For The Greatest Good To The Largest Number

A History of the Medical Center
The University of Chicago, 1927-1977

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Preface

This historical review is written in celebration of something that began fifty years ago, on October 3, 1927, when The University of Chicago medical center opened the doors of its first building. That date, however, does not mark the beginning of the University's involvement in medical education. Years earlier, the University had entered into an affiliation with the Rush Medical College, and the basic biological science departments of the University became responsible for teaching the first two years of the medical curriculum. Thus, in 1927, a medical school program was already partly in existence on the University campus.

What did begin in 1927 was a clinical program on the campus. It was then that a hospital building was completed and clinical departments were established at the University. This history, in keeping with its anniversary subject, concentrates upon these two components—the hospital and the clinical departments; the history of the basic biological sciences is not included. I can only beg indulgence for this omission. These pages are intended to celebrate the jubilee of that which was born in 1927; at that time, the basic biological science departments were already distinguished older brothers.

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Sources and Acknowledgments

Soon after committing myself to write this history I realized the rashness of that commitment. Where would one find the necessary source material for the project? To make a beginning, I first reviewed previous historical accounts of the institution; my debt to them must be acknowledged.*

By far the chief resources, however, were the files of the dean’s office, including its “dead files.” Study of these documents soon revealed that unknown individuals had collected and preserved many early memos, letters, and other papers dating back to a time long before the institution opened in 1927. They proved to be a mine of useful information. This early material, together with other data from both old and current files, and various work-papers of more recent times, constitutes the principal basis for the entire review.

At some points, supplemental material was obtained with the cooperation of other parts of the University. The alumni, public relations, and dean of students offices, several departmental secretaries, and the audio-visual department of the Biological Sciences Division were most helpful in uncovering sources for particular subjects in which the dean’s office files proved to be deficient. My deep thanks go to all.

For the most part, I made no attempt to annotate individual memoranda or file documents which I used to build up the general picture. To do so would have destroyed, I believe, any measure of readability which this review might have. In some instances, however, where it appeared necessary, particular sources have been cited in the text or in accompanying footnotes.

My gratitude must be expressed to many others who have helped in preparing this review: to Charles Freilich who so patiently typed and retyped the manuscript; to Dorothy Taylor and Frank Fierke who helped

*F. C. McLean and N. Gorgas, Medicine in the Division of Biological Sciences, University of Chicago, Chicago, Illinois (New York: The Rockefeller Foundation, 1931).
in assembling some of the information employed; to Katherine Northrup for the design of the publication; to D. J. R. Bruckner for his encouragement and guidance in publication; to Dr. Richard Landau, who induced me to take on this assignment and thereafter held my hand throughout; and, in a special way, to Elisabeth Lanzl for her skillful editing of the manuscript.

—C.W.V.

_Scember, 1977_
Part One
I
Beginnings

In 1927, fifty years ago, something new appeared on the Midway. The University of Chicago at last had its own hospital, and the beginnings of the clinical portion of a medical school on its own campus. True, the hospital was not large, and there were only two clinical departments—Medicine and Surgery. Nevertheless, it was a beginning.

In a sense, the history of this new development began long before 1927; that year merely marked the realization of long-held dreams. To appreciate what the institution is today, to understand its ideals and motivating spirit, one must examine those dreams, for they are the roots of the institution, roots which reach down to a time thirty years before the opening day. The time line (Fig. 1) outlines the events to be considered in this early period of beginnings.

1. THE IDEA EMERGES AND TAKES SHAPE

The history of medicine at The University of Chicago begins with the foundation of the University. Even before the University opened in 1892, President William Rainey Harper had received overtures for an affiliation with Rush Medical College.

The College began operation in 1843, founded by Dr. Daniel Brainard who named it after Dr. Benjamin Rush, a patriot of the Revolution. Its first classes were held in a shed attached to Dr. Brainard’s house but, after the Great Chicago Fire of 1871, the school moved to a building adjacent to Cook County Hospital on Chicago’s West Side.

In the early days, the Rush curriculum was two series of lectures, each lasting...
four months; then the candidate was apprenticed to a practicing physician for two years. As time passed, the Rush program matured and the school grew in size and reputation so that, by 1900, it could claim to be one of the best medical schools in the nation and surely the best in the Midwest. In 1920, such celebrated physicians as Christian Fenger, Nicholas Senn, Arthur Bevan, Dean Lewis, Dallas Phemister, James Herrick, Ernest Irons, Bertram Sippy, Ludwig Hektoen, and Frank Billings were serving on its faculty. Some of these men later were to play an important role in the founding and development of the medical school at The University of Chicago.

An affiliation with the University, originally proposed as early as 1892, was affirmed in 1898. At first the relationship was limited in scope. A draft document on the affiliation stated that the University was to assume two responsibilities: to select and examine students for admission to the College, and to “consider” the names of all instructors on the faculty. Rush was to accept the decisions of the University on these matters.

By 1901, the University had already become far more involved. Rush students received their two years of preclinical training in the basic biological sciences on the University campus, where the faculty were by then able to take on the additional teaching load.

This arrangement—two years on the South Side and two years at Rush—continued even after the South Side clinical program was initiated in 1927; for, when Billings Hospital first opened, only a few medical students could be accommodated, and most of the 100 or more students in the second-year class transferred to Rush. It was not until 1941, after the affiliation had been terminated, that all students remained on campus.

It seems clear that from the beginning President Harper viewed the affiliation with Rush as a temporary arrangement. He had a different idea for University involvement in medical education. The draft document of the affiliation concludes with an addendum providing that the two institutions would mutually agree and understand:

1. That nothing in the affiliation . . . shall be understood to give encouragement that Rush Medical College is ever to become the Medical School of the University.

2. That it is the distinct purpose of the University to establish such a Medical School when funds shall have been provided . . .

In these words lies the shape of things to come. The future was not to be fashioned from Rush; instead, Harper looked for development of a hospital and full medical school on the University’s campus.

The words “when funds shall have been provided” are particularly significant, because Harper used the draft referred to in discussions
The Idea Emerges and Takes Shape

with John D. Rockefeller, Jr., early in 1898. Yet, although Harper failed in 1898 to receive financial support from Rockefeller for medicine in Chicago, he did not relinquish his dream. His decennial address of 1902 reiterated the shape of the future as he saw it. The Rush affiliation was then in force and operating beyond its initial intent, but Harper still envisioned:

... on the South Side at the University ... at the earliest possible date, a permanent hospital for Medicine, Surgery and Obstetrics, and the organization of the Departments to take charge of these hospitals and give the necessary instruction ...

... the establishment of a chair of medicine in connection with the work at the University ... in order that ample time may be given for preparation.

In 1905, a year before Harper's death, a chair of medicine was established, and Dr. Frank Billings was appointed as the first professor of medicine at the University. Dr. Billings, then dean at Rush, believed strongly that the medical school should be an integral part of the University, on campus. It was hoped that his appointment as professor would help to further that idea.

The Flexner Report

In 1910, Abraham Flexner published a report that proved to be a major turning point in medical education in America.* Sponsored by the Carnegie Foundation, Flexner surveyed the 155 medical schools then operating in the United States and Canada. In many he found appalling conditions. Some were little more than diploma mills with inferior faculties, inadequate facilities, and deficient curricula. Lack of training in the basic sciences was especially censured.

Flexner's report stimulated a wholesale movement of reform in medical schools and education. Many of the worst schools were closed outright; others were reorganized and upgraded; drastic curriculum revisions became widespread; and whereas most medical schools had been proprietary free-standing institutions, affiliation or absorption into existing universities now became common.

Flexner's report also provoked discussion on the need for full-time rather than part-time status for faculties in the clinical sciences. His model of an ideal medical school included not only integration into a university, but also the new idea that at least some members of the clinical faculty should be employed exclusively as university professors. This was in sharp contrast with the then current system; clinical teachers, without exception, were also engaged in private practice, de-

*Abraham Flexner, Medical Education in the United States and Canada (New York: Carnegie Foundation, 1910).
voting only a part of their time to teaching.

Although Flexner was an ardent advocate of these novel ideas, he was not their originator. Indeed, individuals on the faculty of the University of Chicago could justifiably claim to be the first in America to foster these concepts. Before the turn of the century, shortly after the University had been founded, a faculty of outstanding biological scientists had already been assembled at Chicago. Among them, the anatomist Franklin Mall stands out as the original proponent of medical education and faculty integrated within a university setting. Others, including Jacques Loeb and Lewellys Barker, soon joined in, and Frank Billings at Rush was an early convert. The idea spread also to Johns Hopkins University where Mall was appointed to the chair of anatomy in 1893. At Hopkins the seed first bore fruit when, in 1913, a few medical faculty members were appointed on a full-time basis.

His 1910 report made Abraham Flexner an important figure in American medicine; special interest is due him, however, for the role he played in the history of the medical school at The University of Chicago, a role that is not generally appreciated.

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Brief History of Abraham Flexner

Abraham Flexner, the younger brother of Simon Flexner,* was born in 1866. He graduated from Johns Hopkins University in 1886 with the degree of B.A. and thereafter taught Greek in Louisville schools, founding his own preparatory school there.

He received his M.A. degree at Harvard in 1906 and, in 1910, published the report on Medical Education in the United States and Canada for the Carnegie Foundation.

From 1913 to 1938, he was an officer of the General Education Board (GEB), first as secretary, then as director of studies and medical education. During this period the GEB was influential in the planning and financing of medicine at The University of Chicago. (The GEB, founded by Rockefeller in 1902 to support general education, also gave endowment funds to some medical schools, cooperating with the Rockefeller Institute.)

In 1930, Flexner organized the Institute for Advanced Studies at Princeton University, serving as its director until his death in 1939.

*Simon Flexner was professor of pathology, first at Johns Hopkins University, later at the University of Pennsylvania. He joined the Rockefeller Institute in 1903 and was its director from 1920-35. He also participated in the founding of Peking Union Medical College.
First Emergence of a Definite Plan

After the death of Harper in 1906, the record showed no significant developments for ten years. Suddenly, for reasons which are not clear, the plan for the medical center on the University campus was reactivated, and by the end of 1916 a definite scheme had emerged.

Early in 1916, University President Harry Pratt Judson sought advice from the officers of the General Education Board on the further planning for a medical school with clinical teaching on the South Side campus. He also expressed his hope that the Board would consider providing some endowment support for this school. The officers of the General Education Board were receptive to the idea, and they suggested that the Board might contribute as much as $1 million; they promised to bring the matter before the full Board at its next meeting in May.

At this meeting, the Board formally authorized its officers to continue consultation with the president of the University who promptly laid before them a plan contemplating a medical school on the campus, with a hospital and proper endowment. A definite sum of money was not specified, but a system for a full-time faculty was mentioned as an integral part of the plan. The Board thereupon recommended that President Judson invite Abraham Flexner (now an officer of the General Education Board) to visit and examine conditions at Chicago and to provide a report as soon as possible. Flexner accepted Judson’s invitation and, in July, presented his report.

——

The Flexner 1916 Report on the Development of Medical Education in Chicago

This report, long and detailed, is a masterly document that first carefully discusses three possible options or directions which the University could pursue in continuing its involvement with clinical medicine:

a. The University could maintain and improve its existing medical organization—the basic biological sciences being taught on the University campus, with the clinical years given at Rush. This would provide an easy path, but the result would be "two half schools," separated from each other. Moreover, a full-time system might never emerge at Rush.

b. The entire four years of medical training could be concentrated at Rush, with the necessary teaching and research facilities being built in proximity to Presbyterian Hospital. This was surely the most economical option, but the medical school would then be separated from the University, and again the full-time system would not materialize.

c. A medical school with its own hospital could be developed on the campus of the University. This option was clearly the most expensive, requiring perhaps $2.5 million in endowment alone. Only in this way, however, could the University create a medical program "in complete harmony with the highest modern educational ideals."
BEGINNINGS

Flexner recommended strongly that the General Education Board and the Rockefeller Foundation support the third plan if they wished to promote medical education “in its purest form, a plan impossible to duplicate elsewhere in the country.”

Flexner made a further addition to the scheme, recommending that Rush be converted to a postgraduate school as a separate enterprise. On the West Side, near Presbyterian Hospital and the research institutions associated with Rush, there would be a new kind of school to which physicians could return for periodic renewal and special training. He suggested, then, not “two half schools” as in option a, but one and one-half schools. (This additional recommendation was never implemented, but for a time it was a part of the official plan.)

Flexner’s proposal was approved almost instantly as a plan for action. Before the end of 1916, it had been accepted in principle by the General Education Board, the Rockefeller Foundation, and the University Board of Trustees. The plan had assumed a more concrete form in the minutes of the Board of Trustees, November 8, 1916:

• There would be two schools, one on campus and a postgraduate school at Rush.

• The medical school on campus would have a 250-bed hospital with adequate endowment so that it would not need to depend upon paying patients.

• The medical staff, both on the south campus and at Rush, would require endowment support. The faculty at the campus school would be under a strict full-time arrangement.

• Financial estimates were also set down:

  Construction and equipment of the campus hospital  $1,000,000
  Hospital endowment  1,500,000
  Campus medical school endowment  1,500,000
  Laboratory building, West Side school  300,000
  West Side school endowment  1,000,000
  ______________________________
  $5,300,000

When this plan was laid before the University’s Board of Trustees, President Judson concluded his report with informal comments:

It is my opinion that if the plan is carried out the result cannot fail to be of enormous benefit not merely to the University but to the entire city of Chicago, and to medical work . . . throughout the nation. As I look at it, the three chief enemies of human society in our day are disease, poverty and
crime. These three are closely related; each is a cause of both the others; each is an effect of both the others. If any one of the three is attacked successfully the results are felt in the other two. Of these three the most vulnerable to attack is disease. There is a nearer unanimity of interest in supporting efforts in that direction; there is therefore greater help to be obtained; and the results when obtained are the most fruitful and far-reaching.

The plan contemplated of course does not mean necessarily a large undergraduate medical school. It is believed that it is not the function of the University to pour into the medical profession a great number of practitioners. It is believed rather to be the University's function to provide a small number of choice men, highly trained. The plan for the undergraduate medical school, therefore, is based on a maximum number of students of not to exceed 350. . . .

It is also a University function to do everything in its power toward the discovery of the causes and of the means for the prevention of disease, which is even more fruitful than measures remedial in character. Therefore this plan impresses me as not merely providing the University with an undergraduate medical school of high grade, worthy of the dignity of the institution; not merely with a graduate medical school fitted admirably to perform an extremely useful function in the best way; not merely encouraging in connection with the work of both the schools investigation into the causes of disease and the means of preventing and of healing; in short it is provision for a great agency of social benefit, almost immeasurable in its possibilities of helpfulness for humanity. Nothing which the University has done, it seems to me, can transcend the importance of this new and most encouraging undertaking.

The Board of Trustees of the University approved the plan; a Committee on the Medical School was immediately appointed: Harry Pratt Judson, A. C. Bartlett, Julius Rosenwald, Andrew MacLeish, T. E. Donnelley, Robert L. Scott, and Harold H. Swift; and a campaign was initiated to raise the required $5.3 million. Pledges for $2 million were in hand; the General Education Board and the Rockefeller Foundation had already pledged $1 million each, to be used by the University for endowment of the school.

Then, on January 11, 1917, the president received a letter from Dr. Frank Billings saying simply that four donors in the Billings family (of whom Dr. Billings was one) desired together to pledge $1 million for the hospital. They hoped that the hospital would be named after Dr. Frank Billings's uncle, Albert Merritt Billings.

By May, 1917, the needed funds were slightly oversubscribed:

\[
\begin{align*}
\text{For endowment} & \\
\text{General Education Board} & \$1,000,000 \\
\text{Rockefeller Foundation} & 1,000,000 \\
\text{Other Sources} & 1,934,000 \\
\end{align*}
\]

\$3,934,000
BEGINNINGS

For buildings
Midway hospital (from Billings family) 1,000,000
Midway dispensary (from Max Epstein) 100,000
West Side, for laboratories and teaching 330,000

$1,430,000
$5,364,000

All was now ready, or so it seemed: But World War I brought the plans to a sudden stop.

2. THE IDEA BECOMES A REALITY

After World War I, the Board of Trustees of the University again took up the plan that had generated such momentum in 1916-17. The architectural firm of Coolidge and Hodgdon was appointed to design a hospital building, with Winfield H. Smith of Johns Hopkins Hospital as consultant. One year later, Dr. Ralph B. Seem, also of Johns Hopkins, was brought to the University as the first director of the University hospital to work full-time in planning for its future. The site chosen was just south of the Midway east of Ellis Avenue.

The plan as it had developed by 1921 called for a building which would accommodate the hospital and three departments. Two of these, Medicine and Surgery, would be new. The third, Pathology, already existed on the campus (in the Ricketts building) as one of the basic biological sciences departments. Its activities would be modified, however, when clinical services and teaching began on campus and closer physical integration with the hospital and clinical departments would be needed.

Architectural planning had now progressed to the point where a preliminary cost estimate for the building could be made. The total was $3,558,000, far more than the $1.1 million available. Confronted with these figures, the Board of Trustees could only “file” the estimate, in effect shelving the project temporarily.

President Burton Moves the Project Forward

The significant contributions to medicine at the University by its presidents frequently go unrecognized. Judson, the second president, did much to shape the plans for the medical center before World War I. The same is true of Ernest DeWitt Burton, who served as the third president for a two-year period, for it was he who broke the post-World War I
stalemate. Burton was a New Testament scholar who had been at the University from the beginning. Although in poor health for much of his life, and now 67 years old, he was asked in 1923 to take on the presidency. Two years later he died in office, but in those two years he accomplished much in moving the medical plan forward.

Immediately upon assuming the presidency, President Burton focused upon the medical school plan that had been shelved for lack of funds. Building costs had escalated after the war, and of the $5.3 million previously pledged, the $1 million allocated for a building on campus was now completely inadequate. Burton therefore laid the figures before the officers of the General Education Board and the Rockefeller Foundation with the request that the restrictions on their pledges of $1 million each be lifted. In this way $2 million previously earmarked for endowment could be used for the construction of the new building. Flexner gave this suggestion his strong support, and it was referred to the respective Boards for their official action. Approval was delayed for some time, but shortly before Burton died in 1925, the restrictions were lifted and the $2 million could be used at the discretion of the University.

Meanwhile, Burton had appointed a University Committee to Advise the President on Medical Affairs. The chairman was E. O. Jordan (Bacteriology), and the other members were A. J. Carlson (Physiology), R. R. Bensley (Anatomy), H. G. Wells (Pathology), and D. D. Lewis (surgeon at Rush). Lewis soon left to accept the chair of surgery at Johns Hopkins, and D. B. Phemister was appointed in his place.

The committee issued a report in 1923 in which the aims and purposes of the projected institution were again emphasized. The intent was not primarily to increase the number of practitioners; the principal function should be the advancement of research and the training of investigators. "A University of Chicago Medical School should be founded having as its chief aim the advancement of the medical sciences." The report also recommended that faculty appointments be full-time; that students number no more than fifty per class; and that the new unit be a school within the existing Ogden School of Science.

In a report to the University Senate in 1923, Burton spoke further of the aims envisioned at the time:

Plans which have been under consideration for a quarter of a century looking to the development of a high-grade University School of Medicine . . . are now definitely on the way toward realization in fact . . .

It will be a professional school in the sense that it will offer to college graduates courses of instruction by which they can be prepared to obtain the M.D. degree. But it will do far more . . . it will aim to cultivate in [them] the spirit of research . . . It will encourage its professors to carry on research . . . and will look for veritable and valuable results of their work.

Here, then, we have restatements in 1923 of the basic purposes ex-
pressed earlier. The school was to educate and train practitioners imbued with the spirit of inquiry. Its faculty also should be research-minded, and “veritable” results would be expected.

Burton’s committee reconsidered the site for the proposed structure and advised that it should not be south of the Midway. Instead, it should be situated as close as possible to the basic science buildings, since physical contiguity would promote closer communication between scholars in the basic sciences and in the clinics.

A site north of the Midway at Ellis Avenue and 59th Street was suggested, with the building facing Ellis. Soon the plan was changed so that the building faced the Midway, and the site was expanded to occupy two blocks along 59th Street—if the city would allow the closing of Ingleside Avenue, the next street west of Ellis. By 1924 this proposal had been accepted by the Board of Trustees, and with approval by the city, Ingleside Avenue was closed.

![Image](image.png)

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**FIG. 2**—The original building site. An aerial photograph (1910?) looking northeast over the campus. In the foreground, University buildings line Ellis Avenue which extends north and to the left in the picture. Ingleside Avenue was closed when the building program began.

President Burton appointed Dr. Franklin C. McLean as professor of medicine and director of clinics in 1923. Henceforth McLean served in planning for the new structure and for the new school that would operate within it.

By February, 1925, the architects, having finished the drawings, had
received contract bids, which are summarized here (excluding architect’s fees):

Main structure
- Billings Hospital plus Medicine and Surgery wings $2,780,000
- Epstein Dispensary (for outpatient clinics) 307,000
- Pathology wing 586,000
A separate building added to the program for
- Physiology, Physiological Chemistry, and Pharmacology 829,000

$4,502,000

The last item, which was not considered to be a part of the clinical complex, was included in the project package because additional space for the basic biological sciences was also required. (This building, now known as Abbott Memorial Hall, on 58th Street, was in fact the first to be completed, opening in 1926.)

When the bids were received, the costs once again exceeded the available construction funds. Nevertheless, the Board of Trustees voted to proceed. Three months later, on May 7, 1925, ground was broken by Dr. Billings, who also laid the cornerstone of the hospital in a ceremony on October 2, 1925, at which Dr. Henry Christian of the Harvard Medical School was the principal speaker.

The formal dedication was observed with a two-day celebration, October 31 and November 1, 1927. A special University convocation on the first day marked the opening of the medical school building. The next

![Albert Merritt Billings Hospital](image-url)
day was given over to the dedication of the hospital. Albert Ruddock Billings, grandson of Albert Merritt Billings, spoke of the hospital which, though dedicated to his grandfather, would also be a lasting honor to Dr. Frank Billings whose inspiration had made it possible.

The quadrangular structure had six stories above ground and one below. The hospital itself occupied the southern front of the quadrangle, with the Epstein outpatient clinic on the second floor. The medical school departments filled out the quadrangle on the north, with the Departments of Medicine on the east (in a section then named for Frank Billings), Surgery on the west, and Pathology in the center.

Within these basic units, use of the space has changed markedly over the years. For example, the fifth floor (Fig. 4) was originally designed to hold thirty-two medical beds in the west wing and thirty-eight beds for surgical patients in the east wing. All beds have disappeared, and the space is now used for other hospital purposes. The original Albert Merritt Billings Hospital contained a total of 215 beds; the present bed capacity of the building is 82.

![Fifth-floor plan of the original building.](image)
3. The People of the First Days

The building opened its doors on October 3, 1927, one month before the dedication. One wonders what those first days were like. Were the hospital, its clinical laboratories, and the outpatient clinics fully equipped and ready to receive and care for patients? Had all the necessary hospital personnel been assembled? One wonders, too, about the very first faculty members. Who were they and where did they come from? Furthermore, did the medical student teaching program actually begin at that time? If so, who were the first students? The people of these first days were no doubt too busy to write about them; thus, unfortunately, the records provide only limited answers to such questions.

First Patients

The medical records of two patients, both of whom came to the new medical center on October 3, 1927, provide a glimpse of the opening day. The first patient, who was seen in the Department of Medicine, has the distinction of holding the unit number 1 in the hospital record system. The second record is that of the first patient to be operated upon in the new hospital.

Patient with Unit Number 1

Victor S.

October 3, 1927. The patient was seen in the outpatient medical clinic with a complaint of sore and bleeding gums. A complete medical history and physical examination are recorded. The preliminary diagnosis was given as Vincent's infection. A bacteriologic smear from the mouth was taken, and an appointment was made for return on the following day for a report and treatment.

October 4, 1927. The smear confirmed the diagnosis, and treatment with salvarsan was instituted. Later follow-up showed satisfactory results.

June 3, 1934. He was next seen seven years later with the complaint of severe chills, fever, and diarrhea of four days' duration. An emergency admission was arranged for hospitalization in the infectious disease unit on M-3 South, on the service of Dr. C. P. Miller. A complete medical history and physical examination by a medical student were recorded and checked by the attending physician. A diagnosis of typhoid fever was made and confirmed by blood and stool culture.

The disease ran a stormy course, complicated by severe intestinal hemorrhage. Recovery was gradual and the patient was discharged.
fifty-seven days after admission.

1953-65. During this period, Patient Number 1 was again cared for at the Clinics, this time for chronic obstructive lung disease. Outpatient visits and two periods of hospitalization for special study are recorded in the chart. Eventually it was suggested that the patient move to a warmer climate to obtain relief.

The last sheets of the record are copies of letters in which the physician at the University attempted without success to establish contact with a physician in Florida, where the patient now lived. He finally sent the necessary data to the patient’s wife for transmission to the physician chosen. The last letters from Chicago, in 1968, are inquiries about the patient’s condition. The wife’s responses are also included; she expressed gratitude for the care and concern shown her husband.

Patient with First Surgical Operation

Marian L. P.

Male, aged 21
Occupation: farmer
Unit No. 9

October 3, 1927. Marian L. P. was admitted to the surgical nursing station on S-4, on the service of Dr. Phemister. The patient was from Michigan, and admission presumably had been arranged in advance by Dr. Phemister.

FIG. 5—Results of first operation—a multi-exposure photograph taken at ten and one-half months.
The problem was a stiff left elbow joint, due to a fall five years previously, which prevented the patient from extending the forearm. The history and physical examination were recorded by the resident, Dr. H. P. Jenkins. X rays and special photographs were taken to illustrate the limited movement.

October 5, 1927. An arthroplasty for ankylosis of the elbow was performed. The surgeon was Dr. Phemister; Drs. Curtis, Spurrier, and Jenkins assisted.

During an outpatient visit for long-term follow-up, ten and one-half months later, X rays and multi-exposure photographs were taken.

Much later, in 1945, Dr. Phemister wrote to the patient asking that repeat X rays and photographs be taken and sent to him. In his reply, the patient expressed his thanks and stated that "the operation was an unqualified success."

First Faculty

The original faculty members of the two new departments, Medicine and Surgery, are listed below, with the years in which they were appointed. In some instances, supplemental information of interest, gleaned from old files, has been added.

Department of Medicine

Dr. Franklin C. McLean—Professor, 1923. Vice-Chairman of Graduate School of Medicine in the Ogden School of Science, 1926. Chairman, Department of Medicine, 1927. Dr. McLean came from Peking Union Medical College, in China.

Dr. Emmet Bay—Assistant Clinical Professor and Assistant Director of Student Health Service, 1927. Previously at Rush, he was the first physician to engage in the practice of medicine at the University, beginning in the summer of 1927.

Dr. Samuel Becker—Assistant Professor of Dermatology, 1927.

Dr. Robert G. Block—Clinical Instructor, then Assistant Professor, 1927. He came from Montefiore Hospital in New York.

Dr. Paul C. Hodges—Associate Professor of Radiology, then Professor, 1927. He came from Peking Union Medical College. His appointment at The University of Chicago was within the Department of Medicine where radiology remained as a section for many years.

Dr. Louis Leiter—Assistant Professor, appointed in 1926, and taking up residence at the University in July, 1927. Dr. Leiter also came from the Rockefeller Institute.

Dr. C. Phillip Miller—Assistant Professor, appointed in 1925, and taking up residence at the University in January, 1927. He came from the Rockefeller Institute, where he had worked with Homer Smith on rheumatic fever.
Dr. Walter Lincoln Palmer—Assistant Professor, 1927. He had previously held a fellowship in physiology at The University of Chicago.

Dr. Oswald Robertson—Professor, 1927. He came from the chairmanship of the Department of Medicine at Peking Union Medical College. In Britain during World War I, Dr. Robertson had made a most notable contribution to medicine, developing and standardizing indirect blood transfusion with citrate as the anticoagulant. For that work he had been awarded the Distinguished Service Order.

Department of Surgery

Dr. Dallas B. Phemister—Professor, 1925. Chairman, Department of Surgery, 1927. He came from Rush, where he was first appointed in 1906.

Dr. E. V. L. Brown—Professor of Ophthalmology, 1927. This was an exceptional part-time appointment. Dr. Brown was a highly regarded ophthalmologist in private practice.

Dr. George M. Curtis—Associate Professor, 1925. Coming from Rush, he took up residence at The University of Chicago in July, 1927.

Dr. Lester R. Dragstedt—Associate Professor, appointed in 1925. He took up residence at The University of Chicago in November, 1926, coming from Northwestern University where he had been professor of physiology and pharmacology.

Dr. Charles B. Huggins—Instructor, 1927. He came from a residency in surgery at the University of Michigan.

Dr. Chester M. Van Allen—Assistant Professor, 1926. He came from the University of Iowa and left The University of Chicago in 1930 to take a post at the Peking Union Medical College.

Students

Information on the first medical students is particularly scanty. It is clear that a few began clinical training in the new South Side program as soon as the medical center opened in October, 1927. The list below, however, gives the names of all who took their clinical training on the University campus and received the M.D. degree between 1929 and 1931.

August, 1929
  William Wexford Redfern

December, 1930
  Sylvia H. Bensley, Isee Lee Connell

March, 1931
  Llewellys P. Howell

June, 1931
  Archibald R. McIntyre, Joseph Johnson

August, 1931
  Graham A. Kernwein, James L. O'Leary,
  George R. Crisler, Normand L. Hoerr,
  William B. Steen, Edward E. Terrell,
  Donald E. Yochem
Some of these first graduates later filled academic positions of distinction; for example, Dr. Johnson became the long-time dean of the Howard University Medical School, while Drs. Bensley, Kernwein, and Hoerr later became faculty members at The University of Chicago.

4. DR. FRANK BILLINGS

Abraham Flexner wrote in his 1916 report that the plan for medicine at the University “depends very largely on the influence of one man, Dr. Frank Billings . . . a wise, clear-headed and absolutely unselfish leader. If a modern medical school can be developed at The University of Chicago at this time, the influence of Dr. Billings will procure for it the special opportunities and resources that I have in mind.”

Life of Dr. Frank Billings

Frank Billings was born in 1854 on a farm near Mineral Point, Wisconsin. Henry Billings, his father, was a civil engineer who, with his brother Albert Merritt Billings as partner, owned a 500-acre farm, certain mineral rights, and a process for the manufacture of illuminating gas. When the partnership was dissolved, Henry remained in Wisconsin, whereas Albert assumed title to the gas process, came to Chicago, and with others, organized the Peoples Gas Light and Coke Company.

Frank first taught for three years in public schools. He then enrolled in the “old” Chicago Medical School which, with Rush, was one of the two schools of medicine in Chicago at that time. It later became the Northwestern Medical School.

With an M.D. degree obtained in 1881, he interned at Cook County Hospital, then entered private practice and taught anatomy at the Chicago Medical School.

He spent the year 1885-86 in postgraduate study in Vienna, Paris, and London, chiefly in studies of bacteriology and of the use of the laboratory in clinical care, which he later introduced and fostered in Chicago.

Back in private practice from 1886-98, he also taught physical diagnosis and medicine at Northwestern University. His practice grew, and soon he required several assistants (he preferred to call them
BEGINNINGS

"associates"), who lived with him in his home.

In 1898, Billings became professor of medicine at Rush where, from 1900-20, he was also dean. In 1905, Harper appointed him professor of medicine at the University so that he could help to further the plan for a medical school on the South Side.

Governor Dineen appointed Billings as chairman of the Board of Charities for Illinois, and he served in that post from 1906 to 1912. At that time, state institutions, including psychiatric hospitals, were badly in need of reorganization and improvement. Billings revitalized the entire system, and the institutions became internationally recognized models for their time.

In 1917, he entered the army at age 63; he was discharged as colonel in 1919. During his army service, Billings served as chairman of the Commission for Russian Medical Relief, having been sent to Russia because revolution and epidemics had produced a breakdown in medical care. In Russia, Billings met General Maximov, an eminent scientist but also a Tsarist in fear of his life. Later Maximov, who had escaped from Russia, reached the United States and became a University of Chicago professor. His classic histology text was carried through many editions, first by Professor William Bloom and subsequently by Professor D. Fawcett at Harvard.

Dr. Billings retired from active practice in 1924 and died of gastric hemorrhage at age 78, in 1932.

This sketch suggests that Dr. Billings was a man of wide interests. It does not show his unique stature in the Chicago medicine of his day. In his lifetime, he headed many medical organizations and societies:

1902-32 President, Board of Trustees, McCormick Institute for Infectious Diseases
1902-04 President, American Medical Association
1906 President, Association of American Physicians
1907 President, National Tuberculosis Association
1909-32 President, Board of Trustees, Otho S. A. Sprague Memorial Institute
1915 Founder and long-time Governor of the Institute of Medicine of Chicago
1924 President, Congress of Physicians and Surgeons

Tirelessly, he promoted funds for medical investigation. Under his influence and guidance, for example, the large Sprague and McCormick trusts came into being and were used for the encouragement of fruitful research in basic biological science at Rush, at the University, and elsewhere.

Above all, Billings had an unswerving devotion to the idea of a medical school on The University of Chicago campus. That this dream came true before his death was in no small part due to his influence and ceaseless efforts. In his 1916 report, Flexner spoke of Billings’s activity
in stimulating funds for medical research:

"... in season and out of season he has urged that [these funds] can be most efficiently employed in connection with the Medical Department that the University of Chicago is someday bound to have."

And further:

"Of the leading men on the staff [of Presbyterian Hospital], Dr. Billings alone can be regarded as a thorough believer in the full-time plan."

More than thirty years elapsed before the vision of medicine on the Midway materialized in 1927. During that period, many people played a part for a time, but Dr. Billings alone was on hand throughout, despite frustrations and delays. In gratitude, his name was given to two parts of the building when it opened. One was the Medicine wing, designated as the Frank Billings Medical Clinic and so inscribed on its rear entrance-way. (When the Chronic Disease Hospital was added in 1961, this entrance with its inscription disappeared.)

![Figure 7](image.png)

**FIG. 7—Entrance to Frank Billings Medical Clinic just before demolition.**

The second of the two memorials still exists. Frank Billings donated his personal library to the University, along with a modest sum toward its upkeep. Figure 8 shows the Frank Billings Library as it was in 1932; no significant change has been made.

Much later, on November 6, 1969, the large lecture hall, formerly called simply P-117, was dedicated as the Frank Billings Auditorium
after extensive renovation. At the dedication ceremony, Dr. Richard Richter stated how appropriate it was to name this auditorium, this focal point of the school, after Dr. Billings, and concluded:

"It was often said of Dr. Billings that he was a doctor's doctor. Here we offer a tribute to him, knowing that in doing so we honor both the room and the man. More than that, we are, in a sense, making an offering to our patron saint."

FIG. 8—Dr. Frank Billings Library in 1932.
II
Immediate Expansion

When the first building of the medical complex opened in 1927, the hospital and medical school could not by any means be regarded as a complete institution. There were only 215 beds and only two clinical departments, Medicine and Surgery—three if Pathology is included.

New plans were already under way even while Billings Hospital was being constructed. Three expansion projects, in fact, were simultaneously in the making at that time, each with a separate origin and distinctive history: Bobs Roberts Hospital, Chicago Lying-in Hospital, and the McElwee-Hicks building.

The history of this period reveals in an especially striking way how the institution came into being as a complex web of many strands—local private philanthropies of various sorts, the more distant General Education Board, the contributions and oversight of the University, and above all the force of a dream which must now be completed. It was in this period, also, that Dr. Franklin McLean played a prominent role; he was the chief weaver who pulled the various threads together.

1. Bobs Roberts Memorial Hospital for Children

Bobs Roberts Memorial Hospital with its new Department of Pediatrics was the first of the three expansion projects to be completed, opening in May, 1930. The total elapsed time from the original idea to opening was only slightly more than three years. The principal events gleaned from the record point up this remarkable speed and show what was involved:

- March 3, 1927. Dr. McLean received the first word of a possible gift by an unnamed donor toward a children’s hospital. The information came from a member of the Department of Chemistry who, in turn, had it from an attorney.
- March 7, 1927. McLean met with the attorney representing the possible donor (who was still unnamed). The gift would be about $1 million for a children’s hospital—but not for teaching or research. McLean proposed a site at Drexel Avenue and 59th Street, contingent, of course, on University approval.
IMMEDIATE EXPANSION

- March 14, 1927. McLean and University Vice-President Frederic Woodward met with representatives of the General Education Board (GEB) and discussed the possibility of support for establishing a pediatrics department. Would the GEB provide endowment assistance? Quite likely, was the answer; perhaps $800,000 or $1 million.
- April 19, 1927. The contract between the University and the donor, Col. John Roberts, was signed. The gift was to be in memory of Col. Roberts's son, Charles Radnor Roberts, who had died in 1917 at the age of 5½ years. The child was called "Bobs" after a great-granduncle, a British colonel in India, nicknamed "Bobs" by his admiring soldiers. Upon completion of the projected hospital, any residual of the gift would become a hospital endowment.
- A period of detailed planning for the building and further discussions with the GEB followed.
- December 3, 1928. The GEB officially pledged $1 million as endowment for the pediatrics department, as well as $175,000 toward construction and equipment.
- June 18, 1929. The cornerstone was laid.
- May 1, 1930. The hospital opened with a capacity of eighty beds. The cost of the building was $813,521.
- June 9, 1930. The new structure was formally dedicated.
- August 7, 1930. The University received full payment of the GEB pledge.

By December 1, 1930, a Department of Pediatrics had been formed, with Dr. Frederic W. Schultz as chairman, and with two other professors, one associate professor, and two instructors.

![Bobs Roberts Memorial Hospital](image)

**FIG. 9—Bobs Roberts Memorial Hospital.**
2. THE CHICAGO LYING-IN HOSPITAL

In the 1930's, if a medical student wanted to go to the Lying-in Hospital from the central medical complex, he had to step outside, cross Drexel Avenue, and enter Lying-in by a side door. Immediately, he was surrounded by an atmosphere that was somehow different. The hospital seemed to be a different world. It was as if Dr. Joseph Bolivar DeLee, held in awe and reverence by the student, was still present and setting his imprint everywhere and on everyone, even though by then he rarely walked those halls. The student since then has learned something of why Lying-in Hospital had its distinctive aura, and of the long, rich history that was inextricably linked with that remarkable man.

DeLee, Early Days

Joseph DeLee was born in New York City in 1870, of parents who had emigrated from Poland. While DeLee was a boy, the family moved to Chicago. There the teenager became an after-school entrepreneur installing doorbells, a trade he had learned in New York. When he graduated from high school, he suddenly announced that he wished to enter medical school. Financial problems made it difficult for the family to accept the decision; argument stopped, however, when the mother sided with her son. (Dora DeLee Hall was later named in her honor.)

Like Frank Billings before him, DeLee attended the old Chicago Medical School, receiving the M.D. degree in 1891. Internship at Cook County Hospital followed. Here his lifelong passion, the care of destitute pregnant women, began.

The next few years were a saga of adversity overcome. By 1895, DeLee had set himself up in a four-room store-front dispensary in the Hull House district, on Newberry and Maxwell Streets, with a total capital of $500 contributed by his brother and a few friends. His idea was to provide free prenatal care and free home deliveries, while also devising and teaching safer methods of doing so. Despite pitiful poverty, DeLee persisted, and his idea quickly took hold. Two hundred babies were delivered in the first year, and in two years, fifty-two nurses and twelve physicians had received some training under him.

Soon expansion of his facilities was needed. A Women’s Board of Directors came into being, raised funds, and, in 1899, opened a fifteen-bed hospital in a remodeled home on Ashland Avenue. Here, for 14 years, deliveries were carried out in especially complicated cases.

Dr. DeLee’s sister had founded a Mothers’ Aid Sewing Club in 1906 from an informal sewing circle already in existence. Soon this group took on, as its special charge, the provision of isolation facilities and care for mothers with puerperal sepsis, then called child-bed fever.

Meanwhile, the institution, now called the Chicago Lying-in Hospital
IMMEDIATE EXPANSION

and Dispensary, became a national model and mecca for students and nurses.

A Larger Lying-in Hospital Is Built

In 1908, the Chicago Lying-in Board had a dynamic new president, Mrs. Kellogg Fairbank. Under her guidance the Board acquired a site for a new and much larger center at Vincennes Avenue and 51st Street. After prolonged litigation, building at the new location was permitted; in 1914, a Mothers’ Aid Pavilion was opened, and three years later the main building, the Chicago Lying-in Hospital proper, had been completed.

FIG. 10—The old Lying-in Hospital at Vincennes Avenue and 51st Street.

Affiliation and a New Lying-in Hospital

In 1924, Mrs. Fairbank and Dr. McLean began to discuss the possibility of affiliation between Lying-in and the University, which by then was contemplating the medical center on the South Side, not far from the hospital on Vincennes. At first, Dr. DeLee resisted such an arrangement, for he preferred a relationship with Northwestern University, or
perhaps with both institutions. After repeated discussions with Dr. Billings and Dr. McLean, however, Dr. DeLee's resistance finally changed to concurrence, if not to enthusiasm.

In numerous planning meetings concerning affiliation, the idea emerged that a Lying-in Hospital should be built once again, this time on the University campus. Mrs. Fairbank and Dr. McLean argued convincingly for such a step, and in 1927 a formal agreement was reached:

- The University would provide the necessary land on 59th Street between Drexel and Maryland Avenues.
- The Lying-in Board would build and operate a 140-bed hospital.
- The University would establish a Department of Obstetrics and Gynecology, with Dr. DeLee as its head. Funds would also be provided for the construction of departmental quarters within the building.

Mrs. Fairbank and her associates undertook a spectacular and successful fund-raising campaign which yielded $1.5 million. Meanwhile, Dr. McLean, together with University President C. Max Mason, again approached the General Education Board, seeking endowment funds to help support the new department. Abraham Flexner and other GEB officers favored the proposal, and the Board itself later made the appropriation. When the building opened, the University had received $1 million from the GEB for endowment, and $250,000 for construction and equipment of departmental quarters.

The cornerstone was laid on September 3, 1929. The new building opened officially in May, 1930, and Dr. DeLee delivered the first baby there on May 25, 1930.

![The present Chicago Lying-in Hospital.](image-url)
IMMEDIATE EXPANSION

The total cost of the building was $2,377,000. Of this amount, $250,000 was contributed by the University (the grant from the GEB), and the remainder by the Boards of Lying-in and Mothers' Aid.

Merger and Later History

The Chicago Lying-in Hospital was at first a separate corporate entity, affiliated with the University, but run by its own Board. In 1938, this arrangement was changed: the Board became an Auxiliary Board, and the hospital was integrated with the other medical units in the complex. Nevertheless, the Lying-in Board still continues its corporate existence and, together with the Mothers' Aid group, maintains a deep interest today, not only in raising funds, but also in providing special services within the hospital.

Other changes also took place. The former Lying-in Hospital had been for obstetrics only, and in the beginning this was also the plan for the new hospital, at least as Dr. DeLee envisioned it. He wanted a second building, a gynecology pavilion, but that wish was never fulfilled. The gynecological service, initially located within Billings, was soon moved into Lying-in, much to the distress of Dr. DeLee.

The home delivery and dispensary program, from which Lying-in had grown, had developed into a network with several stations on the west and south sides of Chicago. When Lying-in moved to the University campus, the new hospital for a time served as the central coordinating station for home delivery, but only for a part of the territory previously covered. For many years, medical students at the University went on delivery calls to the homes of indigent women, accompanied by a nurse and a physician, thus learning something not only of obstetrics, but also of the impoverished conditions under which the patients lived.

3. THE HOME FOR DESTITUTE CRIPPLED CHILDREN

The Home for Destitute Crippled Children (HDCC) has participated prominently in medicine at The University of Chicago and still continues to do so. Since its contributions appear repeatedly in the history of the past fifty years, some of its background is provided here as a brief introduction to this remarkable institution.

In 1892, Mrs. Emma E. Stelle and a group of concerned women organized to provide a home for hopelessly crippled destitute children. Within two years, the women opened the first Home, housing nineteen children, on Maypole Avenue near Paulina Street. Eight years later, an increase in contributions enabled the Home to move to larger quarters nearby, and it was now capable of caring for 106 children. A school was included, as well as an ambulatory dispensary.
Affiliation with Rush Medical College, arranged in 1911, assured proper medical care of the children. Rush faculty members supplied free medical and surgical services and exercised general supervision of the nursing staff of the Home. Many distinguished physicians and surgeons from Rush served on the HDCC staff, among them Dr. Frank Billings.

The diseases of these children were primarily orthopedic, as might be expected in those days. An annual report for the year 1927-28 lists a total of 1,211 children cared for at the Home. Diagnoses included tuberculous joint disease in 149; paralytic conditions, primarily poliomyelitis, in 420; and rachitic disease in 137; 444 children had other types of orthopedic deformities, and nonorthopedic diagnoses totaled 61. During that year, 195 surgical operations were performed. Annual expenses for the Home came to $360,000.

4. THE McELWEE-HICKS BUILDING

The McElwee-Hicks building resulted from affiliation, in 1928, between the University and the Home for Destitute Crippled Children. The affiliation document was a tripartite agreement:

1. The University would provide the site and build an L-shaped structure on the corner of Ellis Avenue and 59th Street as a hospital for crippled children. One section of the building would be funded by the University with a gift of $300,000 already received from Gertrude Dunn
IMMEDIATE EXPANSION

Hicks. The University would also provide an orthopedic staff as well as all costs of teaching and investigation in the new hospital.

2. Mrs. Elizabeth S. McElwee, another party to the contract, would donate $300,000 to the HDCC for construction of the other half of the proposed building.

3. The Home, on its part, would use the McElwee funds for construction, and when the building was completed, the Home would operate and be financially responsible for the 100-bed hospital that would be located within both halves of the new structure. The Home on Maypole Avenue would be closed as an inpatient facility, but continue as a free dispensary.

Planning for the new building proceeded rapidly. Meanwhile, McLean and the University administration again sought help from the GEB which, by November 1928, had pledged $500,000 as endowment support for an orthopedic surgery section. This pledge was honored in 1931 upon completion of the building.

The new building opened in 1931. The north-south portion of the L-shaped structure on Ellis Avenue was named the Nancy Adele McElwee Memorial Hospital, in memory of Mrs. McElwee’s child. The east-west portion along 59th Street, attached to Billings Hospital, was designated as the Gertrude Dunn Hicks Hospital. Each portion contained fifty beds, and the HDCC was responsible for both, as had been agreed upon.

![Photograph](image13.jpg)

**FIG. 13**—Aerial view of the medical complex in 1932. On the left is the Chicago Lying-in Hospital, a separate structure. Apartment buildings were to the north. Bob Roberts, Billings, and McElwee-Hicks Hospitals are joined together in one structure on the right along 59th Street. The Abbott (basic biological sciences) building is north of Billings.
Country Home for Convalescent Children

All of the patients hospitalized at the old Home on Maypole Avenue were now transferred, and the hospital immediately became a busy place. Dr. Nathaniel Allison, Professor of Surgery (Orthopedics), was already on hand, with an appointment that began in 1929. Dr. Allison came from Harvard and, before that, had been at Washington University. Unfortunately, he became ill shortly after coming to Chicago and died in 1932 at the age of 56.

5. COUNTRY HOME FOR CONVALESCENT CHILDREN

Three affiliations were already in effect: with Rush, Chicago Lying-in, and the Home for Destitute Crippled Children. The fourth became official in 1931, when an agreement was concluded between the University and the Country Home for Convalescent Children (CHCC).

The Country Home was established in 1910 by William and Joan Chalmers as a fresh-air home for "poor children in the state of convalescence, and to provide for the proper education of such children in public school work . . . domestic science, manual training, and farming." Early benefactors included Ogden Armour, John Shedd, Reuben Donnelley, and R. W. Sears. It was Mr. Sears who gave the organization a 96-acre farm near Prince Crossing, DuPage County, on which the CHCC was constructed. When it had been completed in 1915, a contract was arranged for provision of medical care and supervision by Rush Medical School.

FIG. 14—The Country Home for Convalescent Children in Du Page County, 1930.

The record shows that Dr. McLean and the leaders of the Home were discussing a possible affiliation with the University already in 1924. Ac-
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cording to the plan under consideration, the CHCC would convey its
assets, including its $1.2 million endowment, to the University which
would act as trustee. The Home was to maintain its corporate structure,
but the University would administer the program at Prince Crossing.
Later, when the University medical center was in operation, its con-
valescing children might be sent to the Home.

Such a plan was implemented after official agreement had been
reached in 1931. For many years thereafter, until the Home was closed
in 1945, children operated on in the McElwee-Hicks unit of the HDCC
got to the Country Home for aftercare. Orthopedic surgeons, staff,
and often students traveled regularly to Prince Crossing for follow-up
visits to their patients.

When the Country Home closed, its Board was dissolved, and all as-
sets reverted to the University and its Hospital. Later a part of the
CHCC funds was to enter importantly into the financing of Wyler Hos-
pital. Furthermore, the Country Home endowments now constitute al-
most half of all the endowments assigned to the Hospital. Thus the
CHCC continues to be a living force in the present medical complex.

6. WHAT NOW?

Before the later history of the medical center is considered, it may be
helpful to review what had been accomplished in the five years be-
tween 1927 and 1932.

There were now four hospital units:

<table>
<thead>
<tr>
<th>Hospital Name</th>
<th>Beds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Albert Merritt Billings Hospital</td>
<td>215</td>
</tr>
<tr>
<td>Bobs Roberts Memorial Hospital for Children</td>
<td>80</td>
</tr>
<tr>
<td>Chicago Lying-in Hospital</td>
<td>140</td>
</tr>
<tr>
<td>McElwee-Hicks (HDCC), hospital unit</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>535</td>
</tr>
</tbody>
</table>

and five clinical science departments:
- Medicine (with a section of radiology)
- Surgery (with anesthesiology and ophthalmology)
- Pediatrics
- Obstetrics and Gynecology
- Pathology

Of the present-day departments, only Psychiatry and Neurology are not
mentioned in the list. The dreams of Harper and Billings had surely ma-
terialized, since by 1932 a sizable hospital complex and a rather com-
plete medical school had become established on the University campus.

But men of vision continue to dream, and even before 1932 further
expansion was contemplated. An interesting document has come to
light showing what was being envisioned for the future. The document, entitled a "Ten Year Program," was written by Dr. McLean in 1929. A portion of it is summarized below, listing the needs, in order of priority, as McLean saw them.

<table>
<thead>
<tr>
<th>Item</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Endowment to finance present obligations, hospital and school</td>
<td>$6 million</td>
</tr>
<tr>
<td>Psychiatry—building, with beds, and endowment for a department</td>
<td>3</td>
</tr>
<tr>
<td>Additional endowment for the basic science departments</td>
<td>7</td>
</tr>
<tr>
<td>Additional endowment for a school of nursing</td>
<td>1</td>
</tr>
<tr>
<td>Medical library, for building and endowment</td>
<td>2</td>
</tr>
<tr>
<td>Student health service building</td>
<td>0.5</td>
</tr>
<tr>
<td>Additional funds for a hospital for contagious diseases</td>
<td>0.5</td>
</tr>
<tr>
<td>Gynecology—building of a pavilion, and educational endowment</td>
<td>1</td>
</tr>
<tr>
<td>Additional beds, outpatient units, and clinical laboratories</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$22 million</strong></td>
</tr>
</tbody>
</table>

---

**FIG. 15**—Plot plan of the future medical complex as envisioned by McLean in 1929.
IMMEDIATE EXPANSION

McLean concluded his ten year plan with the suggestion that one last approach be made to the General Education Board for help. Perhaps the Board would make a final lump-sum contribution to “fulfill its obligation” to medical education at the University.

McLean’s suggestion was followed, and early in 1929 University officials met with representatives of the GEB to discuss such a contribution. Later, a formal request was presented to the Board for $2 million to be used as medical school endowment, and for an expendable fund of $1 million to cover present and anticipated hospital operating deficits.

In May, 1929, the University received word that the Board had acted favorably, with the understanding that the grant was a final one, “fulfilling all obligations of the Board to the University of Chicago.” A grateful letter from McLean to the president of the Board followed; in it McLean indicated that the message had been received—no more support would be forthcoming from the GEB.

If this final grant for medicine at The University of Chicago is added to all previous grants from the GEB and the Rockefeller Foundation, the total comes to almost $8 million.
III
Early Years,
Through Struggles to Strength

In retrospect, the period of fifteen years from the opening of Billings Hospital to the start of World War II was perhaps the institution’s finest hour. Although it began auspiciously with the appearance of three new buildings, the period soon became a time of struggle for survival. Adversities tested the institution and the principles upon which it was founded. Yet, despite these trials and tests, the institution grew in strength and became solidly established.

Preliminary Note on Administrative Changes

Before 1930, the basic biology and clinical departments were included within the Ogden Graduate School of Science, and Dr. McLean held the title of vice-chairman for medicine in that school. Then, under President Robert M. Hutchins, a plan for reorganization of the entire University was developed, with a grouping of all departments into major Divisions, each having its own dean. The Ogden School of Science was to be reorganized and its basic and clinical biological sciences departments were to become one, or perhaps two, of the new Divisions. For a time, the creation of two biological sciences Divisions, one for the clinical and one for the basic sciences, was considered. It appears that Dr. McLean was tentatively offered the deanship of the clinical Division, but he believed that to split the basic and clinical sciences was precisely the wrong way to go. He also did not want to be considered for the deanship of a combined Division, believing that it should be headed by a basic scientist.

When the reorganization went into effect in 1930, the clinical and basic sciences were united in a new Division of the Biological Sciences, and Dr. Richard E. Scammon was offered the post of dean. A highly regarded anatomist at the University of Minnesota, Dr. Scammon had been seriously considered a year earlier for the presidency of The University of Chicago. Late in 1930, he was officially designated as dean and professor of anatomy. When he resigned shortly thereafter, Dr. Frank R. Lillie, a distinguished scientist in the Department of Zoology,
was appointed dean in 1931. Four years later, Dr. William H. Taliaferro, Professor of Parasitology, became the third dean and continued in that post until 1944.

The University Clinics (the name used at the time for the hospital and outpatient clinics) were headed by Dr. McLean as director from 1927 until his resignation in 1932. The next director, appointed in 1933, was Dr. Harry S. Houghton who, at the same time, became associate dean of the Division. (Dr. Houghton had previously been director of the Peking Union Medical College.) Houghton soon left the University, however, and in 1935 his place was taken by Dr. Arthur C. Bachmeyer, previously dean of the College of Medicine at the University of Cincinnati. Dr. Bachmeyer remained as director and associate dean of the Division for sixteen years.

1. POLICY ON PATIENTS AND DISPUTE WITH FLEXNER

The early planners conceived of this institution as a special place, devoted to teaching and research, where all the clinician-faculty members would be full-time salaried individuals not encumbered by private practice. The early planners must have envisioned a hospital primarily for charity patients since at that time only such patients were considered suitable for the teaching of medical students. It followed that an endowment sufficient to carry the charity load would be necessary, and thus early plans called for hospital endowment as well as building funds.

In 1923, however, it was decided to proceed with building in the absence of significant hospital endowments, and thus a new policy of major importance had emerged: paying patients would be admitted, for even they were now to be considered suitable for teaching purposes. This was a revolutionary step in medical education. All patients, charity and otherwise, would be admitted; all would be treated alike; and all would be used in student teaching. This remarkable change is affirmed in the policy statement adopted by the Board of Trustees of the University in March, 1927:

All cases to be admitted to the clinic or hospital shall be service cases; i.e., they shall be admitted to the care of one of the departments or services and cared for by individuals assigned to this duty by the Chief of Service. No case shall be assigned on admission to the care of any individual physician.

Any case . . . shall be available, in so far as the patient’s condition permits . . . for purposes of teaching and study . . .

No physician on the clinic or hospital staff . . . shall have any special pecuniary interest in the care of the patient.

The Epstein Clinic will provide the following classes of service: 1. The Pay Clinic Service . . . (pay approximately at cost) 2. Free Service . . . 3. Private Patients Service . . .
The following types of service will be provided in the Albert Merritt Billings Hospital: 1. Private Room Service (regular rates including professional fees). . . 2. Semi-Private Room Service (regular rates and corresponding professional fees). . . 3. Ward Service (free or partial pay). . .

It appears that Abraham Flexner, one of the early planners, did not clearly understand that a change in policy had occurred. He only became aware of it in the course of an exchange of letters with McLean which have been preserved. This remarkable collection is reviewed here in detail because it brings out clearly the thinking of the time and the clash of two idealistic individuals, both deeply concerned with medical education. McLean's comments stress the features of the Chicago system which were unique at the time.

In all, twenty-one letters were exchanged between February 3 and August 4, 1930. They began innocuously when Flexner asked whether McLean could provide information on the professional fees earned by the full-time faculty of the Department of Surgery in the year 1929. Flexner was making similar enquiries at other schools where some full-time appointments existed and thought that the amounts would doubtlessly be small. Full-time faculty clinicians would not be involved regularly with paying patients since such patients were not considered suited for teaching and investigative work. Nevertheless, Flexner recognized that full-time faculty clinicians might, on occasion, treat noncharity patients, and he wished to have some idea of the sums involved.

McLean responded that he did not have the answer to Flexner's question since, at the University, all professional fees were lumped together; no record was kept by departments or by individuals. The idea of pooling was deliberate, he stated, the intent being that no individual or department would thus be in a position of having efforts reviewed in terms of income-producing power.

After some further exchanges of letters, McLean produced an estimate for Surgery, which he had derived from the individual patient accounts. The estimated professional fee charges, not the actual earnings, were $70,000 for the year 1929.

Flexner now revealed the fees reported by other schools: Yale, $10,241; Johns Hopkins, $4,770; and Rochester, $6,650. He concluded that there must be a different policy at The University of Chicago, since the professional fee income was so much larger, and asked McLean whether he had an explanation.

McLean replied that he was not surprised at the difference. At other schools, only a few of the surgeons held full-time appointments, whereas at Chicago all were under that arrangement. He explained point by point how the Chicago system differed from others:

- This was not a charity hospital where part-time physicians came in to supervise care and to teach, nor was it a hospital of two parts, private and charity.
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• No, Chicago was different. All patients, charity and otherwise, were on one service without distinction.
• The paying patients helped to support the enterprise financially. If all patients were free, funding of the entire program would be impossible; the amount of endowment was quite inadequate to carry the whole load. This was a new departure in the economics of medical education. It was a great experiment, for all patients, whether charity or not, were used in teaching, and so far it seemed to be a success.

Flexner responded to this letter after a delay of two weeks: "Thank you for your candid statement. I did not answer it promptly, because I was too disappointed and too profoundly shocked." He then continued with very strong words:

Your letter quite frankly states that your motive was financial. . . .
. . . Instead of a full-time clinic on the Hopkins or another model [you have become] a Mayo Clinic on a small scale.

The whole full-time arrangement was meant to free the full-time staff from the necessity of doing uninteresting routine in order that they might devote themselves to teaching and research. Your arrangement is an absolute surrender.

McLean, in turn, expressed shock that Flexner was not aware of the Chicago plan, although he had previously received many documents in which it was explained. The McLean "shock" letter (dated May 10, 1930) is a lengthy review of the policy document approved by the Board of Trustees, followed by a detailed description of how the policy appeared to be working at the time.

The Hospital, McLean wrote, does not say who is or is not to be admitted; the physicians decide what patients are of value in teaching or study, and no patient is turned away if the faculty wishes him admitted. Most of the patients were just above the charity level; in 1929, 76 percent of the patients paid either nothing or less than cost. Clearly, said McLean, this is not a money-making institution.

He then went on to admit that, aside from the possibility of bankruptcy, there were dangers in the new system being tested here: (1) Possibly, the new Chicago system would lead to determination of faculty appointments, promotions, and salaries according to the economic value of the individuals rather than their academic worth. So far, however, this had not happened. (2) The paying patients might adversely influence staff activities, for full-pay patients demand more attention. But was this necessarily bad for teaching purposes? (3) Perhaps the system would also lead to selection of patients on the basis of their ability to pay, although at present patients were selected for admission by the physicians, not by the admitting officer. (4) Finally, McLean dealt with the objection that paying patients could not be used for
teaching. He simply responded that this was not true, at least so far; instead, it was now believed that they were often better subjects than charity patients for teaching purposes.

McLean summarized his long defense letter with these words:

...we are accepting paying patients when they are of interest to us, and using the income derived from them for the extension and support of medical education on the full-time basis. We believe that this is sound policy, and that with intelligent administration, devoted to the aims and purposes of the institution... not only can the dangers inherent in the plan be avoided, but also a constructive contribution to medical education may be made. If this be treason, make the most of it!

Further correspondence followed, but Flexner was not mollified. After two more months, the argument was broken off by mutual consent and with kind regards on both sides.

We find it difficult, fifty years later, to understand the intensity with which this argument was carried on, for we accept the use of noncharity patients in teaching as if it were a principle that had always existed, both here and elsewhere. The principle, first put into practice as a great experiment at Chicago fifty years ago, has long since proved its worth.

2. CONTROVERSY WITH THE CHICAGO MEDICAL SOCIETY

A new mode of delivery of medical care had appeared in the city of Chicago, for the University now had a large group practice. The entire group was under one roof, with a large, integrated outpatient clinic substituting for the scattered community or downtown offices of private practitioners. Laboratory and X-ray facilities were conveniently at hand. Consultation or referral of patients to another physician within the group was readily available. A potential problem existed, however, with the new group system: it might attract more patients than warranted by the quality of the care actually delivered, and therefore the medical fraternity was likely to complain of unfair competition.

No such complaint would arise if the group limited itself to the care of charity patients. However, the policy of treating charity, part-pay, and pay patients without preference, except for their value for teaching and study, created another possible cause for conflict. The decision to accept patients seemed to be in the hands of the physicians; but the physicians were salaried full-time faculty members without personal economic concern for the paying status of the patient. Sometimes patients who were able to pay might nonetheless be chosen for treatment without charge because they were of special interest. In such cases, the group would be open to the charge of practicing cut-rate medicine.

There was still another potential problem. Did the group practice, as
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set up at the University, conform to the Illinois Medical Practices Act? A question of legality arose because a corporation, the University, stood between the patient and the physician. However, no legal action was taken against the University, and eventually ambiguities in this regard were removed from the Medical Practices Act.

The potential for friction with the Chicago Medical Society was recognized from the beginning, and early in 1928 a joint committee was formed to study the problem. Members of the committee, for the Chicago Medical Society, were William A. Fousey, J. W. Vandershire, and James H. Hutton; and for the University, President Charles Max Mason, Albert W. Shearer, and Franklin C. McLean. As they stated in their official report issued in 1928, these men “recognized the difficulties there are for both the Chicago Medical Society and The University of Chicago . . . and the importance of a policy as fair to both parties as is possible . . . and the desirability of a clear and amicable mutual understanding.” The report then proceeded in the form of an agreement between the University and the Society in which the University committed itself to six points:

1. The University’s purpose in establishing its Clinics . . . is to obtain the clinical material necessary for teaching and research . . . It will not expand its medical service to the public beyond the limits of this purpose . . .

2. The University does not enter upon practice as a business for income per se . . .

3. The plan of operation at present includes free patients, part-pay patients, and pay patients . . . all admitted on the same service. The only difference is in their economic rating . . . Pay patients will be charged fees commensurate with the usual charges made by physicians for similar services rendered to such patients.

4. Every reasonable precaution will be taken to avoid the abuse of medical charity . . .

5. The University prefers to receive patients referred by physicians; it will give preference to such patients . . . and will deal with the physicians referring cases according to the usual customs of the profession . . .

6. It is the policy of the University to follow the ethics of medical practice that long experience has found to be for the good of the public . . .

A detailed description of the University plan, apparently written by McLean, was attached to the document of agreement, stating once again the purpose to provide clinical material necessary for teaching and research. Now a new purpose was added, not previously mentioned but undoubtedly implied from the beginning.

“. . . In establishing the Clinics, however, the University recognizes that they must function primarily in the interest of the patient . . . only a hospital in which the entire plant and personnel constantly function in the interest of the patient is acceptable . . .”

This agreement, accepted by both parties, was like a charter between
the Clinics and the Chicago Medical Society. Nevertheless, amicable relations were soon disturbed. The Bulletin of the Chicago Medical Society (January 12, 1929) reported that “many complaints are heard . . . many members are bitter in denunciation of the unfair competition offered by Billings.” On other occasions, resolutions were discussed to exclude members associated with the Clinics from appearance on medical society programs. A minority of the Society members continued the agitation up to the time of World War II.

3. GROUP PRACTICE—QUALITY OF CARE

Teaching and research were the avowed purposes of the medical care system developed at the University. With students and full-time faculty physicians engaged primarily in teaching and research, and with students participating in the delivery of care, would the patient’s welfare be neglected? Would the quality of medical care be jeopardized? And would the paying patients be satisfied to be used for teaching purposes?

These questions were a cause for concern in the early days and were seriously and scientifically addressed by Dr. Emmett Bay when the new system was less than five years old. Dr. Bay’s study was published as a monograph in 1932 by the Julius Rosenwald Fund in Chicago with the title, “The Quality of Care Rendered by The University of Chicago Clinics.” A brief summary of the monograph follows.

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Emmett Bay on Quality of Care

In appraising the quality of care, Dr. Bay included a minute examination of 447 randomly selected patient records from the Departments of Medicine and Surgery, supplemented where necessary by discussions with the physicians. He also corresponded with many of the patients to learn, for example, why some had broken outpatient appointments that had been arranged for them. Time studies on the machinery for processing of patients and of physician contact were also reported.

The appraisal included accuracy and completeness of diagnosis, appropriate or inappropriate use of the laboratory and X rays, proper or improper treatment, and the medical outcome. In the entire study, Dr. Bay boldly set himself up as the sole judge, freely admitting his outrageous presumption in doing so.

A few samples of Bay’s many observations may suggest the flavor of the study. He found that 100 of the 447 patients had already had at least one hospital admission at the Clinics. Furthermore, 55 percent of patients had been referred from the clinic of admission to other clinics while they were under care.
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Of special interest is Bay's examination of failure of patients to return for scheduled appointments. Of the 447 patients, 34 percent had failed to return. This figure disturbed Bay, for it might be considered an index of effectiveness and satisfaction. Letters of inquiry were sent to these patients. To his great surprise, no patient suggested dissatisfaction because he or she had been involved with students and the teaching process. Three reasons were given for failure to return.

- The patient felt well and thought that return was unnecessary.
- The patient could not afford further visits. ("I believe I need further treatment, but I am financially destitute.")
- The third reason indicated a breakdown in the system; the patient had been given an inadequate explanation regarding a return visit. ("Last October I came to the University Clinic for a thorough physical examination which cost me $10. . . . Several tests were made, the results of which I was never informed. . . . This is very unbusinesslike. . . . To this day I do not know what you have found out about my physical welfare after wasting one-half day in your clinic. . . . Now, if it is not too late. . . ., forward a report on the results. . . . I will be glad to resume another visit but I'm no mind-reader. . . .")

Bay went on to make many quality-of-care assessments, pointing out good and bad features impartially as he saw them. Overall, however, he was pleased. He concluded the monograph with a modest covering statement that "if leaders of the profession in Chicago were to study the Clinic's activity . . . they would be satisfied with the quality of work at the University Clinics."

Dr. Bay's findings were not disregarded; a special faculty committee was appointed to examine the deficiencies he had brought to light. Because of severe financial constraints, however, two of Bay's criticisms, although recognized, could not be corrected at that time—the needs for psychiatric services and for reorganization of the outpatient administrative services under a medical officer who would be in direct charge of all ambulatory care.

In retrospect, after forty-five years, one cannot help but applaud this forgotten classic in patient care research, and the new system that was emerging at the Clinics; patient care was of good quality, despite seeming hazards in its delivery.

4. FINANCIAL CRISIS

Crisis in the Clinics

Financial trouble for the Clinics could be predicted from the start since, according to stated policy, patients were to be admitted solely on the
basis of their interest and usefulness in teaching and research without regard to their ability to pay. This policy was incompatible with the meager hospital endowment available to offset the costs of free care. When the Great Depression came soon after the Clinics had opened, financial crisis was inevitable.

By early 1932, the financial situation had become desperate. President Hutchins asked an outside consultant firm, James D. McKinney & Co., to examine the state of affairs and make recommendations for correction. The resulting report, dated August 17, 1932, summarized the overall financial picture of "The Clinics," including both inpatient and outpatient facilities. Chicago Lying-in Hospital and McElwee-Hicks (HDCC) were separate fiscal entities at that time and were not included in the figures.

<table>
<thead>
<tr>
<th></th>
<th>Total clinics expenditures</th>
<th>Total income, including endowment</th>
<th>Annual deficit</th>
</tr>
</thead>
<tbody>
<tr>
<td>1929-30</td>
<td>$591,500</td>
<td>$359,700</td>
<td>$231,800</td>
</tr>
<tr>
<td>1930-31</td>
<td>797,400</td>
<td>512,100</td>
<td>285,300</td>
</tr>
<tr>
<td>1931-32</td>
<td>765,800</td>
<td>486,800</td>
<td>279,000</td>
</tr>
</tbody>
</table>

Today these figures look very small. For those early years, however, the deficits were enormous compared with the total costs, amounting, in 1931-32, to about 36 percent of the total expenditures. If the same percentile were applied to hospital expense today, the deficit would be more than $20 million.

The report also provided data on patient services rendered, giving total numbers of hospital patient days and total outpatient visits as well as the costs incurred per hospital patient day and per outpatient visit.

<table>
<thead>
<tr>
<th>Hospital patient days</th>
<th>Outpatient visits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>Cost/day</td>
</tr>
<tr>
<td>1929-30</td>
<td>$8.47</td>
</tr>
<tr>
<td>1930-31</td>
<td>8.22</td>
</tr>
<tr>
<td>1931-32</td>
<td>8.26</td>
</tr>
</tbody>
</table>

These dollar amounts also seem small today, but the figures for patient days, and especially the number of outpatient visits, show that although the establishment was small and the faculty members few, the patient load was remarkably high. Patient days in 1932 were already about one-third and outpatient visits about one-half of the number in 1976.

As described by the consultants, the distribution of patients according to charge rate came close to the heart of the financial problem. A high proportion of patients paid no fees and others paid less than cost. The following data, for inpatients, are for the year 1931-32.
EARLY YEARS

<table>
<thead>
<tr>
<th>Type of patient</th>
<th>Percent of all patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Free. No charge made.</td>
<td>34</td>
</tr>
<tr>
<td>Part-pay. Charged $1-4 per day.</td>
<td>13</td>
</tr>
<tr>
<td>Pavilion. Charged $5 per day.</td>
<td>40</td>
</tr>
<tr>
<td>Semi-private. Charged $6-7 per day.</td>
<td>6</td>
</tr>
<tr>
<td>Private. Charged $8 or more per day.</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>100</td>
</tr>
</tbody>
</table>

Clearly, the consultants stated, the institution was financially nonviable unless drastic changes were made. Specific cost reductions were suggested, including sharp decreases in the number of hospital employees and in salary and wage scales. The policy on patient admissions came in for severe criticism. In the absence of adequate endowment to cover deficits, admission of nonpaying patients must be curtailed sharply. It was suggested that, since free patients were admitted to satisfy teaching and research needs, costs should properly be charged not to the hospital, but to the medical school. Perhaps each academic department should receive a specific budgeted amount for that purpose, and the hospital would then charge the costs for free or part-pay patients to departmental accounts.

Some of the consultants’ recommendations were already being implemented before the report was completed. The 1931-32 minutes of the Subcommittee on Clinics and Clinical Departments* mention various cost reductions already in progress at that time. The policy of unrestricted admission of free patients was being abandoned, although with great reluctance. The suggestion that academic budgets carry the costs of free patients was logical, but could not be adopted; medical school finances were in difficulties almost as great as those of the hospital.

Crisis in School Finance

Unfortunately, no comprehensive consultant’s report is available to provide a financial picture for the early days of the clinical departments. The following table has been developed from various sources for historical purposes.

As might be expected, total expenditures increased sharply during the first few years; the Departments of Medicine and Surgery were then building their faculties and programs. In 1931-32, however, and again in 1932-33, expenditures declined, despite the addition of new depart-

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*This subcommittee of the Divisional Committee was organized by Dean Frank R. Lillie in June, 1931, with the approval of the Divisional Committee. Whereas the Divisional Committee consisted of chairman of all departments, membership of the subcommittee consisted of chairmen of clinical departments and the director of clinics. Both committees were chaired by the dean.
ments and new programs. Clearly, severe trouble lay behind these figures.

A Summary Reconstruction of School (Clinical Departments) Finance, First Seven Years

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Income</th>
<th>Endowment</th>
<th>Professional Fees</th>
<th>Other Support*</th>
</tr>
</thead>
<tbody>
<tr>
<td>1926-27</td>
<td>$119,000</td>
<td>$43,000</td>
<td>$—</td>
<td>$76,000</td>
</tr>
<tr>
<td>1927-28</td>
<td>376,000</td>
<td>125,000</td>
<td>36,000</td>
<td>215,000</td>
</tr>
<tr>
<td>1928-29</td>
<td>518,000</td>
<td>267,000</td>
<td>88,000</td>
<td>163,000</td>
</tr>
<tr>
<td>1929-30</td>
<td>680,000</td>
<td>465,000</td>
<td>158,000</td>
<td>57,000</td>
</tr>
</tbody>
</table>

The Departments of Pediatrics and Obstetrics/Gynecology were then added:

<table>
<thead>
<tr>
<th>Year</th>
<th>Income</th>
<th>Endowment</th>
<th>Professional Fees</th>
<th>Other Support*</th>
</tr>
</thead>
<tbody>
<tr>
<td>1930-31</td>
<td>824,000</td>
<td>586,000</td>
<td>201,000</td>
<td>37,000</td>
</tr>
</tbody>
</table>

The orthopedic program now came in as a further addition:

<table>
<thead>
<tr>
<th>Year</th>
<th>Income</th>
<th>Endowment</th>
<th>Professional Fees</th>
<th>Other Support*</th>
</tr>
</thead>
<tbody>
<tr>
<td>1931-32</td>
<td>793,000</td>
<td>574,000</td>
<td>193,000</td>
<td>26,000</td>
</tr>
<tr>
<td>1932-33</td>
<td>745,000</td>
<td>515,000</td>
<td>159,000</td>
<td>71,000</td>
</tr>
</tbody>
</table>

*Includes gifts and use of special grant from General Education Board.

The minutes of the Subcommittee on Clinics and Clinical Departments repeatedly referred to the agonized discussions that went on in this period. Endowment principal for support of the departments had grown remarkably (from the General Education Board, as we have already seen), but the rate of income from this endowment had dropped with the onset of the Depression. The aggregate income from endowments and fees had reached a peak and then fallen. Outside help, including additional grants from the General Education Board, was not sufficient; there was only one thing to do: cut expenditures. Throughout 1931 to 1933, we read of restraints imposed on items of "expense and equipment," of reductions in personnel, and of reductions in research expenditures and faculty salaries.

The worst setback came in 1933, when the Board of Trustees was forced to announce sweeping reductions for the entire University. It appears that 1933-34 budgets for the clinical departments were further reduced from the 1932-33 levels: faculty salaries by 10 percent, "service" and "expense and equipment" by 25 percent, and research funds by 20 percent. In total, the clinical segment of the Division suffered a 14.4 percent reduction from the level of the prior year.

Financial problems seem to be characteristic of teaching hospitals and medical schools, but it is no exaggeration to say that the early days of medicine at Chicago were hard times indeed, and that the new Chicago
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system was sorely tried and put to the test. It was not surprising, under these circumstances, that the full-time system itself was called into question. A special committee was appointed by Dr. Houghton, and reluctantly chaired by Dr. Phemister, to reexamine the full-time system. The committee, however, apparently never produced a written report.

Within a few years the financial situation improved, and in 1935 Dr. Bachmeyer spoke to the Subcommittee on Clinics and Clinical Departments about plans for restoration of salaries to previous levels. The Chicago system had endured and survived its early financial troubles.

5. PROVIDENT HOSPITAL—AN AFFILIATION THAT FAILED

When the Chicago Lying-in Hospital moved to the University campus in 1930, its former property on Vincennes Avenue and 51st Street was taken over by another corporation, The Provident Hospital and Training Association. Already in 1928, the Association had planned to purchase the Vincennes property for development of a new hospital for Negro patients. The Board of the Association also hoped to arrange an affiliation with the University medical center which was now being built nearby on the University campus.

Officers of the Board first approached Dr. McLean in 1928. Would the University be interested in an affiliation and help to develop programs for training of Negro medical students at the new Provident Hospital? McLean was instantly in favor of the idea and, after consultation with the University Trustees, was authorized to continue discussions with Provident and to explore possible mechanisms for affiliation.

The Provident Board was already engaged in seeking donors of the $2 million that would be needed. Promises were obtained for almost half of that amount from two sources, the Julius Rosenwald Fund and the Rockefeller Foundation, both of which were especially interested in furthering educational programs for Negroes. The Board therefore concluded that a new hospital was financially feasible and proceeded with a general fund-raising campaign. Pledges were soon obtained to bring the total to more than the $2 million needed.

In consequence, an agreement was reached and signed in October, 1929, between the Provident Association and the University, in which the Association would: (1) purchase, renovate, and fully fund the new facility and, if necessary, lease land to the University for construction of a laboratory and educational building; (2) obtain, in addition, a hospital endowment of at least $400,000; (3) appoint to its staff only physicians nominated by the University, although a courtesy staff could also be appointed by the Association. The University, on its part, agreed to: (1) make the new hospital a center for teaching and pay all teaching costs; (2) give preference to Negro physicians in making nominations for staff
appointments; (3) pay the salaries of any full-time teaching physicians who might be appointed. Both parties agreed that affiliation would also depend upon the ability of Provident to fund the project with $400,000 of additional endowment by July, 1932. Meanwhile, the arrangement would remain tentative.

The affiliation was considered to be mutually advantageous. The benefit for Provident was obvious, and the University and its early clinical faculty also saw great value in it. On the one hand, the new hospital would offer additional clinical material for study; on the other, it would enable the new school to provide clinical training for Negro medical students and physicians. Perhaps Provident would become a great center, like no other in the country, for the promotion of medicine in the Negro population.

When the agreement was signed, Franklin McLean had already been thinking of the General Education Board as a source of funds to support the proposed program. On October 8, 1929, he suggested that President Hutchins consider asking for a $1 million endowment. Hutchins agreed to do so, and by December, 1929, the GEB had pledged that amount, with the proviso that Provident would satisfy its financial requirements, including $400,000 in hospital endowment. Meanwhile, the GEB would annually transfer to the University the interest on its pledge.

All now seemed to be in order, and at first the planning of the Provident Association proceeded satisfactorily. By June of 1931, the Association had secured title to the property and begun a renovation program which it expected to complete in six months. Unfortunately, there were many delays, especially due to financial problems, for the impact of the Depression was now being felt. The hospital did open, but not until September, 1933; it had somewhat more than 100 beds. Its financial condition remained precarious, however; and in 1932, McLean informed Dean Lillie that there was no possibility that Provident could fulfill the requirements laid down previously for satisfactory funding. Pledges were withheld because of the Depression, and the Rosenwald pledge of $500,000 was not being met; only annual interest, not principal, was being paid on it. McLean stated that the affiliation plan needed complete review, but that, for the present, it should continue on a tentative basis if the GEB agreed. The GEB concurred with McLean’s proposals.

The University attempted to carry out its part of the agreement when Provident Hospital opened in 1933. Nominations of staff members were made and accepted by the Board of the Association, and some time later, the University had as many as three full-time physicians at Provident. Clerkships for Negro medical students were initiated. Some University faculty members were appointed to the consulting staff, and a few spent much time at Provident. Dr. Bay was among them and served somewhat like an unofficial liaison officer.

In 1936, the Provident Board was completely reorganized, but its
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severe financial problems persisted. The GEB began to doubt that the program would ever succeed, and it complained that interest in the affiliation on the part of the University and the clinical faculty was flagging. Finally, in 1939, the GEB announced its wish to terminate the tentative arrangement, not abruptly, but with diminishing support over five years. The affiliation which had been attempted for several years now gradually faded away.

The July, 1944, minutes of the Subcommittee on Clinics and Clinical Departments contain a final note on the Provident affiliation. Dr. Phemister appears to have been particularly saddened by its failure. He made a motion that, if financial support could somehow be provided, the working arrangement with Provident should be revitalized, so that as many as ten Negro medical students per year could receive instruction. The motion was passed, but nothing came of it; the fifteen-year relationship had ended.

6. AN UNANTICIPATED WINDFALL—THE ZOLLER DENTAL PROGRAM

In 1933, the University unexpectedly received a large endowment bequest, initially estimated at $2 to $3 million, for a program of dental care for the poor. The bequest not only was a surprise, but also presented something of a problem, for the University had to decide whether engaging in a major service program in dentistry would fit into the prime purposes of teaching and research.

Walter G. Zoller, born in 1867, had moved as a young man from Lebanon, Pennsylvania, to Illinois. He entered the coal-mining business in central Illinois and, by 1895, was co-owner of the largest bituminous coal mine in America. Unmarried, Zoller retired in 1927 to live quietly in Hyde Park until his death in 1933.

His estate was given almost entirely to the University, with the direction that it be used for the establishment of dispensaries which would supply competent dental service to relieve and prevent the numerous ills suffered by the needy and poor due to dental neglect. The will made oblique mention of teaching, but not of research. It directed, however, that the University itself determine the best way of employing the funds in a “manner that the greatest number possible” would receive skillful treatment, relief, and prevention of their dental ills. Dr. Frank Billings and Dr. Wilbur T. Post had had several discussions with Zoller concerning the will. It was they, it seems, who had induced Zoller to add liberalizing expressions to the bequest, such as the mention of teaching and the direction that the University use the funds for the benefit of the greatest number of patients.

Among others, President Hutchins was asked to give his opinion on
the place of such a program within the University. It was agreed that the will could be interpreted as permitting the use of the funds in teaching and research. In his written opinion, Hutchins emphasized the words in the will which directed the University to use the funds in a “manner that the greatest number possible” might benefit. Hutchins in part built his position around these words, which he translated into the expression, “for the greatest good to the largest number.”

When it had been decided that the bequest could legitimately be used not only for direct patient service, but also for teaching and research, the practical matters of organization and space still needed attention. Initially the new unit was planned as a section within the Department of Surgery. Since Dr. Phemister could not provide the necessary space, however, he suggested that a new building might be constructed to house both the section of ophthalmology and the new Zoller dental unit. Nothing came of that suggestion, nor was Zoller organized as a part of Surgery. Instead, in 1936, Dr. J. Roy Blayney accepted the directorship of a separate administrative unit, called the Walter G. Zoller Memorial Dental Clinic. The endowment, the Zoller Memorial Fund, was to be restricted to this clinic and would provide its entire financial support.

The Zoller program soon included four service dispensaries: one in the Home for Destitute Children dispensary, which was still being maintained on the West Side; another at the Country Home for Convalescent Children in DuPage County; a third, on campus, in the Chicago Lying-in Hospital; the fourth, the central facility, occupied a small area in Billings Hospital. Since the Clinic had little space of its own, its investigative work soon spread into other departments, including Anthropology, Anatomy, and Pathology, and into areas outside the University.

A field experiment performed some years later by the Zoller Clinic is reviewed in some detail in the following pages. Its subject, the use of fluoride in prevention of tooth decay, is now generally known, but few realize the important role played by Zoller and Zoller funds. The experiment, under the direction of Dr. Blayney and Dr. Niden Hill, began in 1946 after more than a year of preparatory work. It was known that excessive amounts of fluoride in drinking water produced mottling of teeth, and there was some evidence suggesting that the presence of fluoride in lesser amounts reduced the incidence of decay. The Zoller Evanston project was the classic study which, along with two similar but less rigorous field trials, established the value of water fluoridation. The results were conclusive, and the addition of fluoride to municipal water supplies became almost universal in areas where a fluoride deficiency exists.
The communities of Evanston and Oak Park, where the municipal water supply contained no fluoride, were used in the Zoller experiment. Fluoride was to be added to the water of one of them, Evanston, in amounts of one part per million. A massive program for periodic examination of school children would be mounted for testing the effect of the added fluoride, while Oak Park children would serve as controls.

Informational meetings and conferences were held, and the Evanston City Council agreed to participate in the experiment and to provide the facilities required for water fluoridation. Dental examinations were to be carried out in the Evanston schools by units set up, staffed, and funded by Zoller. The examiners would determine, year by year, the incidence of decay in children six, seven, eight, twelve, thirteen, and fourteen years old at the time of these examinations.

The study was carried out over a period of sixteen years, beginning in 1946 with a control dental survey of Evanston children prior to water fluoridation which was started in 1947. Periodically thereafter, through

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**FIG. 16**—Bar graph of results, fluoridation study.
1961, the Evanston children were re-surveyed. Meanwhile, Oak Park children, in the same six age groups, were surveyed in 1947, and again ten years later, so that it could be determined whether the incidence of decay at Oak Park had remained unchanged.

All six age groups yielded similar results. For illustration, a summary of findings in the thirteen-year-olds is shown in Figure 11. Each bar represents a group of children examined when they were thirteen years old, in the year given on the bar. The number of children in each group ranged from 313 to 685. The length of the bars indicates the average number of decayed teeth per child (or of teeth which had been removed or filled because of decay). The shaded bars represent the children who had been exposed to fluoride after water treatment began in 1947. The period of exposure to fluoride (F) for each group is shown at the right of the bar.

After only two years of fluoride treatment, the incidence of caries in thirteen-year-old children had already decreased. Year by year the decline continued, with maximal reduction in the group of thirteen-year-olds examined in 1961, whose mothers had also been exposed to fluoride before the children were born. In this group, the incidence of decay was less than half that in the control groups. By 1957, the study in Oak Park had to be abandoned, for Oak Park, convinced by the Evanston results, now also began to add fluoride to its water supply.

The conclusion was clear; fluoridation indeed helps to inhibit this common human ailment and has become a part of public health practice, in keeping with the mandate for Zoller to provide "the greatest good to the largest number."

7. DESPITE PROBLEMS, BASIC PURPOSES PROSPER

In spite of the trials and financial struggles of the new institution, there was no longer any doubt, after the first decade, that it would survive and prosper. The patient care program was flourishing; its reputation attracted patients beyond its capacity. The regular beds were full, and extra beds in treatment rooms, elevator alcoves, and halls were a common sight. Members of the staff and housestaff vied nightly among themselves and with the admitting office in seeking vacancies that would permit the admission of patients on long waiting lists.

The effect of the new teaching environment was that more medical students than could be accommodated were choosing the South Side for their two years of clinical education. The research atmosphere in which the students and housestaff lived, learned, and worked was leaving its mark. Graduates were moving out to become accomplished clinicians who had a firm belief in the values of research and inquiry. It became the custom in some departments that resident appointments began with a year in a research laboratory under the tutelage of the chief of service,
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and for many this introduction to the spirit and excitement of research determined the entire direction of their lives.

In 1923, President Burton had envisioned a school that would prepare clinicians for practice, but would also do much more. It would "encourage its professors to carry on research... and look for veritable and valuable results of their work." Even during the first decade the faculty of the school was surely in pursuit of veritable results, and the excitement of discovery could be felt everywhere. The experience of a young faculty member, Dr. Charles Huggins, is a notable example.

Huggins, aged 26, was completing a residency in surgery at the University of Michigan when Dr. Phemister, early in 1927, invited him to join the new faculty being formed at Chicago. Phemister suggested that Huggins remain at Michigan for a few additional months in order to learn cystoscopy, for he was to take up urology as his speciality at Chicago. In October, when Huggins reported for work, Phemister immediately arranged for him to spend a year visiting various European clinics. Upon his return, Huggins was made an assistant professor and was given the charge to develop a section of urology in the Department of Surgery.

A busy urology service was soon established. At that time, as Hug- gins later admitted, his interest lay entirely in clinical practice and surgery; research held little attraction for him. Yet before long he had made a beginning, doubtless upon the urging and example of Phemis- ter, and almost immediately, he produced elegant experiments on blood formation in bone marrow. He had caught the "good infection," as he called it, the need and urge to investigate.

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Prostatic Cancer and the Story of Abe Johnson

In 1938, now a full professor, Huggins became interested in the prostate. Determined to study its secretory activity and the composition of its fluid, about which very little was known, he set about developing a suitable method for controlled collection of the fluid from dogs. A technique was soon devised, and new information began to pour in. Signif- icant scientific advance often depends on the discovery of some new instrument or method for making observations that had been impossi- ble previously; this was the case here. Huggins demonstrated, among many other findings, that the prostatic secretion could be suppressed by surgical removal of the testes, which eliminated the production of male sex hormone. The conclusion was obvious: the prostate needed the male hormone if it was to function and produce fluid. Without the hormone, the prostate became quies- cent. This fact in itself may not have been too surprising, but one can imagine Huggins fitting this together with other information, like the pieces of a jigsaw puzzle.
Two New York chemists had reported finding a curious substance, acid phosphatase, in the blood of patients with cancer of the prostate, but only when the cancer had already spread widely through the body. Other observations had shown that, in man, this substance was a normal product of the prostate, appearing in very high concentration in its secretion; its function, however, remained unknown.

Huggins speculated that the widespread cancer cells were still active and making prostatic fluid, but that their secretion spilled over into the blood because it could not go elsewhere. The acid phosphatase present in the secretion would therefore be detectable in the blood, thus explaining the findings of the New York chemists. Huggins then asked what would happen if these cancer cells could be inactivated. Suppose the testes were removed; would the cancerous prostate cells become quiescent, as happened with the prostates of the experimental dogs?

In October, 1939, Abe Johnson, a seventy-five-year-old gentleman, came as an emergency patient and was admitted to the hospital. He had been troubled for several years with increasing difficulty in urination, due, he thought, to an enlarged prostate. He had recently lost about forty pounds and now weighed 100. Examination showed that his prostate was indeed enlarged, but also appeared to be cancerous. Further study confirmed this diagnosis, and X rays showed spread of the cancer into the pelvic bones, as is common in this disease.

When the immediate urinary difficulty had been cared for, Dr. Huggins explained to Abe the nature of the diagnosis, but offered some hope; removal of the testes might bring relief. Such treatment had not been tried before, but research had suggested that it might help, and in any event, the operation was a relatively minor one.

Abe entered the experiment with the attitude that he had nothing to lose, and on October 16, 1937, the operation was performed. Within a short time, the first hint appeared that something dramatic was happening. The hard cancerous prostate began to soften and shrink. X rays of the bones, taken after Abe had been discharged from the hospital, showed that the bone lesions were healing. Eventually they vanished completely; the cancer had apparently been inactivated and had gradually wasted away.

Abe, the volunteer, lived for thirteen enjoyable, pain-free years after his operation. When he died, "full of years," at the age of 88, it was not from his cancer, but of a heart attack.

As soon as it became evident that a dramatic change was occurring in Abe's condition, the treatment was applied to other patients with cancer of the prostate. Not all responded as favorably, and some relapsed after an initial regression of the cancer. Huggins published the first report of these results in 1941, describing his experience with twenty-one patients. The remarkable beneficial effect of the treatment in most of the patients was evident to all who dealt with them, but Dr. Huggins was content to understate the case, as the strongest sentence of the article shows: "The improvement was greater than we had observed in any case in which far advanced cancer of the prostate was treated in any other way."
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This work, and the work that followed as Huggins built upon it, opened up a new era in the understanding of cancer and its treatment. Eventually he received the supreme accolade for his research, announced to him in the following telegram from Stockholm (including misspellings):

WA037 (31) HVCA 167
(BB026) VIA RCA URNX C SWSN STOCKHOLM 53 13 1320
PROFESSOR CHARLES B HUGGINS BEN MAY LABORATORY FOR CANCERDYSRCH
950E59TH ST CHICAGO 6063:/
THE CAROLINE INSTITUTE HAS DECIDED TO DIVIDE THE NOBEL PRIZE FOR PHYSIOLOGY OR MEDICINE IN 1966 EQUALLY BETWEEN YOURSELF FOR YOUR DISCOVERIES CONCERNING HORMONAL TREATMENT OF PROSTATIC CANCER AND PEYTON ROUS FOR HIS DISCOVERY OF TUMORINDUCING VIRUSES
STEN FRIEBG RECTOR

D66
(25)

8. TWO GIANTS

In the fifteen-year period from 1927 to the onset of World War II, the institution gathered strength and became firmly established. Many individuals were involved in that process—devoted hospital personnel, faculty clinicians, researchers, eager students, and supporters of all types—but two men, Dr. Franklin McLean and Dr. Dallas Phemister, towered above all others.

Dr. Franklin C. McLean

When the University medical center began, Dr. Franklin McLean was its chief designer and champion. Under him the Chicago idea and purposes came to life.

Fig. 17—Franklin C. McLean.
Franklin McLean was born in Maroa, Illinois, in 1888. Both his father and grandfather were physicians. Having received an S.B. degree from The University of Chicago in 1907, he became an assistant in Pharmacology at The University of Chicago and a student at Rush and, in 1910, was awarded the M.D. degree.

Between 1910 and 1914, he spent a year as intern at Cook County Hospital, then taught pharmacology at Oregon Medical School. During 1913, he went to Austria to study in Vienna and Graz. While serving as assistant resident at the hospital of the Rockefeller Institute, from 1914 to 1916, he also obtained the Ph.D. degree from The University of Chicago in 1915.

The years 1916 to 1923 were spent in China where he was sent by the Rockefeller Foundation to plan, build, and direct the Peking Union Medical College. This work was interrupted for two years of military service during World War I. In 1920, McLean resigned as hospital director and dean at the College to become chairman of its Department of Medicine.

Leaving China in 1923, he returned to the United States as professor of medicine at The University of Chicago where he was to head the medical program then being planned. In 1926, he was named vice-chairman, Graduate School of Medicine of the Ogden Graduate School of Science, a post that he held until 1929. In addition, he was chairman of the Department of Medicine from 1927 until he resigned on January 1, 1929, becoming, from 1929-31, special assistant to President Hutchins for medical affairs. At the same time, he became director of the University clinics, serving until his resignation on December 21, 1932. For four months in 1931, he also held the position of associate dean of the Division of the Biological Sciences.

Having resigned as professor of medicine on October 1, 1932, McLean became professor of pathological physiology in the Department of Physiology on the same date. In 1941, at the start of World War II, he was made director of the Toxicity Laboratory, Chemical Warfare Service, at the University; but soon thereafter he took a leave of absence for the duration of the war, returning to the professorship in pathological physiology on October 1, 1945. He became emeritus professor in 1953, but continued his research. On January 1, 1966, he terminated his appointment to become visiting professor at the University of Illinois School of Dentistry. He died at the age of 80 years in Billings Hospital.

*Excellent detailed biographical reviews include: Elisabeth Lanzl, Franklin McLean Institute, 1973; Marshall R. Urist, Perspectives in Biology and Medicine, Vol. 19, no. 1 (Chicago); and Walter L. Palmer, Perspectives in Biology and Medicine (in press). However, the data given in this outline sketch are almost entirely from documents in the files of the Division of the Biological Sciences.

Dr. McLean enters this historical account in 1923, the year when President Burton brought him to The University of Chicago as professor of
EARLY YEARS

medicine for the purposes of planning the medical buildings and organizing the medical school. It is easy to understand how he came to be chosen, for at that time President Burton was in contact with the General Education Board, the Rockefeller Institute, and the Flexners. McLean's association with the Rockefellers had begun in 1914, when he became an assistant resident in the Rockefeller Institute. He must have made an excellent impression, for two years later, when he was only twenty-eight years old, he was assigned the task of organizing the school in China that became known as the Peking Union Medical College.

McLean was in China and apparently knew nothing of the plan to enlist him for Chicago. He was due for a rotation in assignment in 1923 and traveled home with the expectation of a period of research at the Rockefeller Institute. Instead, he was met at the dock with a telegram inviting him to accept the post at The University of Chicago.

Thus began a period of nine years, 1923-32, when Dr. McLean served essentially as chief of the entire operation, moving the plan and program of the proposed new hospital and school from the drawing board to reality. It was he who pulled things together and made them work. It was he who induced the first faculty members to come to the Department of Medicine and to collaborate with him in this untried school. He also played a vital role in each of the three early expansions, Bobs Roberts, Chicago Lying-in, and McElwee-Hicks, and was constantly concerned with adequate endowments for these new additions to the school program. He directed each of the efforts of the University for funding from the General Education Board, and it was his "Ten Year Plan" of 1929 which resulted in a further "final" $2 million from that Board. Thus, from a financial viewpoint alone, McLean's contribution during the early period was immense.

Perhaps it is not so strange that McLean's own writings on this early history* do not mention his financial efforts, for he was not boastful. Unfortunately, however, his silence permitted two erroneous impressions to develop. The first is that McLean was somehow at fault during the years of early monetary crisis because he had been financially unrealistic. The second error is of a different kind: because McLean was silent, the large contributions of the General Education Board and the Rockefeller Foundation have not been generally appreciated. Instead, one hears that Rockefeller was "turned off" by Harper's affiliation with Rush, and the impression was created that the medical school later had to go it alone insofar as Rockefeller funding was concerned.

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* a) F. C. McLean and N. Gorgas, Medicine in the Division of the Biological Sciences, University of Chicago; Chicago, Illinois. (New York: The Rockefeller Foundation, 1931).
McLean's role as "defender of the faith" needs no further elaboration: his correspondence with Abraham Flexner is sufficient proof of his devotion to the aims and special purposes of the institution.

It is difficult to write about the events of the year 1932, when McLean suddenly relinquished his clinical positions and joined the Department of Physiology. The available records are limited; it is clear, however, that his sudden departure from clinical activity was associated with the appointment of Dr. George Dick as chairman of the Department of Medicine. In 1929, McLean had resigned as chairman of the department in order to become assistant to the president on medical affairs as well as director of the University Clinics. Dr. Russell Wilder then became chairman of Medicine, but resigned in 1931. When Dr. Dick was appointed to succeed Wilder he insisted, for unknown reasons, that Dr. McLean be removed from all clinical activity. Thereupon, in a telegram dated July 9, 1932, McLean tendered his resignation as professor of medicine "on or before the date on which [Dr. Dick's] appointment begins and from all activities—professional, research, or otherwise—directly or indirectly under the jurisdiction of that department." A general professorship in the Division was at first entertained as a substitute for the departmental appointment, but other arrangements supervened. McLean's resignation as professor of medicine was effective as of October 1, 1932, and on that date he became professor of pathological physiology in the Department of Physiology at the invitation of his old friend, Dr. A. J. Carlson. Resignation from the directorship of the University Clinics followed on December 31, 1932; his severance from clinical activity was now total.

Thus completely rebuffed, McLean might have said with Job: "All my purposes are broken off." He was forty-four years old and his purposes, his life lay shattered. A lesser man might have withdrawn permanently after such a rejection; not so McLean. Without complaint he picked up the pieces and built a second life, a new career in research.

In the course of this career in physiology, he became internationally recognized for outstanding work in many fields, including electrolyte and mineral metabolism, radiation biology, and especially the physiology of bone. Few have contributed more in a full lifetime than did McLean in the second half of his.

As time passed, McLean's early work came to be appreciated more and more. In 1973, five years after his death, a lasting memorial was established when the Argonne Cancer Research Hospital was renamed the Franklin McLean Memorial Research Institute.
Whereas McLean left the clinical arena in 1932, Dr. Dallas Phemister served from 1924 until he died in 1951. During this entire time he stood as an exemplar of the institution and its goals; in him the spirit of the place was personified.

Life of Dr. Dallas B. Phemister

Phemister was born in 1882 on a farm near Carbondale, Illinois, and graduated in 1900 from the Valparaiso Normal School. He entered medical school at The University of Chicago, becoming a member of the earliest class to receive basic science training on the campus prior to two years at Rush. Following graduation in 1904 and a one-year internship at Cook County Hospital, he carried on a private practice for four years in La Grange, Illinois. During this period he also began to teach at Rush, starting with an appointment as an assistant in the Department of Surgery in 1908.

In 1909, Phemister began two years of postgraduate study in London, Paris, Berlin, and especially in Vienna where his lifelong interest in bone diseases and bone pathology began. On his return, he centered his practice about Presbyterian Hospital and resumed his position as assistant in the Department of Surgery at Rush. Thereafter, he rose steadily in the Chicago surgical world and in the faculty at Rush where he soon attained the rank of professor. In 1918, he served as an officer in the Army Medical Corps with the Presbyterian Hospital unit in France.

His association with the new school on the University campus began in 1924, when he replaced Dr. Dean Lewis on President Burton’s committee on medical affairs. (Lewis, the original surgical member of the committee, had left Chicago to become chairman of Surgery at Johns Hopkins.) In 1925, Phemister received his first faculty appointment at the University, as professor of surgery.

Two years later, he was officially declared the chairman of the department, a position he held for twenty-one years until he became professor emeritus. Thereafter he continued to work full-time at the University until his death on December 28, 1951.
Two Giants

Phemister's spirit and example were described by Dr. Lowell T. Coggeshall when he spoke at the memorial service in Rockefeller Chapel two days after Phemister's death.

We are a privileged group because we consider ourselves to be friends of Dr. Dallas Phemister. If the words great and good can be descriptive of anyone, he was truly worthy of them. His contributions and achievements, the esteem and affection in which he is held, make difficult a fitting tribute to his character as a physician and a man. . . .

The medical center of the University reflects so much of his spirit, attitude, and ideals that his presence will be felt always in every patient's room, class, laboratory, and corridor; yet, in spite of any rationalization we may make, there is a shock in the realization that from this time forward we must go on without him. . . .

. . . To this new position in the University Clinics [professor and chairman of the Department of Surgery], Dr. Phemister devoted himself with unceasing energy, imagination, and enthusiasm. He planned the organization of the Department of Surgery, and recruited a staff that satisfied his exacting standards. He sought men whose primary training had been in research and investigation. . . .

With the completion of the Clinics in the autumn of 1927, Dr. Phemister began what is now pointed to everywhere as his outstanding career of twenty-four years of teaching and research at the University. His industry was always tremendous; he worked long hours, and his concern for his patients brought him to the hospitals every day of the year. He believed so firmly in the purpose of the institution that no effort was too great for its success. . . .

He worked constantly to establish and encourage the spirit of research in the department. As with his teaching, he did this by example and encouragement, continuing his own investigations. Those contributions that place him in medical history are, in addition to his studies in bone pathology and shock, his methods of diagnosing bone tumors and infection, his procedure for equalizing the growth of bones in children and adolescents where disease has altered the process, his surgical technique for the previously inoperable cancer of the esophagus, and his observations and descriptions of the development and types of gallstones.

. . . He was as much concerned with the young medical student as he was with residents who worked with him for five-year periods of postgraduate training. He was a demanding and a strict teacher, but he gave much more than he ever asked, sparing no effort or detail. . . . Of his own work, clinical or investigative, he was even more scrupulously critical, pointing out with unwavering honesty and objectivity his own mistakes. This forthrightness set for the generations of his students and associates an example that stimulated them to strive for his kind of exactness. To be satisfied with nothing less than perfection is a mark of a Phemister-trained surgeon. . . .

The achievements of Dallas Phemister brought him every recognition that the medical world confers. Thus, among his many other positions of distinction, he was President of the American College of Surgeons, President of the American Surgical Association, President of the Society of Clinical Surgery,
and last September the Vice-President of the Paris Congress of the International Surgical Society.* Nine foreign countries have made him a fellow or conferred their medals upon him. He was honored internationally not only because he was a great surgeon and investigator, but also because he represented the ideal physician.

Word of Phemister's death spread quickly, and letters of regret poured in from his many friends throughout the world. One of his former patients wrote:

I... never met a man so sincere, honest, and charitable. Many years ago as a boy of 15 I was brought into the hospital with a bad fracture of the hip. The fact that I had no money to pay meant nothing to Dr. Phemister. He gave me the same care as if I were a member of the wealthiest family in Chicago. And every year since he has sent for me to come so he could examine the leg. Five years ago, when he thought he would have to retire, he operated on the leg again to correct a deformity that had developed.

A year ago I entered the hospital to have my appendix removed. There he stood in his white gown in the operating room alongside the surgeon who operated, to see that I got the proper care in this insignificant operation—and I am only a janitor.

God grant that more men follow in his footsteps.

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*When Phemister retired as president of the American College of Surgeons in 1949, the subject of his retirement address was, "An Evaluation of Full-Time and Group-Practice for the Clinical Faculty of a Medical School." In it he reviewed the Chicago system and called it "the most promising way" for medical education in America. The address was published in the Bulletin, American College of Surgeons, vol. 35, pp. 17-21, 1950.
IV
Years of the Second World War

The upheaval in the time of war involved all; individuals and institutions, including universities, became a part of the national effort. President Hutchins spoke as follows at the 1942 Trustees' dinner for the faculty:

When war has been declared, long-run activities must be sacrificed to the short-run activity of winning the war. Education and research, as we have understood them at the University of Chicago, are long-run activities. We have stood for liberal education and pure research. What the country must have now is vocational training and applied research. What the country must have we must try to supply . . .

Total war may mean total extinction, for the time being, at least, of the characteristic functions of the University of Chicago. I say this as flatly and candidly as I can, not because I expect it to happen, but because it seems to me essential that we understand that the setting of our work has completely changed. We are now an instrumentality of total war. . . .

The University did become, in a revolutionary way, such an "instrumentality." The sculpture "Nuclear Energy," by Henry Moore, erected where squash courts once stood, still bears witness to this transformation.

The medical school, also, was caught up in the war; every aspect of its activities was affected. Members of the faculty and housestaff left to serve in the armed forces. Accelerated programs hurried the production of physicians. Barracks and other makeshift structures sprang up everywhere. The group of buildings for war research which were known as the Toxicity Laboratories, once the scene of intense research on the biological effects of war gases and other toxic agents, still stands behind the modern Cummings Life Sciences Building.

The period of World War II, disruptive as it was, yet led to research which had some immensely significant side effects that benefited medicine. Many productive research programs arose directly or indirectly from war research carried on at the University. For example, the whole field of nuclear medicine, and the University's pre-eminence in this field, date back to that time. Other significant achievements in-
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cluded Dr. Leon Jacobson's work on the use of nitrogen mustard (mustard gas) in the treatment of lymphomas and leukemia. Another example, perhaps not so widely recognized, is reviewed below.

Malaria Research Leads to a New Treatment—and More*

Malaria, an age-old tropical killer, became a serious problem in World War II as soon as United States forces entered the western Pacific. Current measures to prevent or cure the disease in the field proved ineffective or unsafe. Dr. Lowell Coggeshall, who was then in the Navy, had tested a new drug, chloroquine, on Guadalcanal veterans, but although it was superior as a suppressant, it was thought to be too toxic for general use.

Early in the war, Dr. Alf Alving, Professor of Medicine at the University, was drafted to do research on malaria, with consequences which were quite unforeseen at the time. This work began when he was asked to attend an emergency meeting in Washington of Armed Forces experts who were to consider whether a safe, practical dosage of chloroquine could be found. Alving was asked to attend not because he was an expert on malaria, but because he was familiar with certain laboratory techniques that might be applied to the determination of levels of the drug in the blood and urine. At the meeting, Alving suggested that prison inmates might volunteer for useful toxicity studies.

Within a few days after returning to Chicago, he had obtained cooperation at Stateville Prison; and 400 prisoner volunteers were eager to help in the war effort. A series of studies on chloroquine was now begun and was successful. A safe and effective dosage schedule was soon found, and chloroquine became the standard treatment, now being used worldwide, to suppress acute attacks of malaria.

Chloroquine, however, is suppressive, not curative, and the disease often recurs. By 1944, Alving and his group had already begun the search for a safe and simple treatment that would cure malaria. The search developed into an enormous study that focused on a whole family of chemical agents with antimalarial properties. In all, fifty-four such chemicals were tested, and 4,500 convicts participated as volunteers in the project. None died. The thirty-seventh drug on the list, called primaquine, gave the best results in the prison experiments, and by 1950, tests in Nicaragua had also demonstrated its effectiveness in the field.

In 1951, during the war in Korea, another emergency meeting on malaria was held in Washington.

*No comprehensive scientific review has been published thus far of the long series of events summarized briefly here. The principal source of information was a rough draft of a document written by Dr. Alving shortly before he died. In it he informally gave his recollections, many years later, of the events. Conversations with others who were involved suggest that Alving's recollections may have been faulty in certain details. If any such errors have crept into the present summary, this reviewer apologizes.
Alving was able to report the new results with primaquine, and the decision was made immediately to test it in combination with chloroquine on returning military personnel. The combination proved to be spectacularly effective and it, too, became standard throughout the world.

Thus, Alving's wartime study of the toxicity of a drug suppressing malaria ended some years later with the discovery of a curative agent. This was a great achievement, for malaria ranks among the most debilitating and killing diseases of mankind. Total conquest has not yet been achieved, however, since new forms of the disease, resistant even to these new drugs, are now appearing.

The successes in the treatment of malaria would have been important enough, but this research brought a second benefit. During the primaquine study, certain prisoners had developed a condition in which a portion of their red blood cells was destroyed by the drug. This complication was observed only in Negro subjects, and in them the incidence was about 10 percent.

Attempts to understand this curious blood-destroying phenomenon led to a series of brilliant hypotheses and investigations. Perhaps the destruction was due to a genetic defect, since it occurred only in certain Negroes. What was the nature of this genetic defect? Would it be possible to discover the underlying biochemical mechanism?

Many individuals were involved in this new phase of the research, but the final critical steps were taken by Dr. Paul Carson. These studies, which began in a makeshift biochemistry laboratory set up at Stateville and which were supplemented by special studies at the University, eventually led to the unraveling of the basic mechanism. A detailed description of the work is not attempted here, but in the end it was proved that the defect was in the red blood cells of affected individuals, who have a deficiency in a particular enzyme, glucose-6-phosphate dehydrogenase, commonly referred to as G-6-PD.

For the first time, a genetic fault had been given a biochemical interpretation. The finding not only helped to explain certain blood diseases, but also stimulated research in human and population genetics which subsequently progressed with rapid strides.

The research had still another result. The program went on for more than twenty years, and during that time some twenty-two physician-investigators selected by Alving were involved. Some were already advanced investigators; for others, this program became their introduction to research. Perhaps Alving's greatest achievement was to provide an opportunity for these young men to develop. At present, twelve hold faculty positions in medical schools throughout the country, including three chairmanships of departments of medicine.
Part Two
Introduction—The New Era

The history of the period extending through World War II was divided into four more or less discrete chronological units: the beginnings, the period of immediate expansion, the years preceding World War II, and finally the war period itself.

The years that follow, however, provide no convenient points to mark them off into distinct chronological segments. After World War II, an unbroken era began that has moved forward continuously up to the present time. In consequence, the account of this period of approximately thirty years is not divided into chronological segments; instead, each of the four chapters describing it is oriented topically, addressing a particular subject over the entire period. The first chapter deals with renewed physical expansion; the next, with people, population growth, and related matters. The third, "More and More Money," is again about growth, this time in dollars. Finally, an attempt is made to say something about the work of the institution and its achievements during the last thirty years. (In subsequent pages, for convenience, this period of the institution's history is referred to as the "new era.")

The period before the 1940s might be called the heroic age in the history of the medical center—the time when principles and policies were established. In the new era, the feeling of heroism had passed, and a more prosaic phase had begun. Great men had already created the spirit of the institution; it was the task of those who followed to preserve that spirit.

The modern period nevertheless has its own fascination. Its basic characteristics seem to be expansion and increase in response to new forces in a rapidly changing world. A discussion of these forces is better suited for a general history of modern medicine; yet they must be kept in mind as the history of the institution continues, for they are the pressures which have driven it continuously on this course of expansion.

- New medical knowledge and technology grew explosively. The new knowledge was soon translated into new forms of treatment, increasing specialization, and more and more sophisticated machinery for patient care and research, each, in turn, contributing to further expansion of knowledge. The pace became bewildering. Hospitals and their
equipment grew increasingly complex; research projects multiplied; and the new knowledge led to a continuous increase in that which must be taught. Along with these developments, expenses escalated at an outrageous pace.

- A great outpouring of federal dollars for medical research began, with effects both good and bad. The funds helped to continue the explosion of knowledge and to trigger new investigations, but the independence and integrity of private universities and medical schools became jeopardized as government agencies assumed ever greater power.

- For patients, it was a period of rising expectations. Everyone became entitled to medical care, for federal support with Medicare and Medicaid lightened the financial burden. The effects were again both good and bad; the needy received care, but hospitals began to take on the complexion of public utilities, while administrative offices became jungles of mounting paperwork.
### V

### The Physical Plant Expands

The list below of all the buildings in the medical complex as it exists today provides a measure of the growth of the institution. The buildings are listed chronologically according to the years in which they were completed. (The numbers of patient beds are included because they reflect changes in the use of hospital space.)

<table>
<thead>
<tr>
<th>Year of completion</th>
<th>Number of patient beds</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Original</td>
</tr>
<tr>
<td>1927 Billings Hospital</td>
<td>215</td>
</tr>
<tr>
<td>1930 Bobs Roberts Hospital</td>
<td>80</td>
</tr>
<tr>
<td>1930 Chicago Lying-in Hospital</td>
<td>140</td>
</tr>
<tr>
<td>1931 McElwee-Hicks (HDCC) Hospital</td>
<td>100</td>
</tr>
<tr>
<td>1950 Goldblatt Cancer Research Hospital</td>
<td>60</td>
</tr>
<tr>
<td>1953 Argonne Cancer Research Hospital</td>
<td>50</td>
</tr>
<tr>
<td>1953 Gilman Smith/West Wing Hospital</td>
<td>225</td>
</tr>
<tr>
<td>1961 Goldblatt Pavilion</td>
<td>0</td>
</tr>
<tr>
<td>1961 Chronic Disease Hospital</td>
<td>104</td>
</tr>
<tr>
<td>1964 Armour Clinical Research Laboratory</td>
<td>0</td>
</tr>
<tr>
<td>1966 Wyler Children's Hospital</td>
<td>100</td>
</tr>
<tr>
<td>1969 A. J. Carlson Animal Facility</td>
<td>0</td>
</tr>
<tr>
<td>1971 Ben May Laboratory</td>
<td>0</td>
</tr>
<tr>
<td>1977 Surgery-Brain Research Pavilion (under construction)</td>
<td>—</td>
</tr>
</tbody>
</table>

| Total Beds (excluding SBR, not yet completed) | 1,074 | 649 |

The completion dates for these buildings fall into two groups. Construction of the first group, with four buildings, ended in 1931; thereaf-
THE PHYSICAL PLANT EXPANDS

ter, no new structures appeared for nineteen years. Following World War II, expansion resumed, and ten new buildings were added. Even the mere list of buildings illustrates that this period was one of continuous enlargement of the medical complex. Two other major structures, the Cummings Life Sciences and Kovler Virology buildings, are not shown on the list, for they belong to the basic science segment of the Division. If they had been included, the gap between 1971 and 1977 would disappear.

1. CONTINUOUS INTERNAL CHANGE IN EXISTING SPACE

The list of new buildings includes a tabulation of patient beds. For all of the buildings as they were originally constructed, the combined number of beds was almost 1,100. The current number is far less, the latest count (February, 1977) giving only 649; more than 400 beds have somehow disappeared in spite of the expansion of space.

The explanation is simple. The continuous rapid change in the science and practice of medicine in recent times translates into equally rapid obsolescence of space and the need for continuous reorganization, remodeling, and renovation. Old, deteriorated areas were converted to new use, and in the process, beds were often eliminated. That their number is so large, amounting to 40 percent, is merely a sign of the number and magnitude of these alterations.

The program of renovation, which began in 1949, was spearheaded

![Food line in the original cafeteria, in use until 1949 and located in the basement of Billings Hospital at the south end of the Surgery wing. The main dining room was beyond the doorway at the far end of the photograph.](image-url)

68
by Dean Lowell T. Coggeshall and Ray Brown, who was then Superintendent of the Hospitals and Clinics. Their first project was the development of the present cafeteria facilities by filling in of the open court in the Billings quadrangle at the basement level. Since this was the initial project, it is illustrated by photographs of the food line in the earlier cafeteria and, for comparison, in the present cafeteria, which was completed in 1949.

![Image of cafeteria](image)

**Fig. 20**—One of two food lines in the present main cafeteria, which opened in 1949.

After the cafeteria project, the renovation program began in earnest, with changes in the design of many of the inpatient nursing units, followed by redesign of the service laboratories. The process has continued steadily; projects both large and small have been pushed forward, sometimes at great inconvenience to patients and staff, as the institution attempted to catch up with advances in medical science and practice. At one time the change might be to make room for a cardiac surgery operating suite, at another for an expanded record room, or again for upgrading of the outpatient clinics one by one, or perhaps for more radiology facilities or a new kind of research laboratory.

2. **The Medical Complex More Than Doubles Its Size**

Dr. Coggeshall, initiator of the postwar expansion program, became dean of the Division of the Biological Sciences in 1947. He was also the principal agent in carrying the program forward, first as dean for a pe-
THE PHYSICAL PLANT EXPANDS

period of more than twelve years, and then for six years as vice-president of the University until his retirement in 1966. *

The plan of the medical complex as it exists today is given in Figure 21 to show the location of the new buildings discussed below. Buildings completed before 1931 are unshaded; the new structures, shown shaded, are numbered in the order of their construction. The same numbers are used in the text.

**Fig. 21**—Plot plan of medical buildings, as guide to discussion of new structures (numbered 1-10). The Ben May Laboratory (9) overlies a portion of the Chronic Disease Hospital (5), and a portion of the Surgery-Brain Research building (10) overlies the eastern part of the A. J. Carlson Animal Facility (8).

*Nathan Goldblatt Memorial Hospital for Cancer Research (1)*

After the death from cancer of Nathan Goldblatt in 1942, the Goldblatt family decided to establish a hospital as a memorial. The hospital was to emphasize cancer and cancer research and was to be associated with one of the large medical institutions in Chicago. Northwestern University was apparently approached first, but the family's attention soon focused upon The University of Chicago, where a vigorous cancer research effort already existed and where land for a hospital would be provided by the University. Agreement was reached on the form which

*The file contains an informal account written by Dr. Coggeshall on the origin of most of these new buildings. The document has been an invaluable resource in the reconstruction of the events summarized here.*
the proposed new building would take, and in 1946 the family pledged $1 million for its construction.

This was the beginning of a long association between the medical school and Maurice Goldblatt, the brother of Nathan. A man of extraordinary vision and drive, Maurice Goldblatt has been responsible in subsequent years for raising very large sums from various sources for medical research and facilities at the University. According to Dr. Coggeshall, Goldblatt has "promoted the cause of cancer research and treatment with almost religious fervor." In doing so he became a nationally known figure—in Congress, in health organizations, and wherever cancer research is discussed.

The seven stories of the Goldblatt building are attached to and extend eastward from the main corridor of Billings Hospital. Two of its floors contained sixty beds; other floors permitted contiguous expansion of facilities from Billings, with more outpatient clinics and with additions to the operating rooms and the Radiology Department. Two levels, the basement and the seventh floor, became laboratories which housed the research unit of Dr. Huggins and which were soon to be named the Ben May Laboratory for Cancer Research.

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Final Cost and Sources of Funds

<table>
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<tr>
<th>Source</th>
<th>Amount</th>
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</thead>
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<tr>
<td>Pledge of Goldblatt family</td>
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<tr>
<td>U.S. Public Health Service grant (Huggins laboratories)</td>
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<tr>
<td>University of Chicago Cancer Foundation gifts</td>
<td>320,000</td>
</tr>
<tr>
<td>Worcester gift</td>
<td>200,000</td>
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<tr>
<td>Other sources</td>
<td>45,000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$2,255,000</strong></td>
</tr>
</tbody>
</table>

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The Worcester Gift

When construction bids for the Goldblatt Hospital were received, the available funds turned out to be inadequate to cover the cost. In looking for additional funds, Dr. Coggeshall and Vice-President Emeritus Woodward decided to visit Mr. and Mrs. Charles Worcester, who had been previous benefactors of the Division of the Biological Sciences.

The visitors were graciously received, and after preliminary conversation Coggeshall raised the subject of a possible gift. Mr. Worcester replied that he had included the University in his estate plan and did not wish to make a further contribution at this time. He suggested that his wife might be interested in giving from her personal funds; there would be a problem in getting her to understand, however, for she was almost totally deaf. The old gentleman then withdrew to a far corner of the room while Coggeshall launched
THE PHYSICAL PLANT EXPANDS

into an appeal to Mrs. Worcester, undoubtedly with some difficulty. Mrs. Worcester at last responded by pledging $100,000. At that point Mr. Worcester could contain himself no longer. Returning from his corner, he said: "If it takes $100,000 to get back into the conversation, I would like to be included." Thereupon the Worcester gift became $200,000. The bids could be accepted, and construction began.

Argonne Cancer Research Hospital (2) (renamed The Franklin McLean Memorial Research Institute in 1973)

The idea for the Argonne Cancer Research Hospital occurred to Dr. Leon O. Jacobson just after he had completed his wartime association with the Manhattan Project. His experience with the biomedical effects of atomic energy led him to believe that a special facility, including patient beds, would be desirable for research on the medical uses of atomic radiation. In 1946, Jacobson first mentioned his idea to Dr. Coggeshall, who was then chairman of the Department of Medicine. A year later, when Coggeshall became dean, further explorations began within and outside the University. Discussions about funding were carried on with officials of the National Cancer Institute, the National Institutes of Health, and the U.S. Public Health Service. All took a favorable view of the idea of a "cancer isotope hospital," but were unable to fund such a project. In the end, the entire program came under the Atomic Energy Commission (AEC), following an appropriation by Congress, in 1947, of several million dollars for cancer research utilizing atomic energy, with funding to be under the direction of the AEC.

At first, the location of the new facility was uncertain. Should it be on the campus or at the Argonne National Laboratory in DuPage County? The Director of the Argonne Laboratory suggested that the hospital should be located on the University campus, although the word "Argonne" would remain in the name. The plan that emerged after a visit by a governmental advisory committee in February, 1948, was for a new building attached to the University medical complex. Ownership of the facility would remain with the AEC, which would also be responsible for the operation and annual budget. On June 28, the University received a letter from the AEC approving the plan, and University authorities acted upon it the same day. The arrangement thus became operative within the time limit imposed by Congress under which the AEC was required to obligate its funds by June 30, 1948.

More detailed planning could now proceed. The building was to extend along Ellis Avenue and connect with the Goldblatt Hospital which was nearing completion. Two of its seven floors were designed to accommodate fifty research beds. (Later, these beds were no longer
needed for research, and the floors are now leased to the University Hospitals and Clinics.) The remaining floors and the basement were designated for research, and a subbasement was to provide space for radiation therapy. Ground was broken in June, 1950, and the new hospital went into full operation in 1953 with Dr. Jacobson as its director.

The building itself cost $2.9 million, and an additional $1 million was spent on equipment, the entire amount being provided by the AEC. The operating budget, also from the AEC, was $1.1 million for the first year.

Comment

For the first time, the medical school had a unit on the campus that was owned and completely supported by a federal agency. Faculty members in various departments became faculty members of the Argonne Cancer Research Hospital in addition, with portions of their salaries and research support derived from the AEC under a contract between the University and the AEC for the operation of the hospital. More recently, the Energy Research and Development Administration has taken over from the AEC due to federal reorganization, and it, in turn, is about to
come under the new federal Department of Energy; but the basic arrangement has persisted for twenty-four years.

*Charles Gilman Smith/West Wing Hospital (3)*

Of all the new buildings, the West Wing has the most complex history. It began in 1926, when Dr. McLean learned that a bequest of about $280,000 had become available for a contagious-disease unit, to be named the Charles Gilman Smith Hospital. Both Smith and his wife had been patients of Dr. Billings; both had died long before, but Mrs. Smith had arranged that the bequest to the University would become effective on the death of her daughter. Charles Gilman Smith had been a distinguished physician in Chicago who, during the Civil War, had served as one of six medical officers assigned to Camp Douglas, a prisoner-of-war camp.

Architects were engaged, and with them McLean developed a plan for a two-story isolation hospital north of Bobs Roberts (see Figure 15). The funds appeared to be sufficient, and construction was about to proceed. A contagious-disease unit was urgently needed; diphtheria was especially mentioned at the time. However, Dr. George Dick, soon to be chairman of the Department of Medicine, considered the plan inadequate and wanted the building to be much larger. Plans for a larger building were prepared, but the available funding was insufficient and the project was not carried out.

Two other detailed designs for a Gilman Smith Hospital in the same general location followed. Again the plans failed, however, for the same reason—insufficient funds.

A few years after the last attempt, a new plan was developed under Dr. Coggeshall and Mr. Brown. More beds as well as additional hospital support space were urgently needed, especially for Medical Records and the receiving room. Federal funding was solicited and obtained, with a Hill-Burton grant to the hospital and a U.S. Public Health Service grant for a new cardiac care center. A special fund-raising campaign was undertaken, and other resources available internally were added to the Gilman Smith fund, which by now approached $600,000.

The result was a new seven-story unit which opened in 1953 with 224 beds, the largest single addition of patient beds since the original Billings Hospital had opened. The outpatient clinics on the second floor and various supporting facilities in the basement and subbasement were also expanded. The north-south portion of this L-shaped building is known officially as the Charles Gilman Smith Hospital; the east-west segment is the so-called West Wing.

The first floor of Gilman Smith/West Wing also had an emergency room suite, the first in the hospital, and it came just in time. Soon emergency rooms everywhere became the front-line starting point for
medical care of large parts of city populations. The volume of emergency room work increased at a remarkable pace. That at The University of Chicago was no exception, as the graph below shows.

**EMERGENCY ROOM VISITS ANNUALLY**
*FROM 1968 VISITS TO WYLER EMERG. RM. ARE INCLUDED*

![Graph showing the increase in emergency room visits over time.](image)

**FIG 23—Graph of explosive growth in emergency room visits. In 1968, a second emergency room was opened for children in Wyler Hospital, and from that point on, the figures for both are combined in the graph.**

**Final Cost and Sources of Funds**

<table>
<thead>
<tr>
<th>Source</th>
<th>Amount</th>
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<tbody>
<tr>
<td>Charles Gilman Smith fund</td>
<td>$578,000</td>
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<tr>
<td>USPHS cardiac center grant</td>
<td>$485,000</td>
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<tr>
<td>Hill-Burton grant</td>
<td>$690,000</td>
</tr>
<tr>
<td>Hospital endowment income</td>
<td></td>
</tr>
<tr>
<td> Country Home</td>
<td>$586,000</td>
</tr>
<tr>
<td> Hicks endowment</td>
<td>$502,000</td>
</tr>
<tr>
<td> Durand trust</td>
<td>$145,000</td>
</tr>
<tr>
<td>Campaign gifts</td>
<td>$741,000</td>
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<tr>
<td>Hospitals and Clinics alterations fund</td>
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<tr>
<td>Divisional resources</td>
<td>$84,000</td>
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<td><strong>Total</strong></td>
<td><strong>$4,225,000</strong></td>
</tr>
</tbody>
</table>

**Comment**

Previously, a room on the fourth floor of Billings (A-4) had served as the emergency room of the hospital. In earlier years, emergency visits had been so uncommon that medical students sometimes worried about
THE PHYSICAL PLANT EXPANDS

having inadequate experience, for example, in the setting of fractures. These were also the years before electronic paging devices came into use, and cryptic messages of various kinds were sent over the speaker system. When the problem of insufficient exposure to fractures was brought to the attention of the telepage operators, they readily agreed to announce such cases over the speaker system by calling for "Dr. Bone-apart." The students could then quickly assemble on A-4 to observe and perhaps to help. The new call worked, but only for a time; the practice was considered too frivolous and had to be abandoned, even though it remained the custom for a long time for telepage to call out, "Dr. Mort-in," to announce to students and others that autopsies were about to begin.

The Goldblatt Pavilion (4)

When the Goldblatt Pavilion was completed in 1961, the Chicago Lying-in Hospital was at last connected to the main medical complex; Drexel Avenue no longer separated the two. At the request of the University, the city of Chicago had vacated one block of Drexel and given the property to the University, and the linking pavilion was built on it. This building was not, however, intended to be merely a bridge; it was to become the headquarters for the entire outpatient operation. The first floor was planned as the central outpatient admitting office, while the second would provide space for laboratory and X-ray tests before patients went to their individual clinics. The basement of the new building provided much-needed general support space. These functions have remained essentially unchanged, except that an inpatient admitting office and a Medicare desk have been incorporated in the first-floor lobby and waiting room.

Cost and Source of Funds

The cost of the building was approximately $850,000, provided almost entirely by Goldblatt sources: the Goldblatt Brothers Employee Research Foundation, the Nathan Goldblatt Society, and other gifts raised specifically for the building by Maurice Goldblatt. A building such as this plays a very important role, but it is a workhorse without glamour; yet these great friends of the medical center funded it almost completely.

The Chronic Disease Hospital (5) (now called Clarissa Peck Pavilion)

The Chicago Home for Incurables was incorporated in 1886, as provided for by the will of Mrs. Clarissa C. Peck. Located on Ellis Avenue just a few blocks north of the medical complex, it supported and cared for more than 200 poor patients with incurable diseases.

In 1947 the University, with faculty support, attempted to negotiate a limited affiliation with the Home, which could provide patients for
teaching and research on chronic debilitating diseases. The first attempt at affiliation was unsuccessful, and two subsequent attempts failed as well. In 1957, however, the Board of the Home asked that the subject be reopened, and in July, 1958, an affiliation agreement was signed. In accordance with its terms, a beautiful structure was built by the Home on land provided by the University under a long-term lease. The hospital had 104 beds on its three floors and a group of research laboratories in its basement. Its dedication and opening took place in July, 1961.

The agreement provided that, although the Home owned the hospital, its operation would become the responsibility of the University. Whereas the old property of the Home was relinquished to the University, the assets in stocks and bonds remained under the control of the Board of the Home. All of its income, however, has been turned over to the University.

**Cost and Sources of Funding**

<table>
<thead>
<tr>
<th>Source</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Home for Incubates</td>
<td>$2,410,000</td>
</tr>
<tr>
<td>Hill-Burton grant to the Home</td>
<td>189,000</td>
</tr>
<tr>
<td>Two USPHS grants to the University</td>
<td>160,000</td>
</tr>
<tr>
<td>Hospitals and Clinics alteration fund</td>
<td>187,000</td>
</tr>
<tr>
<td>Other sources</td>
<td>16,000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$2,962,000</strong></td>
</tr>
</tbody>
</table>

*Fig. 24—The Chronic Disease Hospital, viewed from the emergency room drive.*
teaching and research on chronic debilitating diseases. The first attempt at affiliation was unsuccessful, and two subsequent attempts failed as well. In 1957, however, the Board of the Home asked that the subject be reopened, and in July, 1958, an affiliation agreement was signed. In accordance with its terms, a beautiful structure was built by the Home on land provided by the University under a long-term lease. The hospital had 104 beds on its three floors and a group of research laboratories in its basement. Its dedication and opening took place in July, 1961.

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<tr>
<td><strong>Total</strong></td>
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</tbody>
</table>

FIG. 24—The Chronic Disease Hospital, viewed from the emergency room drive.
THE PHYSICAL PLANT EXPANSIONS

Comment

A large part of the medical center was created as a result of various affiliations. Having occurred one at a time, they tend to be forgotten; and yet the successive and successful affiliations constitute a remarkable portion of the history of the medical institution. The first was the affiliation with Rush; then, in rapid succession, came those with the Home for Destitute Crippled Children, the Country Home for Convalescent Children, and the Chicago Lying-in Hospital. The Argonne Cancer Research Hospital is also in a sense the result of an affiliation, in this case with the AEC in Washington. The Home for Incurables is another example, and others were still to follow. In terms of beds alone, these affiliations account for about 40 percent of the total facilities. Some affiliations have moved on to merger; others have not. The hospital is thus a complex not only of buildings, but also of administrative units. Nevertheless the parts function smoothly together—so smoothly that one gets the illusion that the complex is a single entity.

The history of these affiliations is a reminder of the debt owed to many individuals and groups. There are benefactors of the distant past, many with unfamiliar names, as here that of Clarissa Peck. Others are still working quietly on boards of trustees for the benefit of the whole institution.

Philip D. Armour Clinical Research Laboratory (6)

Dr. Coggeshall, in his informal history, wrote of the Armour building: "Relatively speaking, the Department of Surgery had been short of research space, although under Dr. Dallas B. Phemister's chairmanship, there was unusually vigorous and productive research in spite of this handicap." A possibility for improvement arose as early as 1947 when a grateful patient of Phemister, Joseph Baumgarten of Hillsdale, Michigan, indicated his intention to contribute a substantial sum toward a surgery research wing. Plans were formulated for such a building, to extend eastward from the Pathology wing of Billings. In 1951, however, all negotiations with Mr. Baumgarten broke down; he had designated a contribution of $1 million in securities and real estate for this purpose, but a disagreement with some University officers arose on the value to be placed upon certain pieces of the property to be transferred. Mr. Baumgarten thereupon withdrew his offer and turned to Michael Reese Hospital, where he contributed the unit which now bears his name.

Another opportunity came in 1958, when Dr. Coggeshall learned that the will of Philip D. Armour provided a trust fund of $250,000 for cancer research. The trustees of the Armour Foundation were approached, and an alternative was proposed to them because funds for cancer research were abundant at that time. Might the trustees consider...
using the $250,000 toward a new building instead? Perhaps the Armour family would add another $300,000. The Division would then try to match the total Armour gift, and application for governmental one-to-one matching could be made. If this plan proved successful, the total of $2.2 million would be sufficient to fund what had previously been planned as the Baumgarten building. The funding was, in fact, realized. The final design, however, included facilities in addition to those for surgical research, and other funds were added to cover the total cost of $3 million.

Ground was broken in 1961, and the building was completed in 1964. Its occupants became as diverse as the components that had gone into its funding. The subbasement housed additional facilities for deep radiation therapy; the Zoller Dental Clinic expanded into the second floor; and the sixth floor became quarters for interns and residents. Offices and research laboratories of the Department of Surgery occupied the remaining four floors and basement. (Ophthalmology, located in the basement, at that time was still a part of the Department of Surgery.)

Cost and Sources of Funding

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<tr>
<td></td>
<td>3,004,000</td>
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</table>

Comment

Much planning lies behind an undertaking like the construction of the Armour wing. In this instance, Dr. Coggeshall took advantage of every opportunity to bring the project to a successful conclusion. The original purpose was to provide additional research space for the Department of Surgery, and five of the eight levels of the building did result in such use. The building as it now stands was designed to satisfy additional needs; therefore other funding components were added. The Hospitals and Clinics participated and gained quarters for interns and residents; the Zoller Dental Clinic contributed and obtained expansion space; funds from the Chicago Tumor Institute were used for improvements in Radiation Therapy; and the matching grant from the USPHS helped to finance the research laboratories. With the addition of income from the Worcester* endowment, the total was brought to the amount required. All of this began with a need for more Surgery space and a starting sum of $250,000.

*The Worcesters, as mentioned earlier, also were contributors to the Goldblatt Hospital.
THE PHYSICAL PLANT EXPANDS

The Silvain and Arma Wyler Children's Hospital (7)

In the early fifties, the existing pediatric facilities had become obsolete. Furthermore, children received medical care in two widely separated units, the Bobs Roberts Hospital on the one hand and, on the other, the McElwre-Hicks Hospital under management of the Home for Destitute Crippled Children (HDCC). Both had served well in earlier days, but advances in medicine necessitated a change.

Ray Brown, then hospital superintendent, developed a plan that would bring Bobs Roberts and HDCC together in a new structure, to be built north of the Lying-in Hospital. The proposed building had three floors and a basement, and a capacity of 100 beds; an outpatient department was to be included. By 1960, definitive plans were available with an estimated cost of $3 million. The accumulated resources of the Country Home for Convalescent Children (which had closed in 1945) and of HDCC could be employed to support the new project, and arrangements for underwriting of additional amounts from other endowment funds, in case they were needed, had been approved by the University Trustees.

When H. Stanley Bennett became dean in 1961, however, the initial plan was expanded. The 100 beds were retained, but three floors devoted to research were added. The new plan and escalating building costs raised the total cost estimate to $7.8 million.

Dr. Coggeshall, now a vice-president of the University, was still deeply involved in fundraising. He asked Dr. Albert Dorfman to develop a proposal to the Kennedy Foundation for a Mental Retardation Research Center to be located within the new structure. Eventually, a grant was approved and later modified so that the entire amount, $1.5 million, could be employed for construction. By 1963, the total anticipated funds stood at about $6.9 million, of which $1.4 million was borrowed from endowment funds. Eventually, the borrowed amount would have to be replaced.

The project was at an impasse; approximately $7.8 million was needed, but less than $6.9 million was available, of which $1.4 million would have to be repaid. Here the matter stood until December, 1963, when information was received that the will of Silvain S. Wyler included directions providing for a children's hospital in the city of Chicago. (Wyler, a pioneer in developing dehydrated foods, had come from Switzerland to Chicago, where he had founded Wyler and Company, a firm acquired by the Borden Company in 1961.) Meetings were arranged with Mrs. Wyler who, after a few months, became very much interested in the pediatric project. In May, 1964, an agreement was reached in which Mrs. Wyler was to contribute $2.2 million, the amount then estimated as still being required. At last, a project begun more than a decade earlier could proceed.
The result was a beautiful building, named the Silvain and Arma Wyler Children's Hospital, containing, on its first floor, a large pediatric outpatient department and emergency room along with a children's dental clinic. The second and third floors are devoted entirely to inpatients. Research laboratories, including the Kennedy Research Center, occupy the three upper floors. On January 23, 1967, the young patients were moved from Bobs Roberts and McElwee-Hicks into this magnificent new hospital.

Final Cost and Sources of Funding

<table>
<thead>
<tr>
<th>Source</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>HDCC and CHCC funds</td>
<td>$2,500,000</td>
</tr>
<tr>
<td>Gift from Chicago Community Trust</td>
<td>300,000</td>
</tr>
<tr>
<td>Hill-Burton hospital grant</td>
<td>348,000</td>
</tr>
<tr>
<td>USPHS grants for research facilities</td>
<td>900,000</td>
</tr>
<tr>
<td>Grant from Kennedy Foundation</td>
<td>1,500,000</td>
</tr>
<tr>
<td>The Wyler gift</td>
<td>2,200,000</td>
</tr>
<tr>
<td>Other sources</td>
<td>272,000</td>
</tr>
</tbody>
</table>

$8,020,000

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FIG. 25.—The Silvain and Arma Wyler Children's Hospital, viewed from the northwest.

Comment

In the history and present functioning of the Wyler Hospital, the Home for Destitute Crippled Children continues to occupy an essential place. The HDCC Board is responsible for the operation of the entire inpatient
THE PHYSICAL PLANT EXPANDS

unit of the hospital, which is not within the fiscal entity called the "University of Chicago Hospitals and Clinics." In a sense, Wyler is an affiliated hospital within the larger complex, having a separate budget and a separate directing Board. This is another example of the fact that the hospital is not an administrative monolith. The HDCC arrangement in Wyler may be a surprise to some readers; the surprise itself is testimony to the success of the arrangement. The continuing work, within the medical complex, of this affiliated institution and its Board surely merits special appreciation.

A. J. Carlson Animal Research Facility (8)

The next building took twenty years from initial planning to completion. The story of the A. J. Carlson Animal Research Facility begins in December, 1949, when Dr. Coggeshall appointed a faculty committee to survey the facilities then available for the housing of laboratory animals and to make recommendations for the future. The committee issued a report in July, 1950. Six years later, a general plan had emerged, calling for construction of a two-level underground structure between the Pathology wing of Billings and the Abbott building to the north. Detailed planning moved very slowly, for there were few precedents for the construction of a hospital not for human patients, but for animals. In 1963, the Trustees' Committee on Budget approved a project then estimated to cost $3 million, of which $1,295,000 was expected from the USPHS. The plans were later revised, however, and contracts were finally awarded in 1965, with a budget that had increased to $4,208,000.

When the facility was finished in 1969, it proved to be extremely well suited for its purposes. The entire lower level was devoted to the housing and care of small animals. The upper level, containing facilities for larger animals, also included special diagnostic laboratories, operating and X-ray rooms, and a veterinary clinic. Dedicated in 1969, the building was named in honor of Dr. Anton J. Carlson, past chairman of the Department of Physiology.

Final Cost and Sources of Funding

<table>
<thead>
<tr>
<th>Source</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>USPHS grant</td>
<td>$1,295,000</td>
</tr>
<tr>
<td>Income from various Divisional endowments</td>
<td>$2,935,000</td>
</tr>
<tr>
<td></td>
<td>$4,230,000</td>
</tr>
</tbody>
</table>

The Ben May Laboratory Moves to a New Building (9)

In 1950, two floors of the Goldblatt Hospital for Cancer Research housed Dr. Huggins's laboratory. Twenty-one years later, in 1971, the laboratory at last had its own building, a structure of 19,000 square feet on four floors built above a portion of the Chronic Disease Hospital.
The Medical Complex More Than Doubles

The name had become the Ben May Laboratory for Cancer Research. Beginning in 1951, Dr. Huggins’s laboratory was a special, independent administrative unit in the Division of the Biological Sciences, like a department, but not so designated. The name of Ben May was given to the laboratory as a token of Mr. May’s past and continuing benefactions. This star “nondepartment” in the Division requires special consideration in any history of medicine at the University. Something of its special flavor was conveyed in President Edward Levi’s address at the dedication of the new building in 1971. Quotations from that address may serve to remind us what the entire series of new medical buildings is all about.

It is twenty years since the Ben May Laboratory for Cancer Research was established. It requires no celebration for us to make known that this laboratory has been and is successful. The purpose of the new facilities, quite simply, is to give support to the ways of working, that combination of individual enquiry and communication which has made for discovery—yesterday, today and tomorrow. But, undoubtedly, we also hope, even though we know the wish is frequently not realized, that through new facilities we may help continue, as a legacy for the future, the spirit and quality of this laboratory. We know, of course, that the arrangement of space and the furnishing of equipment, however indispensable, cannot buy for posterity the present vitality.

President Levi went on to review Harper’s early dreams and aspirations for a medical institution at the University, and he described Ben May as exemplifying these aspirations.

I have recounted this history of the originative years of this University, and stressed certain values inherent in it because the story of the Ben May Laboratory for Cancer Research to an astonishing degree and for a later period is much the same. Here there is the miraculous partnership of Charles Huggins and Ben May—a partnership based upon the most sensitive recognition and confidence. . . .

. . . The Laboratory has cut across the disciplines, rooted in its search for basic knowledge. . . . Dr. Huggins accomplished in his Laboratory an interaction of scientists working in biochemistry, experimental pathology, organic chemistry and radiobiology. . . . The Laboratory has pushed forward the boundaries of medical science. Its announcements of discoveries have been so potent in their meaning as to stir the civilized world. . . .

What then is the formula for this accomplishment? It has many parts. History and fate have helped to fit them together. But the spirit of the love of truth has held them in place. And the proof of that love, in the words of Roger Bacon, is in the work. It is with this spirit that Dr. Huggins has endowed the Ben May Laboratory. May it be that way tomorrow and always thereafter.

It remains now to descend from these lofty thoughts to the mundane
THE PHYSICAL PLANT EXPANDS

and record the estimated costs and sources of funding for the Laboratory.

Costs and Sources of Funding

Ben May Laboratory Cancer Research Fund (including principal) $1,016,000
USPHS grant 903,000
Divisional endowment and other restricted income 705,000
Ben May pledge 604,000
Other sources 400,000

$3,628,000

The Surgery-Brain Research Pavilion (10)

The hyphenated name of this building suggests a combination of two
distinct projects. The two were originally quite separate, and it was
planned that they would occupy different buildings. Neither project
could proceed, however, because of insufficient funds, and later the
idea arose that the two might be included in one structure, in which
the most essential elements of both would be preserved.

The Surgery Component

The concept of the surgery portion first arose from the need for a com-
pletely new, modern operating room suite. Even before 1950, the De-
partment of Surgery was confronted with the problem of an outdated
set of four operating rooms in Billings Hospital, then already almost
twenty-five years old. Improvement came with expansion into the
Goldblatt Hospital for Cancer Research when it opened in 1950, but
shortly thereafter two additional rooms had to be carved out of other
space in an effort to provide accommodations for newly developing
fields, in particular cardiac surgery.

Even with these additions, the operating room complex could not
keep pace with advances in surgery. By 1966, a plan had been de-
veloped for a surgery building above the A. J. Carlson Animal Hospital,
construction of which was soon to begin. The 1966 plan, however, was
a plan without funds.

The Brain Research Component

The idea for a brain research building goes back to 1953 and to the for-
mation in Chicago of the Brain Research Foundation, a corporation
founded to promote the study of the brain and nervous system. From
its beginning, the foundation had supported research in this field, but
its major objective was to establish a center for such studies where sci-
entists of various related disciplines, including neurophysiologists,
neuroanatomists, neurologists, psychiatrists, neurosurgeons, and
neuropharmacologists, could be brought together for mutual benefit.

In 1964, a formal affiliation of the foundation with the University took place, and a Brain Research Institute was established as a unit within the Division of the Biological Sciences. Plans were developed to erect an L-shaped seven-story building, north of the Gilman Smith Hospital, which would house research laboratories and patient units. Funding would be from the Brain Research Foundation, the University, and a federal grant, if one could be had. At this point, however, federal policy changed, and a government construction grant could no longer be expected.

Merger of the Two Projects

A merger of the two structures was tentatively proposed to President Levi in October, 1970. After further definition, this proposal was formally presented and accepted in July, 1971. The two projects were to be combined in a single six-floor structure at the site originally intended for the surgery building. The lower three floors were to be given over to the Brain Research Institute; the upper three would contain the operating room suite and the Department of Surgery. The estimate of cost in 1971 was approximately $16 million. A special fund-raising campaign was suggested and later expanded into the Advancement in Medical Sciences (AIMS) campaign.

More definitive planning for the new structure resulted, as usual, in an increased cost estimate. To finance the necessary additional funds, the University’s Trustees, in 1974, approved a borrowing of $12 million through the Illinois Educational Facilities Authority, which executed a public offering of tax-exempt bonds. The University agreed to pay back

![Fig. 26—The east facade of the Surgery-Brain Research building now nearing completion.](image)
THE PHYSICAL PLANT EXPANDS

the principal and interest over a period of thirty years.

Ground was broken for the new building in 1974. At present it is still under construction, with completion anticipated in late 1977. The cost is now expected to be $22,420,000.

Concluding Comment

Ten new buildings have now been added to form the present medical complex. Instead of four buildings in 1931, there are now fourteen, all interconnected and spread out over fourteen acres between Ellis and Maryland Avenues from 58th to 59th Street. The institution has more than doubled its size, from 390,000 to a total of 920,000 net square feet.

If these figures are too large to be meaningful, another measure can be used. Suppose we determine the total length of all main corridors on all floors of all buildings. Such a measure is admittedly odd, but leads to a remarkable result: The total corridor length for the first four buildings, completed by 1931, comes to 2.6 miles; the ten new buildings added another 3.5 miles. The entire complex has become like a small city with more than six miles of traffic lanes.

Another measure of size is given by the cost of the additions. Without the Surgery-Brain Research building, the cost for the nine other new buildings comes to $33 million. Of that total, 40 percent was funded by private donors and 32 percent by federal construction and Hill-Burton grants. The remaining 28 percent came from accumulated endowment income, divided approximately equally between Hospital and other Divisional endowments.
VI
The Clinical Segment Becomes Large in the University

Medicine at the University, in the postwar era, grew not only in the size of its physical plant; concomitantly, it grew in other dimensions as well. Its working population multiplied; the number of its academic departments increased from five to ten; and additional affiliations were arranged. The Division also received a new name, becoming the Division of the Biological Sciences and The Pritzker School of Medicine. This chapter ends, after all of these subjects have been considered, with a gallery of deans and hospital directors who have administered the Division, and the medical center within it, from the beginning up to the present.

1. MORE PEOPLE

Statistics are available on the number of employees budgeted in the Hospitals and Clinics component of the medical complex from 1963 to the present. Figure 27 shows that, over this thirteen-year span, the working population has more than doubled.

Data on the total population ascribed to the medical school component of the complex are not available for prior years. The number of faculty members from 1952 to the present, however, is shown in Figure 28. Counts for both the basic science and clinical departments are given for comparison. It is clear from the diagram that, for the years shown, growth in faculty has occurred principally in the clinical departments. From 1952 to 1976, the basic science group increased by 35 percent; over

*These counts were derived from a study of budgets for the years indicated on the graph. The last two points (1971 and 1976) were checked with faculty rosters now periodically prepared by the dean’s office staff. Pathology has been included in the clinical science departments. Faculty members of Ben May, Zoller, and Michael Reese have been omitted throughout. Some imprecision is inherent in the counting method, but the results are sufficiently accurate to reveal long-term trends.
THE CLINICAL SEGMENT BECOMES LARGE

the same period, the faculty of the clinical departments grew by more than 150 percent.

A count of all other personnel, made in March, 1977, provides a fi-

**Fig. 27**—Graph of Hospitals and Clinics budgeted personnel.

**Fig. 28**—Number of faculty members from 1952 to 1976.
More Departments

ure for the nonfaculty component of the medical school. This count yielded 315 persons for the basic science departments, 859 for the clinical departments, and 219 in other units (Ben May, Zoller, Division General, A. J. Carlson, etc.). These clinical and other unit figures, when combined with the latest counts for Hospitals and Clinics and clinical faculty shown in the graphs, give a total of 4,865 as the current working population of the medical complex.

Earlier, somewhat in jest, the medical complex was compared to a city with 6.1 miles of corridor traffic lanes (5.4 miles if the Surgery-Brain Research building, as yet unoccupied, is excluded). In the daytime, this city has a population approaching 5,000, not counting patients, students, and visitors—about 1,000 persons per mile or one person for every five feet of corridor.

2. MORE DEPARTMENTS

When Billings Hospital opened in 1927, the clinical segment of the medical school consisted of only three departments: Medicine and Surgery, both newly created, and Pathology, which had been considered a part of the basic sciences, but was now thought of as being a clinical department. Three years later, two other departments, Pediatrics and Obstetrics/Gynecology, were added. A gap of many years followed in which the number of departments remained unchanged. Then, beginning in 1953, the altered circumstances of the new era led specialty sections, previously within Medicine or Surgery, to be separated into five new departments.

The clinical departments, the years in which they were formed, and the present chairmen are listed below.

<table>
<thead>
<tr>
<th>Year</th>
<th>Department</th>
<th>Present Chairman</th>
</tr>
</thead>
<tbody>
<tr>
<td>1927</td>
<td>Medicine</td>
<td>Dr. Alvin R. Tarlov</td>
</tr>
<tr>
<td></td>
<td>Surgery</td>
<td>Dr. David B. Skinner</td>
</tr>
<tr>
<td></td>
<td>Pathology</td>
<td>Dr. Werner H. Kirsten</td>
</tr>
<tr>
<td>1930</td>
<td>Pediatrics</td>
<td>Dr. Samuel Spector</td>
</tr>
<tr>
<td></td>
<td>Obstetrics/Gynecology</td>
<td>Dr. Arthur L. Herbst</td>
</tr>
<tr>
<td>1953</td>
<td>Radiology</td>
<td>Dr. John J. Fennessy</td>
</tr>
<tr>
<td>1955</td>
<td>Psychiatry</td>
<td>Dr. Daniel X. Freedman</td>
</tr>
<tr>
<td>1969</td>
<td>Anesthesiology</td>
<td>Dr. Donald W. Benson</td>
</tr>
<tr>
<td>1970</td>
<td>Ophthalmology</td>
<td>Dr. Frank W. Newell</td>
</tr>
<tr>
<td>1975</td>
<td>Neurology</td>
<td>Dr. Barry G. W. Arnason</td>
</tr>
</tbody>
</table>

Radiology

Dr. Paul Hodges came to The University of Chicago from Peking Union
THE CLINICAL SEGMENT BECOMES LARGE

Medical College in 1927 with the hope that Radiology would be recognized as a department. Instead, Radiology was made a section in the Department of Medicine. Dr. Hodges reconciled himself to that position because he was given authority to act as a department chairman in budgetary and other administrative matters; thus, Radiology was always a department except in name. The record nevertheless shows that Dr. Hodges repeatedly asked for official departmental status, and his request was granted at last in 1953. Dr. Hodges became the first chairman of the Department of Radiology and held that position until his retirement in 1958.

The specialty of radiology perhaps serves as the most impressive example of the growth in medical science and technology during the new era. Advances in radiology have created a continuous demand for change as entire new fields—for example, nuclear medicine, medical physics, angiography, and computerized tomographic scanning—have sprung up within it. Radiation therapy also has undergone tremendous changes with its high-energy machines.

Psychiatry

The specialty of psychiatry was entirely missing at the medical center in its earliest years. Later, efforts to build psychiatry as a section in the Department of Medicine were only partially successful, even though some distinguished scholars in the field were recruited. In 1955, nearly thirty years after the institution had begun, the decision was finally reached to develop psychiatry as a department, and Dr. C. Knight Aldrich was invited to become its chairman, a position he held until 1964. Thereafter, Dr. Daniel X. Freedman assumed the chairmanship, and Psychiatry has grown into one of the distinguished departments at the medical center.

Anesthesiology

Anesthesiology was a section in the Department of Surgery until 1969. One year earlier, in an effort to build up the specialty, the University invited Dr. Merle Harmel to head the section with the expectation that it would shortly take on departmental status. Anesthesiology officially became a separate department in 1969, but Dr. Harmel left in 1971 to assume the chairmanship at Duke University. After a four-year period of interim leadership, Dr. Donald Benson came from Johns Hopkins in 1975 to serve as chairman. The department was recently given a significant increase in space, including research laboratories, and at present it has twenty-two faculty members.

Ophthalmology

Ophthalmology was present at the University from the start as a section
in the Department of Surgery, led by Dr. E. V. L. Brown, a distinguished Chicago ophthalmologist. Although Dr. Brown held a part-time appointment, he provided the necessary expertise and direction for this important specialty during the early years of the medical center. Ophthalmology remained a section until 1970. Seven years earlier, Dr. Frank Newell had become its head, and under him Ophthalmology soon developed into a strong unit with an exceptionally vigorous and productive research program. Rapid advances in this field, however, caused its connection with other branches of surgery to become increasingly tenuous and artificial. It seemed logical, therefore, to separate Ophthalmology from the Department of Surgery, even though it would be a small department with only six faculty members. Dr. Newell was chosen as chairman, a position he has occupied up to the present.

Neurology

Neurology is the newest department, established in 1975. As a section in the Department of Medicine, the specialty had existed at the University for almost fifty years, and distinguished neurologists had served on its faculty. In time, however, revitalization became urgent, and the Divisional faculty proposed departmental status as a means to this end. The proposal was approved, and Dr. Barry Arnason accepted the position as the first chairman in July, 1976.

Comment

The proliferation of clinical departments seems to run counter to the original concepts upon which the school was founded. The intent had been to keep the number of departments at a minimum. Radiology, for example, was not given separate status for many years. As the various specialties developed and matured, however, their interests became increasingly diverse and fragmented, and as a consequence, additional departments were formed.

Paradoxically, while the number of clinical departments grew, the basic biological sciences exhibited precisely the opposite trend, even though the basic as well as the clinical sciences participated in the knowledge explosion of the new era. Instead of proliferation, there has been a fusion of basic science departments. The Departments of Biophysics and Theoretical Biology have been combined in recent years; Pharmacology and Physiology have also merged. It is difficult to explain this difference. Apparently, the basic sciences have begun to find an underlying unity that is absent in the clinical area.

A New Section of General Medicine

Within the Department of Medicine, a large new section has recently emerged. From the beginning, the department had been completely di-
vided into subspecialities which grew from the particular focus of interest of each of the early faculty members. At the same time, the specialists considered themselves to be generalists in internal medicine and functioned as such in the care of patients. Therefore, no need was felt for a section of general internal medicine. When Dr. George Dick became chairman of the department in 1933, his own clinical service remained unspecialized and, in effect, could be considered as a section of medicine-in-general. During his tenure, his service grew, so that it occupied about one-third of the beds assigned to the Department of Medicine. When Dr. Dick left in 1945, however, the concept of a general medical service virtually disappeared.

The idea was taken up by subsequent chairmen, but failed to gain acceptance by the department as a whole until 1970, when a program of general internal medicine was instituted for both inpatients and outpatients. Much of its work has come by way of the Emergency Room, and at present it again uses about one-third of the beds assigned to the entire Department of Medicine. The present service is staffed in part by physicians permanently assigned, and in part by subspecialty physicians who serve temporarily. In 1973, the service officially became a section of general medicine in the department, and a program of research and investigation was begun under its aegis.

3. More Affiliations

All of the major affiliation agreements that have entered into the history of the medical complex (except for the affiliation with Rush) are listed below. In this list, as in those of new buildings and new departments, there is an intense beginning period up to 1931, then a long time gap, followed by a surge during the new era.

1927—Chicago Lying-in Hospital
1928—Home for Destitute Crippled Children
1929—Provident Hospital—an affiliation that failed
1931—Country Home for Convalescent Children
1948—Atomic Energy Commission—Argonne Cancer Research Hospital
1957—La Rabida Jackson Park Sanitarium
1958—Home for Incurables
1964—Brain Research Foundation
1967—Michael Reese Hospital and Medical Center

Of the affiliations listed, most have already been discussed; only two remain to be considered: La Rabida and Michael Reese. Another, an affiliation with the Veterans Administration, is also mentioned, although it was not consummated.
More Affiliations

La Rabida Jackson Park Sanitarium

La Rabida began as a temporary structure built in Jackson Park for the Columbian Exposition of 1893 to house mementos of Christopher Columbus. The building had been designed as a replica of a monastery in southern Spain, Santa Maria de La Rabida. Beginning shortly after the Exposition, this “temporary” building was used as a summer child welfare sanitarium. In 1918, the program was moved elsewhere, and later the building was destroyed by fire. The child welfare project was revitalized in 1932, when a new building was erected near the original site as a sanitarium, now called La Rabida, for children convalescing from rheumatic fever. Loose associations with the five medical schools then existing in Chicago provided for the necessary staff.

Shortly after 1947, the president of the La Rabida Board of Trustees, Richard Finnegan, began discussions with Dr. Coggeshall about a possible closer tie with The University of Chicago. Under the resulting arrangement, Dr. Albert Dorfman, then an assistant professor in the Department of Pediatrics, was appointed as director of research at La Rabida. Meanwhile the convalescent center was converted and became an accredited hospital in 1949.

A more formal relationship between the University and La Rabida was developed in 1957 under the leadership of Albert Pick, Chairman of the Board of Trustees of La Rabida. The affiliation included the organization of the La Rabida/University of Chicago Institute, with a research program on chronic children’s diseases, the responsibility for which rested with the dean of the Division. The institute was housed primarily at La Rabida, and Dr. Dorfman continued as director. The clinical portion, now consisting of about 100 beds and an outpatient service, came under the supervision of the chairman of the Department of Pediatrics at the University. Basically, that arrangement between the University and La Rabida has remained unchanged since 1957.

What’s in a Name

A remarkable history, recorded in a souvenir guidebook surviving from the 1893 Exposition, lies behind the name La Rabida. The original structure in southern Spain which later became the monastery of Santa Maria de La Rabida was built, it is said, in the second century by the Roman emperor Trajan. It was later used by the Moors and subsequently taken over by the Franciscan Order when the Moors were driven southward from Spain. The monastery, on the Atlantic coast not far from Gibraltar, came to occupy an important place in the life and discoveries of Christopher Columbus. In 1485, Columbus took refuge from his creditors at the monastery where he became a friend of the friars. Later they helped him
THE CLINICAL SEGMENT BECOMES LARGE

approach King Ferdinand and Queen Isabella for support of his explorations of the New World. In 1492, when Columbus set out on his voyage of discovery, he left his son, Diego, in the care of the La Rabida monastery.

La Rabida is the Moorish term for outpost or frontier. The name Rabida is therefore an appropriate one to be associated with medicine.

Michael Reese Hospital and Medical Center

Officials of Michael Reese Hospital, in June, 1967, approached University President George Beadle and Dr. Leon O. Jacobson, then dean of the Division, with the proposal that the University consider entering into an affiliation with Michael Reese. The hospital, the largest on the south side of Chicago, had a large intern and resident training program and hence was considered a teaching hospital, but wished in addition to participate in the education of medical students. In the previous year, Michael Reese had considered forming its own medical school in cooperation with the nearby Illinois Institute of Technology. A committee of distinguished consultants, Dr. Phillip Handler, Dr. Robert Glaser, and President John Millis of Western Reserve University, had been invited by Michael Reese to give its opinion and advice. The committee recommended that Michael Reese look toward affiliation with the medical school at The University of Chicago.

The dean decided to explore the proposal with the departmental chairmen in the Division; since the majority favored further consideration, they were asked to begin discussion of the subject with the faculties of their respective departments. Meanwhile, the dean and members of his staff met with representatives of Michael Reese to gain a better understanding of the nature and extent of their affiliation proposal. Soon many problems became apparent. Neither party desired a merger of the two institutions; even a close affiliation appeared unacceptable. A flexible, loose relationship, officially recognized, seemed appropriate, at least as a beginning from which a more precisely defined arrangement could evolve.

A working document was devised which set forth in general terms the proposed objectives and linking structures. The two institutions would

... enter into an affiliation to provide means for mutual assistance and cooperation in areas of common concern for the purpose of achieving the highest possible order of patient care, medical education, and research.

The affiliation would serve to enhance and broaden the scope of the programs in health science education and research already existent at the two institutions.
More Affiliations

As opportunities arise, it would also facilitate joint planning and execution of innovative programs in education, health sciences, and the delivery of medical care with consequent benefit to patients, community, and both institutions.

Further, the affiliation would provide an instrument for mutual assistance in financial affairs.

Liaison committees were proposed for policy and administrative purposes; but the crucial linkage would be the development of effective working relationships between departments at the two institutions. This was the core of the arrangement, the chief reason for its imperfection, and, at the same time, the necessary ingredient for acceptance of the plan.

A further linkage would occur if selected staff members at Michael Reese were given faculty or other types of appointments at the University. Such appointments, which would be in accord with University statutes, would be made on the basis of criteria for ordinary appointments. Salaries, however, would remain the responsibility of Michael Reese. The hospital had approximately seventy full-time physicians on its staff; some others served part-time, and many more were on the “voluntary” staff, i.e., they were physicians in private practice without salary from Michael Reese.

After the limited affiliation arrangement had been discussed in depth by all departments of the Division of the Biological Sciences at the University, the dean was able to report to the president on November 1, 1968, that a majority of the departments and their faculties favored the proposal and that he also approved. The agreement was approved in succession by a University-wide committee appointed by the president, by the Council of the University Senate, and by the Board of Trustees. Meanwhile, the Michael Reese authorities had reached the same conclusion. The working document served to define the affiliation, which was officially announced on January 10, 1969.

Quite recently, after another lengthy period of discussion, the faculty of the Division recommended improvement and strengthening of the initial agreement. Thus the affiliation initiated in 1969 has fulfilled at least one of its objectives—to lay the groundwork for closer ties.

Veterans Administration Hospital

Late in 1967, the dean’s office was approached by representatives of the Veterans Administration who proposed construction of a 750-bed (later 500-bed) hospital to be associated with the medical school. This proposal led to the development of a new concept in which a Veterans Hospital would be integrated closely within the existing University medical complex. This hospital would provide facilities in which the University was deficient (e.g., physiotherapy); the University facilities,
THE CLINICAL SEGMENT BECOMES LARGE

in turn, would be used for the work of the Veterans Hospital (e.g., for specialized surgical operations requiring sophisticated equipment). Many other programs and services, including clinical and research laboratories, would be shared as well.

An intense planning effort began, and a possible site, the block on 59th Street between Maryland and Cottage Grove Avenues, was agreed upon. By March, 1969, the master plan was virtually completed, and the detailed architectural design began to take shape in Washington. But in November, 1969, a telephone call from Washington put a sudden stop to the whole project. A change of officers of the Veterans Administration was under way, accompanied by radical changes in policy and funding. For the moment, at least, a hold on building plans throughout the country was ordered. Some months later, the Chicago project was terminated permanently, and a challenging opportunity thus vanished as suddenly as it had appeared.

4. THE INSTITUTION IS GIVEN A NEW NAME

In June, 1968, the University announced a gift of $12 million donated by the Pritzker family. The Pritzkers, Jack N. and his brother A. N., together with the latter’s sons, Jay A., Robert A., and Donald N., made the gift “in recognition of the University’s advancement of human knowledge, particularly in the medical sciences.” The only restriction placed on the use of the funds was that they were to be employed in the good judgment of the University for support of the medical school. The school of medicine was given the official name, “The Pritzker School of Medicine at The University of Chicago,” and the name of the Division became “Division of the Biological Sciences and The Pritzker School of Medicine.”

Nicholas J. Pritzker, father of A. N. and Jack N. Pritzker, had come to Chicago from Russia as an immigrant child in 1881. Having worked his way through DePaul University, he founded the Pritzker law firm in 1902. The family interests now include the Hyatt hotels, various real estate holdings, lumber companies, and other enterprises.

In making the gift, the Pritzker family mentioned the heavy financial burden borne by the medical school because of the increasing costs of medical care, education, and research. The image of the school as a separate integrated institution within the University needed to be pointed out to physicians, to the public, and to government agencies, the Pritzkers believed. To publicize the school as being merely a part of a Division might adversely affect its appeal.

Here the Pritzkers touched upon a subject that has often been a source of misunderstanding and confusion, both outside and inside the University: What is meant by the medical school at The University of
Chicago? Is it a separate organizational structure? What is its relationship to the Division? The answers reveal some of the basic principles of the arrangement for medicine at The University of Chicago.

On the Organizational Structure of the Division

The movement initiated by Abraham Flexner in 1910 led many medical schools which had been independent proprietary institutions to seek association with universities. At Chicago, the association was to be no arm’s-length arrangement—medicine was not to be an appendage, but would be integrated within the University structure. This integration has remained unchanged even with the tremendous growth that has occurred in the medical facilities and departments.

When the University was reorganized into Divisions in 1930, only brief consideration was given to dividing the biological departments between basic and clinical Divisions. The clinical segment has grown large, but it is still a part of the single Division of the Biological Sciences. Both the basic and the clinical sciences profit by the close tie between them, which fosters interchange and cross-fertilization of ideas. The two segments are geographically contiguous, being situated on the same campus. This arrangement is unlike that at many
universities where the medical school is located at a distance from the main campus, necessitating duplicate basic science departments at the two sites. At The University of Chicago, the entity called "Hospitals and Clinics" is also within the University and its Biological Sciences Division; the hospital is not, as in many medical schools, merely an affiliated institution with its own board of trustees.

The basic structure of the Division is shown below. The two sections within the large box represent the two fiscal entities of the Division.

The Divisional arrangement serves very well, but, as noted by the Pritzkers, gives the impression that The University of Chicago has no medical school per se. Now that the Divisional name has the addition "and The Pritzker School of Medicine," it is hoped that the misunderstanding and confusion may be lessened.

![Diagram of Division of the Biological Sciences and the Pritzker School of Medicine]

FIG. 30—Basic Divisional organization. Many units have been omitted. Thus, the section labeled "Hospitals and Clinics" includes affiliations such as those with HDCC and the Chronic Disease Hospital. The larger section includes Ben May, Zoller, and general Divisional units such as the Carlson Animal Facility.

5. A Gallery of Deans and Hospital Directors

It seems fitting to end this chapter by bringing together the assemblage of deans and hospital administrators who have guided the medical program at The University of Chicago since 1927. Each has had to deal with difficult problems, has seized opportunities as they appeared, suffered frustrations, and, at times, experienced triumphs.

Of the eight regularly appointed deans, four served prior to the new era, and each of the four came from basic science fields. Of the four
deans in the new era, two came from the basic sciences and two from the clinical sciences. Tenure of the eight deans has ranged from less than one year to more than thirteen years. Only three spent more than five years in office; all three had already been on the faculty of The University of Chicago.

Deans of the Division of the Biological Sciences and The Pritzker School of Medicine

**FIG. 31—Richard E. Scammon**
November 1930-June 1931
(from Anatomy, Univ. of Minnesota).

**FIG. 32—Frank R. Lillie**
July 1931-September 1935
(from Zoology, Univ. of Chicago).

**FIG. 33—William H. Taliaferro**
October 1935-September 1944
(from Parasitology, Univ. of Chicago).

**FIG. 34—R. Wendell Harrison**
October 1944-June 1947
(from Bacteriology, Univ. of Chicago).
THE CLINICAL SEGMENT BECOMES LARGE

FIG. 35—Lowell T. Coggeshall
July 1947-December 1960
(from Medicine, Univ. of Chicago).

FIG. 36—A. Stanley Bennett
January 1961-December 1965
(from Anatomy, Univ. of Washington).

FIG. 37—Leon O. Jacobson
January 1966-June 1975
(from Medicine, Univ. of Chicago).

FIG. 38—Daniel C. Tosteson
July 1975-December 1976
(from Pharmacology, Duke Univ.).

FIG. 39—Robert B. Uretz, Acting Dean
December 1976-
(from Biophysics, Univ. of Chicago).
Directors of The University of Chicago Hospitals and Clinics

No portraits are available for these early hospital directors:

- Dr. Ralph B. Seem, of Johns Hopkins, who served as "Director of Hospitals" for purposes of planning long before the hospital was built.
- John C. Dinsmore, who was designated "Superintendent of the University Clinics," serving under Dr. McLean.
- Dr. Henry S. Houghton, who served briefly as director after Dr. McLean, in 1933-34.

![Franklin C. McLean (1927-32)](image1)

FIG. 40—Franklin C. McLean (1927-32). In addition to his other offices, Dr. McLean held the post of Hospitals and Clinics director.

![Arthur C. Bachmeyer (1935-51)](image2)

FIG. 41—Arthur C. Bachmeyer (1935-51). Came from the Univ. of Cincinnati.

![Ray E. Brown (1951-61)](image3)

FIG. 42—Ray E. Brown (1951-61). Brown became director after Dr. Coggeshall had become dean. The two worked together as an exceptionally effective team in the great expansion of the new era.
A Recent Organizational Change

In 1976, the Divisional administrative organization was modified. The dean assumed the additional title of vice-president for the medical center, and four key positions were created under him: deputy dean for academic affairs and associate vice-president for the medical center, and three other associate vice-presidents—one for medical services, another for business and finance, and a third for development.
VII
More And More Money

A comprehensive survey of medical center finance in the new era would be inappropriate here, but certain long-term historical trends are worthy of review. Two fiscal entities are involved and are considered separately: the Hospitals and Clinics, and the other portion of the Division, here referred to as "School." Some observations on the history of endowments, for both Hospital and School, are added in a concluding third section.

1. HOSPITALS AND CLINICS

Growth in Annual Operating Expenditures

Operating expenditures are defined here as the cash spent in the day-to-day operation of the Hospital for salaries and wages, supplies, and services of all kinds from laundry to heat and light. Also included are charges for services provided centrally by the University (general administration, purchasing, accounting, etc.) and any dollars transferred from the Hospital to the School or University in payment for professional services. Expenditures for major renovations or equipment, however, are not considered in this category. With this definition, the trend in operating expenditures for the past twenty years is shown in Figure 45.

The upper curve is plotted in terms of conventional dollars. In 1957, expenditures were less than $10 million; twenty years later, they had reached $61 million, with most of the increase occurring in the last decade. Newspapers report almost daily that a similar escalation in the cost of medical care has occurred nationwide.

In the lower curve, conventional dollars have been adjusted to "constant dollars," compensating for the decline in purchasing power.* The curve still sweeps upward, but the adjusted dollar figure for 1976 is approximately $31 million instead of $61 million. Even with this adjust-

*The dollar adjustments were calculated from Bureau of Labor overall consumer price indices with a base of years 1957-59.
MORE AND MORE MONEY

ment, however, expenditures increased by 349 percent over twenty years.

CASH OPERATING EXPENDITURES
HOSPITALS AND CLINICS

Dollars in Millions

Ordinary
Dollars

Adjusted
Dollars


FIG 45—Hospitals and Clinics operating expenditures.

Operating Expense Versus Income from Patients

Has this sharp increase in operating expenditures been matched by the cash received for patient care? The net income or "surplus" (i.e., cash income from patients minus cash expenditures) is summarized below for five-year periods from 1957 to 1976.

<table>
<thead>
<tr>
<th>Period</th>
<th>Average Annual Net Income from Operations (&quot;Surplus&quot;)</th>
<th>Annual Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>1957-61</td>
<td>$890,000</td>
<td>$1,060,000 to $610,000</td>
</tr>
<tr>
<td>1962-66</td>
<td>1,070,000</td>
<td>1,380,000 to 630,000</td>
</tr>
<tr>
<td>1967-71</td>
<td>980,000</td>
<td>1,510,000 to -100,000</td>
</tr>
<tr>
<td>1972-76</td>
<td>350,000</td>
<td>1,610,000 to -970,000</td>
</tr>
</tbody>
</table>

Except during the last period, the average surplus from operations has been approximately $1 million annually, but there were wide var-
iations in range (during the last period, there was a deficit for one year which approached $1 million). A surplus is not to be construed as profit, however. As calculated here, a surplus is merely an excess of all cash income from patients beyond the operating expense incurred for patient care. There are nonoperating expenses as well; plant and equipment depreciate continually, and obsolescence requires renovation and replacement if proper patient care is to be provided.

Funds for these renovations and improvements come primarily from two sources: the surpluses already described, and income from Hospital endowments. Over the last twenty years, endowment income has ranged from $325,000 in 1957 to $859,000 in 1976. The average for the period 1972 to 1976, if added to the average operating surplus for the same period, comes to approximately $1.2 million annually. This seems like a large sum; in reality, however, it falls far short of the need. It has been estimated that, at current prices, more than twice that amount would be required each year to enable the hospital to replace old equipment, and to finance facilities and instruments for new modes of diagnosis and treatment.

Because of these financial problems and the prospect that they would increase in the future, President Levi, in 1972, appointed a Trustees' Committee on the Hospitals and Clinics. When it was formed, the committee was to "concern itself with the long- and short-term fiscal affairs and business operations of the Hospitals and Clinics." It would report periodically to the Board of Trustees, "apprising the Board of significant problems and important hospital priorities [and their relation to] the University's overall financial condition." In 1974, its membership was expanded to include specially qualified non-Trustee members, and the charge to the committee was expanded as well. It would now "concern itself with all aspects of the organization, operation and administration of the Hospitals and Clinics, including its fiscal affairs, business and physical operation, personnel and staffing matters."

Thus far, the committee has had three chairmen: Charles Brown until 1974, then Robert C. Gunness, and, beginning in 1977, Stanford Goldblatt. The committee has become an important stabilizing influence in hospital affairs. At the same time, it has served as a special avenue for information and advice to the Board of Trustees on the many problems confronting the Hospitals and Clinics.

2. A LOOK AT SCHOOL FINANCE

Whereas the Hospitals and Clinics are a self-contained, sharply defined fiscal entity, the School is not. Unlike the Hospital, the School is not clearly separable financially from the University as a whole. The University provides the School with services of many types (for example, building maintenance, heat, and light) without allocation of the costs
MORE AND MORE MONEY

incurred. A clear separation of some types of income generated by the School is also lacking (for example, tuition income is not distributed to the Division). Nevertheless, certain historical trends in School finance can be observed.

School Expenditures in the New Era

The graph in Figure 46 traces direct expenditures from 1952 to the present at five-year intervals. These figures are not, however, for the clinical segment alone; the basic sciences and many "Division General" items are included, ranging from the dean's office to the Carlson Animal Facility.

TOTAL "SCHOOL" EXPENDITURES

![Graph of School expenditures.](image)

Here again there is a sharp escalation of expenditures in "ordinary" dollars, like that observed for the Hospital; and again, when conventional dollars are translated into "adjusted" dollars, the upward sweep of the curve is lessened, although by no means eliminated. In adjusted dollars, School expenditures from 1957 to 1976 increased by 350 percent, an increase almost identical to that found for the Hospital entity over the same span of twenty years. The School increase, however, was more manifest in the first decade, whereas the Hospital increase was more rapid during the second.
Income from the Federal Government

The massive federal program in support of research at universities and medical schools began shortly after World War II. Thereafter, federal funding grew for many years until it reached a plateau about a decade ago. The graph below shows how the School at The University of Chicago has fared in attracting federal dollars over this period, beginning with 1952.

**FEDERAL INCOME GENERATED BY "SCHOOL"**

![Graph showing increase in federal income to the School.](image)

After 1957, the School attracted federal dollars in ever-increasing amounts which, in the graph, almost form a straight line. The persisting increase, even in the last decade, despite the general leveling off in Washington, attests to the quality of the institution and of the grant applications coming from it.

New Emphasis on Professional Services Income

In 1969, it was recognized that the entire professional fee system at the medical center had become badly outdated. The income from professional fees had remained essentially the same for at least ten years and was far below an amount commensurate with the work performed. Changes in professional fee arrangements were suggested and thereafter gradually accepted and implemented. The effect of these changes is shown graphically in Figure 48. The figures used are totals for all types
MORE AND MORE MONEY

of income to the School for professional services rendered to patients by the faculty, including inpatient and outpatient professional fees and all reimbursements for faculty services to patients in radiology, anesthesiology, and diagnostic laboratories.

![Cash Income for Professional Services](image)

Fig. 48—Professional services income.

Professional services income increased from less than $3 million in fiscal year 1970 to more than $10 million in fiscal year 1976. The 1976 figure is misleading, however, because it includes payments from the Illinois Department of Public Aid (IDPA) for services provided during the two preceding years. Charges for recipients of Medicaid are payable by IDPA, but until recently IDPA claimed that the University medical center was not entitled to payment of the inpatient professional fee portion of these charges. Beginning in 1971, objections to that policy were raised, and repeated pressures led to a change in 1975. Under the new ruling, partial payments were to be made for all IDPA patients treated after July 1, 1973. In consequence, payments of approximately $2.2 million for services provided since July, 1973 were received from IDPA during fiscal year 1976.

The increase in professional services income became important in maintaining the fiscal solvency of the School in recent years. Federal grants continued to provide excellent support for research, but other types of income leveled off; thus, the professional services income
began to play a major role in preventing deficits as nonresearch expenditures continued to rise.

3. ENDOWMENTS

The results of a special study of endowment funds, both for the Hospital and for the School, are shown in Figure 49.* The graph illustrates the striking difference in the trends of these two fiscal entities over the period 1940 to 1975. School endowments have grown strikingly since 1940, whereas Hospital endowments have had a much slower growth.

*The figures plotted are called "fund balances" in University accounts. Therefore the term "endowment principal" is avoided, although for present purposes the figures could be so viewed. The increase in value over the years occurs because of capital gains assigned to individual endowments, or because new endowments appear from time to time. The decrease in the totals shown for 1975 is due in part to a decline in the market and in part to a prior change in University policy whereby capital gains, instead of being additions to principal, became usable to some extent for current expenditures.
MORE AND MORE MONEY

Origin of the Hospital Endowments

The relatively slow growth of the Hospital endowment pool suggested the further analysis given here. Accounting records show that, in 1940, four endowments were ascribed to the Hospital: The Roberts Memorial, Chicago Lying-in, Gertrude Hicks, and Country Home for Convalescent Children (CHCC). The Roberts endowment was derived from the residue from the gift for construction of the Bobs Roberts Hospital, which was completed in 1930, and the Hicks endowment resulted from a bequest subsequent to construction of the McElwee-Hicks Building in 1931. The Hospital endowment designated as CHCC appeared in 1931, when the University became the trustee of CHCC resources. The Chicago Lying-in funds were classified as Hospital endowment in 1938, when Lying-in was legally made a part of the medical complex. Thus, in one way or another, all four of the endowments existing in 1940 stemmed from relationships developed in the very early years of the institution.

Moving forward from 1940, the accounting records note the appearance of endowments in addition to the original four. However, most of the additions are related to the Country Home and Chicago Lying-in endowments. With one minor exception, the bequests additional to these two had been willed or given when the donors still considered the Home and Lying-in as separate corporate entities.

In the list below, the value of all of the Hospital endowments existing in 1975 is summarized and divided into two categories. The first consists of the four original endowments, including the later additions to Chicago Lying-in and the Country Home. The second represents all the other endowments, unrelated to the original four, which the Hospital received up to 1975.

<table>
<thead>
<tr>
<th>A. Original Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Roberts Memorial</td>
</tr>
<tr>
<td>2. Gertrude Hicks</td>
</tr>
<tr>
<td>3. Chicago Lying-in (with additions)</td>
</tr>
<tr>
<td>4. Country Home (with additions)</td>
</tr>
<tr>
<td>Subtotal</td>
</tr>
<tr>
<td>B. All Others</td>
</tr>
<tr>
<td>Total</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Assigned value in 1975</th>
</tr>
</thead>
<tbody>
<tr>
<td>$ 946,000</td>
</tr>
<tr>
<td>2,106,000</td>
</tr>
<tr>
<td>2,375,000</td>
</tr>
<tr>
<td>4,002,000</td>
</tr>
<tr>
<td>9,429,000 (91%)</td>
</tr>
<tr>
<td>884,000 (9%)</td>
</tr>
<tr>
<td>$10,313,000</td>
</tr>
</tbody>
</table>

This tabulation reveals the astonishing fact that more than 90 percent of all present (year-end 1974-75) Hospital endowments were generated, directly or indirectly, by relationships established with donors very soon after the medical center had opened.

New endowments, on the other hand, are less than $1 million, or a mere 9 percent of the total pool. The analysis suggests that little effort has been directed in recent times toward increasing the endowment pool for the Hospital.
Endowments

As Figure 49 shows, School endowments have grown sharply and steadily, especially since 1955. In that year, the total stood at $24.4 million; fifteen years later, it had reached more than $73 million. (The drop to $61.7 million in 1975 is explained in the footnote of the figure.) The use of the income from these School endowments is restricted for the most part to specific purposes; the Zoller bequest, for example, is designated for use in dentistry.

The origin of the Block Fund must be mentioned here, even though it is not a Divisional endowment and therefore does not appear in the above figures. This University fund, which has become a major research resource for the Division of the Biological Sciences, is controlled by the Block Board, consisting of members from both the Biological and Physical Sciences Divisions. The Board functions somewhat like an internal granting agency and makes awards to faculty members of both Divisions.

The Louis Block Fund

As recounted in Dr. Coggeshall’s “informal history,” the story of this fund begins early in 1955 when Dr. Alving reported that a lifelong friend, Louis Block, was considering a change in his will that would make The University of Chicago his beneficiary, with the funds to be used for the support of research. The amount which Block had in mind was not known, but Alving believed that it would be quite substantial.

Block, a fifty-six-year-old bachelor, had been co-owner with his two brothers of a chemical company in Joliet, Illinois. They had recently sold the company to Olin-Mathieson, and Louis decided to retire from business life to become a gentleman farmer. On several occasions, he had been a patient at the University, and the good care he had received during his illnesses, combined with other considerations, convinced him that The University of Chicago best represented his ideals.

Block developed the details of the proposed bequest after many discussions—with his friend, Alving, with Coggeshall, and with other administrative officers of the University. In October, 1955, a meeting took place in Coggeshall’s office for review of a draft of the will which had now been prepared. Two of Block’s lawyers were present and participated in the discussion. After thorough re-examination, Block, appearing satisfied with the document, expressed the wish to sign it as soon as possible. One of the lawyers suggested that Block wait a few days until his return from South Dakota, where he was going to purchase some breeding stock; this would give him the weekend to think the document over. The conference was terminated with the will unsigned, and the three gentlemen left the office.

A few days later, Coggeshall received a telephone call. Block had died in South Dakota of a heart attack.

It was some time before Cog-
MORE AND MORE MONEY

geshall learned that the new will was, in fact, in force. Block, eager to finish the matter, had consulted the University's Office of Legal Counsel after leaving Coggeshall's office, and certain changes in the language of the will had been recommended. A corrected draft was developed that evening by the University attorneys and delivered to Block, who then signed the will before leaving for South Dakota. As a result, by 1958, the University had received almost $14 million, which it used to set up the Louis Block Fund.

Coggeshall mentioned in his informal account that he had been unable to find a photograph of Block. He will be pleased to learn that photographs have been located, and that a drawing made from one of them is reproduced here.

FIG. 50—Louis Block.
The new era has thus far been viewed as a period of continuous change and expansion. It was a time during which ten new buildings were added, and the medical complex reached more than twice its previous size. It was also a period of growth in number of people, departments, and organizational complexity, along with a dramatic growth in dollars. Such considerations, however, are only the stuff of the enterprise; they merely measure the material which, when properly put together, furthers the real work of the institution—patient care, teaching, and research.

1. **Patient Care**

An assessment of patient care should include consideration of its quality; no systematic quality-of-care assessment is available for the new era, however. The material below is therefore limited to a scan of the quantitative aspect of the patient care work of the institution.

Outpatient visits to the clinics in the year 1932 had already reached a total of 126,000. Figure 51 picks up the census data seventeen years later and carries them forward to the present.

Over the last seven years, the number of outpatient visits has increased significantly, as shown in the graph. But the outpatient clinics are only a part of the ambulatory services provided; emergency room visits, plotted earlier in Figure 23, must be added for a more complete picture. The combined visits, outpatient and emergency room, for 1950 numbered about 175,000; twenty-five years later, they had risen to 307,000. A little arithmetic will make this last number come to life. If it is assumed, incorrectly, that these patients were cared for during eight-hour days, five days a week, throughout the year, there were almost 150 visits per hour.

Statistical data for inpatients are commonly expressed in patient days per year. Somewhat less commonly, the number of annual admissions is recorded. The graph in Figure 52 shows both from 1949 through 1976.

For the past twenty years, the number of inpatient days has changed
WORK AND ACCOMPLISHMENTS

very little, indicating that the workload has not kept pace with the growth in space, people, and money. As the lower curve shows, however, the number of admissions has gradually risen from 15,400 in 1961 to 22,200 in 1976—an increase of 44 percent. The two sets of figures lead to the conclusion that patients now leave the hospital after a shorter stay. In 1961, the average stay was 11.8 days; in 1976, it was only 8.9 days—a decrease of 25 percent. Thus, more patients are being cared for, but the time each spends in the hospital is less. Recovery has become

OUTPATIENT CENSUS TRENDS

![Graph showing outpatient census trends, 1949 to 1976.]

FIG. 51—Outpatient clinics census trends, 1949 to 1976.

INPATIENT CENSUS TRENDS

![Graph showing inpatient census trends.]

FIG. 52—Inpatient census trends.

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more rapid; medical care has become more effective, indicating the benefit derived by the patients from the advances made in medical science and technology.

The Medicaid program, implemented in 1966, led to a sharp rise in hospital admissions of Public Aid recipients in the early years of the program, so that, by 1973, patients receiving assistance from the Illinois Department of Public Aid accounted for 36 percent of all admissions. Since 1973 this level has remained constant, as seen in Figure 53.

![Graph showing the percentage of Public Aid recipients as a percentage of total inpatient admissions from 1970 to 1976.]

**Figure 53**—Percent of admissions of Public Aid recipients.

The statistics just given are barren pieces of information which say almost nothing of the vast changes in medical care that have occurred in the new era at the University of Chicago and elsewhere. However, a patient returning after an absence, of, say, twenty-five years would see and feel these changes. Entering the hospital, he would find himself in a strange and frightening world.

Perhaps he would be admitted to one of the new intensive care units and there be overwhelmed by arrays of specialized equipment and electronic monitoring devices. Some would be attached to him, picking up information on conditions not even known a quarter of a century ago. If he were admitted to a general unit of the hospital and sent to various laboratories for tests, he would be confronted with new, perhaps ominous-looking machines which would perform and analyze the results of diagnostic procedures unknown twenty-five years ago. The revolution in diagnostic methods is illustrated spectacularly in the means
WORK AND ACCOMPLISHMENTS

now available for diagnosis and monitoring of cardiac conditions, including cardiac catheterization techniques. One sees an even more spectacular change in the new procedures employed in radiology, with its sophisticated scanning devices.

If the patient were treated with drugs, they, too, would probably be new; in almost every branch of medicine, the complexion of therapy has been modified with the advent of antibiotics and other antibacterial agents. Or he might be given an anticancer drug as a part of a chemotherapy regimen, a mode of treatment developed in recent years for use in many types of cancer. For a host of other conditions as well, his treatment would probably be new. The period has seen an avalanche of new and effective drugs for many diseases, among them the drugs now used in the management of central nervous system disorders and in psychiatry.

If our patient, returning after a lapse of twenty-five years, required a surgical operation, the operation itself might be of a new kind. Every surgical specialty has its new and improved procedures, and beyond that, entirely new surgical specialty fields have emerged, among them cardiac surgery. Many heart conditions, heretofore inaccessible to the surgeon, may now be attacked successfully, aided by sophisticated devices such as the blood pump, which temporarily substitutes for the action of the heart during surgery. For more conventional surgical problems, discoveries have also drastically changed the nature of the operations performed. If, for example, surgery were required for a gastroduodenal ulcer, it now would probably include a vagotomy, a procedure developed at the University by Dr. Lester Dragstedt.

Vagotomy for Gastroduodenal Ulcer

Dr. Dragstedt's contribution to the treatment of ulcer began in the laboratory, with studies in which he attempted to clarify the role of gastric juice in the causation of this common and often intractable disease. In the course of his investigations, Dragstedt devised an operation for dogs in which the stomach was separated from the rest of the gastrointestinal tract to form an isolated pouch. Pure gastric juice, unmixed with food, could be collected from this stomach pouch by means of an indwelling cannula that led to an exterior collection bag.

This technique was applied in many studies which followed, both on the composition of pure gastric juice and on the mechanisms controlling its secretion. These studies led Dragstedt to the conviction, as reported in 1945,*

"... that pure gastric juice as it is excreted by the fundus of the stomach, has the capacity to destroy and digest various living tis-

Teaching to Provide Choice Men

2. Teaching to Provide Choice Men

Long before it opened, the medical school was planned to be one of a special kind. As President Judson saw it in 1916, the purpose of medical education at this University was not to pour into the profession large
WORK AND ACCOMPLISHMENTS

numbers of practitioners, but to provide "choice men," highly trained and imbued with the spirit of enquiry. Looking to the future, Judson envisioned a student body not exceeding 350 candidates for the M.D. degree.

This figure has been reached and exceeded only in recent years, as shown in the table below, in which some data on the M.D. program are given for five different years, including the present one.

<table>
<thead>
<tr>
<th>Number of M.D. students</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Admitted to first-year class</td>
<td>Total enrolled in all four years</td>
</tr>
<tr>
<td>1941-42</td>
<td>72</td>
</tr>
<tr>
<td>1952-53</td>
<td>72</td>
</tr>
<tr>
<td>1962-63</td>
<td>72</td>
</tr>
<tr>
<td>1972-73</td>
<td>104</td>
</tr>
<tr>
<td>1977-78</td>
<td>104</td>
</tr>
</tbody>
</table>

a In 1958, a fourth quarter was added to the senior year. b In 1967, the junior year was also extended to four quarters. c Figure not yet available.

The teaching of the clinical disciplines at the University was different from that at the older medical schools from the very beginning. The junior student, already grounded solidly in the basic biological sciences, now learned the art and science of clinical medicine not so much by lecture as by doing, working with inpatients under constant supervision. (Except for the addition of a fourth quarter in 1967, basically the same program for the junior year has been followed to the present day.) As a junior member of a clinical team, the student moved from team to team in the various medical disciplines. The sudden shift from the classroom to the bedside often came as a shock, but the student soon realized the value of learning not by rote, but by first-hand experience.

In the senior year, the curriculum again involved constant contact with patients, but as a senior, the student was exposed to outpatients while he rotated from clinic to clinic. In 1958, when a fourth quarter was added to the senior year, one and one-half quarters became elective, giving the student additional time to engage in research. A further change occurred in 1967, when all four quarters became elective. One-third of the student's time, however, had to be devoted to elective advanced clinical clerkships, either inpatient or outpatient. If the student elected to do so, he could spend the remaining two-thirds of his senior year in research, where he was helped by his mentor to enter the world of investigation and to experience the excitement of discovery. The purpose was to create not only good clinicians, but clinicians who had
an attitude of enquiry which they would carry with them into medical practice.

Evidence of the degree to which President Judson's goal of producing "choice men" has been realized is available in a report by the Department of Health, Education, and Welfare (HEW), published in 1969.* In that report, summarized below, HEW examined the faculties of all medical schools in the United States to determine the schools of origin of their full-time faculty members, that is, the schools where they had received their M.D. or other graduate degrees. The report was directed especially toward identifying those schools where a high proportion of graduates were later chosen to become faculty members of the nation's medical schools.

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Department of Health, Education, and Welfare
Report on U.S. Medical School Faculties

In 1967, HEW surveyed all medical schools to learn at which institutions all full-time faculty members had received their graduate degrees between the years 1951 and 1967. The total number of graduates from each school for these years was also determined, and for each, the percentage of graduates who occupied faculty positions in 1967 was calculated. The table below gives the results of the survey for holders of the M.D. degree only and lists the five schools more than 10 percent of the graduates of which held faculty positions in 1967. The University of Chicago stands at the top of the list. In proportion to the total number of its graduates, Chicago produced more teachers than any other medical school, and it may justly claim to be a "teacher of teachers."

The HEW survey also provided the number of all recipients of M.D. degrees over the seventeen-year period from 1951 through 1967. The average

<table>
<thead>
<tr>
<th>University of Chicago</th>
<th>1,152</th>
<th>176</th>
<th>15.3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Johns Hopkins</td>
<td>1,273</td>
<td>174</td>
<td>13.7</td>
</tr>
<tr>
<td>Harvard</td>
<td>2,381</td>
<td>321</td>
<td>13.5</td>
</tr>
<tr>
<td>Yale</td>
<td>1,217</td>
<td>160</td>
<td>13.1</td>
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<tr>
<td>Columbia</td>
<td>1,838</td>
<td>211</td>
<td>10.9</td>
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*U.S. Department of Health, Education, and Welfare Office of Resources Analysis, National Institutes of Health, Resources for Biomedical Research and Education, Report no. 17 (Washington, D.C., April, 1969). (In this study, a "full-time" faculty member was defined loosely as "any faculty member . . . regardless of source of salary, if the major portion of his efforts is devoted to the program of the medical school.")
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yearly total for all medical schools was 6,900; the average for The University of Chicago was 68 per year. Thus, Chicago contributed about one percent of the nation's new physicians during this period.

The Combined M.D.-Ph.D. Program

It has always been possible for a student to engage in a lengthened program at the University, leading to both an M.D. and a Ph.D. degree, usually in one of the basic biological sciences. A formal arrangement for such a combined degree program became available to eligible students in 1967, when the Medical Scientist Training Program (MSTP) with a six-year structured course of study was initiated. Six to eight MSTP students are chosen each year and receive special fellowship financial support, provided in part by the National Institute of General Medical Sciences. The Department of Pediatrics has a similar program of its own, limited to a total of twenty students for the six years. In all, during 1976-77 approximately seventy-five students were pursuing combined degree programs; they included MSTP students, those in the special pediatric program, and others under less formal arrangements.

The Post-M.D. Housestaff Program

Obtaining the M.D. degree is now only the first step in the program of medical education. Two to five additional years usually follow during which the resident or fellow receives further training in the medical specialty of his choice. As medical science and technology expanded in the new era, such post-M.D. training grew in importance, as shown in the steady increase in the number of physicians on the housestaff (the common term for post-M.D. trainees). Data on the number of filled housestaff positions are available for the period from 1961 to 1977; during these sixteen years, the number almost doubled, from 181 in 1961 to 325 in 1977, so that the housestaff population now outnumbers the medical students (approximately 200) who are working in their two clinical years toward an M.D. degree.

No national study comparable to the HEW survey for the M.D. degree is available for post-M.D. training. It is likely that such a study also would result in a high rank for The University of Chicago as a source of faculty members, since training before and after the M.D. degree occurs in the same intellectual environment. Informal counts of some specialty programs at Chicago indicate that as many as 25 to 50 percent of former housestaff members presently hold faculty positions here and elsewhere. In addition, some years ago, a national ranking like that of the HEW study was developed for one particular specialty in which the percentage of former trainees then on medical school faculties was de-
Cultivating Research for "Veritable Results"

termined for all of the approved residency programs in the nation. The University of Chicago was again given top rank.

3. CULTIVATING RESEARCH FOR "VERITABLE RESULTS"

A motto on the walls of the Ben May Laboratory reads: "Discovery Is Our Business." This motto could apply to the medical school as a whole, where research is intended to be much more than a subsidiary adjunct to the work being done. President Burton stated in 1923 that the faculty would be in the business of discovery, and that "veritable results" would be expected. When the school began, its faculty was made an integral part of the University's community of scholars and investigators, and the basic biological sciences and clinical disciplines were gathered together into a single Division. In these ways, interchange and cross-fertilization of ideas and mutual stimulation of research could be fostered. Furthermore, the clinical faculty members were full-time and full-salaried; thus they, too, could pursue research as more than an avocation.

Has the pursuit of "veritable results" continued into the era of rapid, continuous change, or have other interests and other problems diluted the research impulse? In the pages which follow, an attempt is made to respond to this question.

The Division periodically prepares a book entitled Research in Progress, which contains abstracts of all research projects currently under way in its clinical and basic science segments. The most recent issue, a volume of 400 pages published in April, 1976, tells something of the extent of the research enterprise within the Division. The table below lists the number of abstracted projects by departments.

<table>
<thead>
<tr>
<th>Basic Science Departments</th>
<th>Clinical Science Departments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anatomy</td>
<td>17</td>
</tr>
<tr>
<td>Biochemistry</td>
<td>22</td>
</tr>
<tr>
<td>Biology</td>
<td>25</td>
</tr>
<tr>
<td>Biophysics/Theoretical Biology</td>
<td>21</td>
</tr>
<tr>
<td>Microbiology</td>
<td>14</td>
</tr>
<tr>
<td>Pharmacology/Physiology</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>113</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Other Units</th>
<th></th>
<th>464</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ben May</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>Committee on Biopsychology</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Committee on Evolutionary Biology</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Zoller Dental Clinic</td>
<td>21</td>
<td></td>
</tr>
<tr>
<td></td>
<td>44</td>
<td></td>
</tr>
</tbody>
</table>

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The subjects of the abstracts range widely over the fields of biology and medicine. A taste of that range is provided below through an unbiased sample of the projects. The sample consists of the first project listed in the book, followed by one from every twentieth page thereafter.

1. "Current research," according to the first abstract, "includes a crystallographic study of the structure of an unusual insulin . . . ."

2. This is a study of the effects of anesthetics on the blood flow to the brain and its metabolism. The technique used was devised for goats.

3. How is insulin manufactured in the body? (This subject is to be considered in more detail later in this chapter.)

4. The subject is evolutionary biology, with laboratory and worldwide field studies on species of the fruit fly. The work moves into theoretical and even philosophical considerations.

5. A nontoxic substance has been found which is capable of increasing the work output of the heart by making the blood less viscous. It is being tested further on animal models.

6. At birth, heart muscle cells lose their capacity to divide and make new cells. Why? The answer is important to the problem of repair after damage to the heart. The investigator has developed a method with which to approach the problem.

7. The cause of many chronic and serious diseases of the colon and intestine remains obscure. Are they due to failure in the immune response? The walls of the gut normally contain large collections of cells which manufacture immune bodies. A search is under way to determine whether defects in these cells produce the diseases.

8. A chromosome expert is continuing extensive analysis of chromosomal abnormalities in patients with various blood diseases, especially the leukemias.

9. This project is a micro-spectrophotometric scanning of normal and abnormal epithelial cells with pattern recognition by computer, an ongoing investigation in a cytogenetics laboratory which has made many important contributions in applying cytological diagnosis to various human diseases.

10. This is a study of tumor viruses induced by drugs acting on embryonic cells in tissue culture.

11. The physiology of the heart is being studied by means of intricate electrical techniques and devices.

12. Here is a study in animals which concerns the effect of various
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drugs on behavior and relates to the drug abuse problem.

13. A massive, long-term, critical reexamination of the concept of schizophrenia in psychiatry is in progress.

14. Ultrasound is a new diagnostic tool sometimes used in the Department of Radiology instead of X rays. Experiments are under way to extend its application.

15. Research on a transplantable tumor in rats continues a previous discovery that tumor "take" and growth can be inhibited by immunotherapy with modified tumor cells.

16. New perfusion techniques for organ preservation and study of metabolism in isolated organs are being investigated in connection with the clinical program of organ transplantation.

The book, *Research in Progress*, contains a total of 621 abstracts of current research in the Division as a whole, with 464 from the clinical departments alone. The number of abstracts considerably exceeds the total number of faculty members. The figures speak only of the quantity of research, and not of its quality or significance; yet they attest to the research emphasis of the institution; the Division is still in intense pursuit of research results.

To underscore this emphasis on research, the remaining pages are devoted to two sketches of research projects as illustrations of the significant work that has gone on in the Division during the new era of its history.

The first sketch deals with the work of Dr. Leon O. Jacobson of the Department of Medicine; it began when The University of Chicago was chosen as the site for development of the first atomic reactor, during World War II. Dr. Jacobson, a hematologist, was selected as the first physician in the project, with the task of monitoring the scientists and technicians who worked on the reactor, to discover any evidence of radiation damage. His specialty was particularly appropriate for such an assignment, since the blood-forming system of the body is very sensitive to radiation injury. Soon, however, Dr. Jacobson also became engaged in research on the effects of radiation and radioactive isotopes on animals.

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**Radioactive Strontium, the Spleen, and Control of Blood Formation**

1. Radioactive isotopes of strontium, one of the by-products of nuclear reactions, were of special interest to Dr. Jacobson because the body handles strontium like calcium; the element becomes concentrated in the bones. If the strontium is radioactive, the bone marrow, the chief
organ of blood formation, may be destroyed. Initial experiments with radioactive strontium, for determination of the dose that produces progressive anemia and death, were performed with rats and rabbits.

When mice were given the same dose, weight for weight, however, they remained well and showed no evidence of anemia. It became apparent that, although the bone marrow was destroyed, the spleen was transformed into a blood-forming organ and completely compensated for the loss.

Two questions arose from the mouse experiments: What is the mechanism whereby the spleen receives the message that induces it to become a blood-forming organ? And how does the spleen transform itself to take over the function of the bone marrow?

2.

In search of answers to these questions, Jacobson turned to studies in which he used X rays as the means for producing radiation damage. Initial tests for radiation tolerance in mice showed that, with 500 roentgens, 50 percent of the mice died; with 1000 roentgens, all died. A surgical technique was developed in which the spleen was shielded from radiation by a small lead casing. Mice with shielded and unshielded spleens were then exposed to an X-ray dose of 1000 roentgens. All animals with unprotected spleens died, whereas all in the shielded group survived. The shielded spleens were temporarily transformed into organs of blood formation, and cells from the spleen then seeded the destroyed bone marrow so that it soon returned to its normal state.

The remarkable results of the shielding experiment led to other studies in which bits of normal blood-forming tissue were transplanted into mice that had been irradiated with a lethal dose of 1000 roentgens. Again the mice survived. The transplants provided living cells which, when carried elsewhere in the body, acted as seeds for regeneration of the marrow and of other destroyed tissues involved in the formation of antibodies. These findings opened the way to the saving of lives of lethally irradiated animals and men by transplantation of blood-forming tissue.

3.

One of the early questions remained, however: What messenger instructed the spleen to take over the function of blood cell formation? The question may be modified somewhat: What controls the formation of red blood cells in the bone marrow so that the normal number of these cells is maintained in the blood of animals and man? Jacobson and his coworkers, in the mid-1950s, shifted their efforts to the search for an answer.

Fifty years earlier, in 1904, Carnot and DeLandre had hypothesized that red blood cell formation (erythropoiesis) is under the control of a hormone secreted into the blood when the body tissues require more oxygen. Many observers had provided evidence for the existence of such a hormone (which was given the name erythropoietin), but methods for measuring the substance and determining the site of its formation remained uncertain.

After a long series of studies, a satisfactory method for assay of erythropoietin was found, and Jacobson's group was in a position to look for its site of origin. A series of experiments in animals followed in which
various organs were excised, among them the spleen, intestines, and kidney. Only the kidney experiment gave positive results. When both kidneys were removed, erythropoietin production ceased. Many other investigators subsequently confirmed this finding, so that, at last, the primary site of production of the hormone controlling red blood cell formation had become known.

More recently, it became clear that erythropoietin is excreted in the urine; methods have now been developed for extraction and purification of the hormone from urine. The material cannot yet be employed in the treatment of diseases of blood formation in man, but it is expected that this will be possible soon.

The second research story concerns the work of Dr. Donald Steiner, at present professor and chairman of the Department of Biochemistry with a joint appointment in the Department of Medicine. This, too, is a tale in three parts, but only the third took place at the University; the first and second parts are given as background to the third. In addition, they provide an interesting insight into the curious ways in which research sometimes moves forward.

The Pancreas, Insulin, and How Insulin is Made

1.

The first part of this account begins in the nineteenth century. The disease called diabetes was already known. Those who had it often died; but there was little help, for no one knew the cause, nor what organ of the body was the seat of the disease.

In the 1880s there were two German researchers: von Mering, a professor, and Minkowski, a young man on his team. Their research subject was the process of food digestion in the intestine and the work of the pancreas in that process. Von Mering and Minkowski already knew that the pancreas produced a juice which poured into the intestine and helped to digest and break down the food to make it available for use by the body. They now wanted to see what would happen to the digestive process in dogs if the pancreas were surgically removed. After many trials, they devised a technique which enabled dogs to survive the operation, at least for a time.

One day, young Minkowski happened to look at the receptacles used to collect urine under the dog cages in the laboratory. Some cages contained unoperated dogs; others housed dogs whose pancreas had been removed. Curiously, house flies in the laboratory seemed to be attracted especially to the urine of the operated dogs—an inconsequential observation, apparently, but not so to Minkowski. He put a finger in the urine, tasted it, and discovered that the urine was sweet. The flies had been attracted to the urine as if to honey. It was a moment of scientific breakthrough: although the operation had been done for another pur-
pose, removal of the pancreas had produced diabetes.

Thus the organ responsible for diabetes was found by accident. In the search for knowledge about digestion, curiosity about the behavior of flies had led Minkowski to a new, entirely unforeseen discovery. The knowledge of sugar chemistry and diabetes had taken a giant step forward.

2.

In the 1920s there were again two men, this time Canadian researchers: Banting, a professor, and Best, a young man on his team. Knowing of the work which von Mering and Minkowski had done some forty years earlier, they were interested in learning how the pancreas does its work in preventing diabetes. They believed that the pancreas produced a hormone which controlled the sugar chemistry of the body and were eager to discover this hormone if they could. From the pancreas of slaughtered animals they made extracts by grinding the tissue in water. Injection of such extracts into rabbits should cause the blood sugar level to fall if the extracts contained the hormone. When the experiment was done, however, nothing happened; apparently the extract did not contain the desired substance. Best concluded that the pancreatic digestive enzymes, also present in the extracts, promptly digested and destroyed the very substance being sought.

The study had reached an impasse; there seemed to be no way of getting at the hypothetical hormone. While puzzling over the problem, Best ran across a German article on the pancreas written many years before. It was not an important article; it merely reported that, as seen under the microscope, the pancreas of calves contain no zymogen granules until shortly before the calves are born. Best knew that zymogen granules, normally present in later life, store the digestive enzymes of the pancreas. What if the pancreas of fetal calves, not yet making the digestive enzyme, already manufactures the hormone that controls sugar? If so, pancreas from fetal calves could be used for extracts, since no interfering digestive enzymes would be present to destroy the hormone. The new possibility was explored with extracts from fetal pancreatic tissue of calves, and the experiment was a success. Banting and Best called the new material "insulin," for presumably it was made in microscopic islets long known to be present in the pancreas, but with a function not known heretofore.

Later, new ways of preparing insulin were discovered, but the beginning was made because a young man came upon a report about fetal calves that seemed to be of negligible importance.

3.

More years passed. Medicine and biochemistry had grown explosively in the new era, and the molecular formula of insulin had been determined: it is a very large double-chain protein with the two chains, side by side, connected by disulfide linkages.

Another young man, Donald Steiner, a medical student at The University of Chicago in 1955, had developed a system for culturing cells to study the way in which antibody proteins are synthesized. At that time, he considered that one could also use the method to study how insulin is made. Steiner went on, however, to other things, other problems, and another place.
Cultivating Research for “Veritable Results”

In 1960, he returned to the University to join the Department of Biochemistry, still with the idea of studying how insulin is made. He knew that cultures of ordinary pancreatic tissue would not be satisfactory; a rare kind of pancreatic tumor, composed of islet cells, would be necessary. If a piece of such a tumor could be obtained, cells from it could be cultured and grown in the laboratory, without interference from cells making digestive enzymes.

Steiner asked the clinical endocrinologists to let him know if they encountered a patient with this kind of tumor. The patient would probably require an operation, and a cell culture could be made from a piece taken at that time. Within a few weeks a telephone call came: a patient had just been diagnosed as having an islet cell tumor, and operation was scheduled for the next day.

Hastily, preparations were made so that the laboratory could receive a piece of the tumor for cell culture and for other tests in which proteins would be labeled with radioactive amino acids. On the next day (a day in October, 1965), a piece of the tumor was rushed to the laboratory. Cell cultures were set up, and slices of the tissue were incubated for radioactive labeling of the proteins present in the material. The cell cultures became infected, and that part of the experiment failed. The other incubation tests, however, were successful, for later examination showed the presence of various proteins, among them insulin which was found in abundance. Another, unknown protein was also present.

After much work on the identification of this unknown substance, it was found to be a long single-chain protein with its two ends resembling half of the double-chain insulin molecule. Here lay the answer to the manufacture of insulin. The study showed that the two chains of insulin are not separately made and later joined together side by side. Instead, the process starts with a long single chain which then doubles back on itself to make a giant “U.” The two arms of the U are joined together by disulfide linkages, and the U-turn end drops off. The single-chain protein, now no longer unknown, was given the name “proinsulin.” For the first time, production of double-chain protein hormones like insulin had been explained. The publication of this finding was followed by recognition and many honors for Steiner.

The discovery has begun to find clinical application. For example, the piece at the turn of the U which is detached from the developing insulin molecule, called a C-peptide, can be identified and measured in the blood of patients. The amount present is now being used in determinations of the amount of insulin which a patient manufactures.

This three-part story illustrates many aspects of research. New pieces of information build upon previous pieces discovered by the worldwide community of scientists. Curiosity and the capacity to see possibilities in chance findings are illustrated by Minkowski’s observation on the behavior of flies. Later, a seemingly useless piece of information encountered by Best turned out to be tremendously important.
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Serendipity played a part also when Steiner obtained a piece of a rare human tumor. But it was more than that: Steiner, a biochemist, because of a conversation with the endocrinologists, learned of a patient who had the needed rare tumor. He could easily obtain a fresh piece of tissue and transport it instantly to his laboratory. All of this might be possible under other circumstances; but the fact that it took place in one Division, on one campus, under one roof, greatly facilitated the events that occurred.

Finally, the story just told illustrates in a striking way the swift pace of progress in medical science over the past hundred years. The first part speaks in a language of simple things, easily understood: of operations, whole organs, urine, sugar, and flies; the second, of hormones and microscopic particles in the pancreas. But when the third part is reached, we have moved into a new world. Now the language has become one of protein molecules, single- and double-chained; of cultures of living tissues; and of tests in which slices are incubated for radioactive labeling of proteins. The story has become a portrait in miniature of the immense changes characterizing the new age.

CONCLUDING COMMENT

In this chapter, following the common analogy in which a medical school is compared to a three-legged stool, the work of the medical center is divided into three parts—patient care, teaching, and research. These three are convenient categories when the work of the institution is considered, but they are also often construed to be components of the institution’s basic purpose. In this concluding, somewhat polemical note, the author wishes to argue otherwise, contending that the medical center, like the University as a whole, has but two basic purposes or reasons for being. One is to teach—to transmit with zest the accumulated knowledge, know-how, and wisdom from one generation to the next. The other is research and investigation—the endeavor to add to that body of knowledge, know-how, and perhaps even wisdom. From the viewpoint of the University’s task, however, patient care is not a purpose in itself. It is, rather, a service needed to fulfill the other two; in order to teach patient care and carry out clinical investigation, the institution finds that it must engage in the practice of medicine and provide patient care.

The concept that patient care is not one of the basic purposes of the institution may be troublesome to some. To think of patient care as a means to other ends seems to denigrate the importance of that work. Nevertheless, the University, fundamentally, is engaged in the business of teaching and research; delivery of medical care is a means to these two ends, not its job per se.
Concluding Comment

Since medical care is, however, a necessary activity, humane and ethical considerations demand that the best possible care be provided. Therefore, the welfare of the patient takes its place alongside the two primary purposes, not as a third purpose, but as a high responsibility. If, on occasion, the patient's welfare conflicts with the purposes of teaching and research, the interest of the patient must, of course, become paramount.

Even so, the concept that teaching and research are purposes, whereas patient care is a high responsibility, still is somewhat abhorrent. One is loath to think of the patient as being a means to other ends, and, in fact, the individual patient can never be considered in this way. The concept changes, however, when one asks: Why is the medical center engaged in teaching and research? What is the higher reason or purpose beyond the medical center's two purposes? Now means and ends become reversed; teaching and research in medicine are seen as means to a higher end—better patient care.

In 1916, long before the medical center began, President Judson spoke words pertinent to the discussion of its purposes. Although they were quoted earlier, they are restated here in a more condensed form to provide a fitting close to this history.

- It is believed . . . to be the University's function to provide . . . choice men, highly trained . . .

- It is also a University function to do everything in its power toward the discovery of causes and . . . prevention of disease . . .

- Therefore this plan impresses me as not merely providing . . . a medical school . . . [but] provision for a great agency of social benefit, almost immeasurable in its possibilities of helpfulness for humanity.

The purposes of the University's medical center are teaching and research; but these purposes, in turn, serve an even higher end—in the words of President Hutchins:

"for the greatest good to the largest number"