. The main floor will contain restaurant facilities, conference and meeting rooms, a registry, lounge, library, barber and beauty shops. Only one nurse will be needed at each floor station to provide necessary diets, medication, and usual nursing service. The hotel will be connected with Billings Hospital by a tunnel so that it will be possible for patients to have necessary diagnostic procedures or treatments in the hospital and then return to their rooms.

FINANCING: It is expected that the Hospital-Hotel will cost approximately $2,500,000. No funds are available for construction. However, this building offers an unusual opportunity for philanthropy, for not only will the structure satisfy a very definite need, but it is expected that the University will receive an annual net income from its operation of approximately $200,000. A gift for this purpose will therefore function both as a capital gift and as an endowment for the support of research.

COURT BUILDING

None of the buildings under construction or contemplated for construction contains any facilities for the preparation of food, for laundry, or for the other services necessary in the operation of a hospital. Although this means that the new hospitals will be completely devoted to teaching, research and the care of patients, it imposes an impossible burden upon the existing service facilities.

The University therefore proposes to construct a one-story building at basement level in the central court of Billings Hospital. This new building will provide adequate kitchen space for all the hospitals, present and proposed, located in the Medical Center group. It will also provide a cafeteria large enough to serve the personnel, out-patients, and visitors for all the hospitals of the University. Additional space will be provided for the central linen and serving rooms, for enlargement of the medical photographic work, and for a gift shop.

FINANCING:

It is estimated that the Court service building will cost approximately $925,000 to construct and equip. No funds are available for this unit. Since this building will become essential partly because of the construction of the four new hospitals, it is hoped that it can be financed in part by sums contributed for the new facilities.

INSTITUTE OF RADIOBIOLOGY AND BIOPHYSICS

The Institute of Radiobiology and Biophysics, together with the Institute for the Study of Metals and the Institute for Nuclear Studies, was founded three days after the bomb exploded at Alamagordo. The three Institutes were established by the scientists whose work at the University of Chicago resulted in the first controlled release of atomic energy. Their mission is to search for the answers to some of the basic problems which confront modern science.

The Institute of Radiobiology and Biophysics is concerned with the effects of radiations upon all living things. The increased use of radioactive materials requires additional knowledge of their effects upon the human system. In addition, the Institute is attempting to understand the action of natural rays, such as the cosmic-rays, upon body cells.

The Institute is occupying temporary quarters until its new laboratory is finished later this year. In addition to the five-story structure which will contain its research laboratories, the Institute will use the cyclotron and betatron in the recently constructed Accelerator Building.

FINANCING: It is expected that the Institute laboratory will cost approximately $1,500,000. This building is being temporarily financed by the use of University capital funds -- funds which are needed for the payment of salaries and the costs of research. The University seeks a donor who will, in defraying the cost of this laboratory, make available once again those funds which are being used for underwriting.

NATHAN GOLDBLATT MEMORIAL HOSPITAL

This hospital will be the focal point of the University's co-ordinated cancer research program. Like the other hospitals in the Medical Center, this is a research hospital. It will contain limited facilities for the care of cancer patients, but the primary function of the building will be to provide laboratory space for the corps of scientists who are searching for the cause and the cure of cancer. Now under construction, it is expected that this building will be completed by January 1, 1950.

The hospital will contain the following facilities:

Research Facilities: Three floors will be devoted to research laboratories.

Patient Facilities: The hospital will contain thirty rooms for cancer patients. In addition, there will be an out-patient clinic and X-ray facilities which will be used both for the treatment of patients and for research.

Other Facilities: The first floor will contain administrative offices and conference rooms. The sub-basement will be devoted to storage and service facilities.

FINANCING:

It is expected that the Goldblatt Hospital will cost approximately $2,075,000. Financing of this hospital is complete except for that portion of the Court Building (dining facilities) which is chargeable to the Goldblatt Hospital.

THE ARGONNE CANCER RESEARCH HOSPITAL

Much of the hope of curing cancer and of understanding other diseases rests upon the use of radioactive isotopes.

These war-born compounds are ordinary chemicals which have been placed for a short time in a chain-reaction "pile". When they are removed, they have changed only in that they give off powerful radiations, just as normal radium does. This radioactivity makes the chemicals tremendously useful in two ways.

Since a substance which gives off radiation can be detected with Geiger counters, a radioactive isotope which has been fed or injected into a living body can be followed through its whole course. This gives us a method of tracing the complex biochemical processes of life.

In the second place, the radiations from these isotopes are powerful enough to kill living cells. If one of them could be concentrated in cancerous tissue, it would destroy the cancer cells. Since iodine always settles in the thyroid gland, radioactive iodine is one of the powerful new weapons for cancer of the thyroid. The scientists will search for others which may be useful in other cancer conditions.

But isotopes are hard to handle. The radiation which makes them useful also makes them dangerous. In order to explore their usefulness on a large scale, a specially designed building is needed. For this purpose, the United States Atomic Energy Commission has decided to construct a research hospital adjacent to the Goldblatt Hospital.

Not only will it supplement the University's cancer program, but it will provide a means of bringing together scientists from twenty-nine cooperating universities. As the prime contractor, the University of Chicago will be responsible for the staff and operation of the hospital for the Atomic Energy Commission.

FINANCING:

This hospital will be constructed by the United States Atomic Energy Commission.

OPERATING SUPPORT

In addition to the need for buildings, the University's Medical Research Center cannot operate effectively without additional operating income.

The costs of operating a great medical and biological research center are very great. The annual cost of operating this center is in excess of $6,000,000. Of this total, more than $4,250,000 is defrayed by patient fee income.

The great dependence of the medical center upon patient fees is a hazard to the establishment of a permanent research center of this nature. No doctor receives a fee for his services. The patient fees go to support the work of the research center. Yet we do not wish any doctor to be under pressure to see patients merely to produce income. Fortunately, in good times, this pressure has not been very great, but in the event of a business recession the entire research program might be in jeopardy.

It would also be desirable to be able to pay greater salaries to the key men in research work. Fortunately many men of very great ability are willing to make the financial sacrifice necessary to do research. We should like, however, to avoid forcing good men to make the hard decision between a very substantial income in the practice of medicine and a relatively meagre one in research.

In addition to the scientists on the permanent staff, there are at the University many young research assistants. These mature young men have completed their formal medical training, but are receiving the additional five to six years of research experience which they need before becoming competent medical investigators. Their salaries vary from $2600 to $3600 per year. Many of these men are the heads of families; many are in their early thirties. All are outstanding young scientists. In order to attract and retain these men, the University must be prepared to offer them salaries more nearly commensurate with their abilities.

We hold to the belief that there are no more valuable men in society than those who make contributions in basic science.

To be the kind of institution which this research center seeks to become requires assurance of continued income in good times and bad without too much dependence upon patient fees, and it requires the freedom to pay salaries commensurate with the value of their contributions to the men who are doing the work.

To bring about this result requires an annual income $500,000 greater than now received. This might come entirely from endowment (of approximately $12,000,000) invested at 4%. It might come in part from endowment and in part from contributions to annual support. Today there are many men who in previous years might have accumulated great wealth who under present tax laws are unable to do so. They can, however, contribute with relatively little cost to themselves one or two or three days' income per year and collectively provide substantial and dependable income. They are in a sense constituting themselves and their own investments a kind of endowment in favor of the Medical and Biological Research Center.

Some of the endowment may take the form of Professorships. We would welcome the establishment of one or more Professorships capable of producing an income in excess of $40,000 per annum. Such Professorships would be the most outstanding in America, the most attractive, the most honorable. They would require an endowment of approximately $1,000,000 and would be named in honor of the donor. We would welcome endowment funds for any specific research.

But most of all, we would welcome endowment for general support of our work in medical and biological research, for their needs change with time, and flexibility is of the essence of good modern research.

There are still buildings and research funds which can be named in honor of donors of substantial sums. Indeed the entire medical school has not yet been named, but we are hopeful of finding a donor whose imagination may be sufficiently fired to establish a large endowment warranting naming of the medical school.

FUNDS NEEDED FOR THE MEDICAL AND BIOLOGICAL RESEARCH CENTER

Gertrude Dunn Hicks Hospital	$1,375,000
Charles Gilman Smith Hospital	215,000
Court Building	925,000
Institute of Radiobiology and Biophysics	1,500,000
Hospital - Hotel	2,500,000
TOTAL NEEDED FOR BUILDING CONSTRUCTION	$6,515,000

Endowment:

The clinics and clinical departments of the University have for several years had an annual deficit of approximately $500,000. To cover part of this deficit the University needs an additional endowment fund of	$10,000,000
TOTAL FUNDS REQUIRED	$16,515,000

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