A major new Washington University facility, the Cancer Immunology Laboratories, is seeking more precise knowledge of the nature of immunologic responses for various forms of cancer. The laboratories share an electron microscope suite which includes a “freeze-etching” machine and an electron microscope, instruments which were used to produce the photographs at right. The heart-shaped object is the nucleus of a type of immunologic cell called a lymphocyte. In the bottom photo, the granular objects which lace the cell in the center are molecules that mark the location of “antigens.” Antigens are the substances which trigger specific immunologic reactions in the body, whether against measles or cancer. Recent evidence that human cancer antigens exist has stimulated an extensive research effort to determine their precise nature. Antigens are one of the main objects of study in the Cancer Immunology Laboratories. See story on “Cancer Immunology in Man” on page 2.
SPECIAL INSERT: This issue of the Washington University Magazine includes a special 16-page insert which gives the complete text of the Annual Report of Washington University for 1971-72, with comments by the Chancellor. See page 21.

Directors of Washington University's recently constructed Cancer Immunology Laboratories, at right, are Dr. Paul E. Lacy, head of the department of pathology, and Dr. Lauren V. Ackerman, professor of pathology and surgical pathology. The laboratories occupy the fourth floor of the Medical School’s West Building. A team of leading scientists is now at work in the laboratories with the general goal of finding the precise biochemical nature of specific immunologic responses for various forms of cancer. Pinpointing the nature of these responses could lead to important clinical applications. This new frontier in basic cancer research is being funded by the largest unrestricted grant ever made by the tobacco industry to a university.
Cancer Immunology in Man

Cancer Immunology in Man is the inscription on a plaque near the entrance to a new laboratory on the fourth floor of the Washington University Medical School's West Building. Those four words stand out to most laymen to whom immunology connotes being "immunized" against infections such as measles or polio. Cancer has been frequently described as one's own cells multiplying in an uncontrolled way. Therefore, what does immunity have to do with cancer?

On May 2, Dr. Paul Lacy, head of the University's pathology department, gave some details in answer to that question. He addressed officers of seven tobacco firms and a tobacco growers association who attended a dedication program for the laboratory (Dr. Lacy and Dr. Lauren Ackerman, Washington University professor of surgical pathology, who is one of the world's foremost cancer experts, had sought and received a $2,000,000 unrestricted basic research grant from the tobacco industry* to put the laboratory in operation). Dr. Lacy pointed out to the group that cancer very often is not detected in a patient until the tumor has spread and the prognosis is poor.

"Today, we have a new way of looking at the problem—and that is through immunology." He explained that scientists were aware some twenty years ago that cancer cells in laboratory animals had substances on their surfaces which were different from the same class of substances on the membranes of normal cells. What was intriguing about the substances was that they could act as antigens. The tumor antigens appeared as "non-self" entities to the animal's immune system and triggered a specific immune attack against the cancer cell. In recent years, similar antigens have been identified on the membranes of human cancer cells. It was these observations that opened the field of cancer immunology in man. What makes the field one of the most active in medical research today is the possibility that there is a specific antigen associated with a specific type of cancer cell. One of the great hopes is that the existence of such a specificity might bring about much earlier diagnosis of cancer than is now possible. A blood test, for example, that could identify an antigen associated only with cancer of the colon, or an antigen associated only with cancer of the lung, would provide evidence of the disease at a very early stage. Development of such a test, Dr. Lacy stresses, is a major goal of the new laboratory.

Directing efforts in the laboratory toward a clearer understanding of human cancer antigens are Dr. Thomas Tillack and Dr. Juan Rosai, who hold faculty appointments in the University's pathology department and alternate as physicians in the Barnes Hospital surgical pathology service. During the past year their research has progressed at an encouraging rate and they have submitted articles on their findings to scientific journals. Dr. Tillack explained that their work so far has dealt mainly with refinement of their biochemical techniques in isolating and identifying human cancer antigens. He pointed out that these antigens had not been studied until the mid-1960's.

In fact, the basic theory behind current research in human cancer immunology wasn't postulated until 1959, when Dr. Lewis Thomas, presently dean of Yale University's Medical School, suggested that in addition to being a defense against outside microorganisms, the immunological system has another basic function: "to preserve uniformity of cell type." He speculated that the body's rejection of grafts of foreign tissue might turn out to be one facet of an immunological mechanism which is constantly eliminating abnormal cells as they arise in the body. By this reasoning, cancer that proliferates to the point of threatening a particular organ is simply the result of a failure of the body's immunological system. In the early 1960's, Nobel Laureate Dr. F. M. Burnet of the University of Melbourne did research which supported Dr. Thomas' theory and evolved the first, clear model to encompass an expanded immune system role, which he termed "immunological surveillance."
Dr. Tillack cites two recent clinical studies that lend support to the idea of an immunological surveillance system as a defense in rejecting tumor cells. It was reported in 1969 that kidney transplant patients, who were given drugs to suppress immunological reactions, eventually developed cancer at a significantly higher rate than in normal individuals. A second study, reported at about the same time, also showed a significantly higher incidence of cancer in patients born with defective immunological systems. Dr. Tillack added that recent data from basic laboratory experiments by Ingegerd and Karl Hellström of the University of Washington have been the cornerstone of immunological research in helping to substantiate the surveillance model.

A BASIC LINE of defense in this surveillance is thought to be the immunological reaction mediated by cells called lymphocytes. These cells bind to an antigen on a foreign cell and destroy it. The Hellströms reported in the late 1960's that lymphocytes destroyed cancer cells in tissue culture from cancer patients; the lymphocytes did not attack normal cells. Why, then, didn't the lymphocytes prevent the cancer from spreading in those patients? "No one knows the answer to that question, although there are a number of possibilities," said Dr. Tillack. One theory is that cancer patients have agents on the surface of the cancer cells which prevent an immunological reaction from taking place. These substances have been called blocking factors by the Hellströms, who have produced very early and tentative data on the blocking phenomenon.

At present, the main focus of research is simply to achieve a better understanding of the antigens themselves. Many laboratories, including the Washington University Cancer Immunology Laboratory, have produced evidence that these antigens do indeed exist on the surface of cancer cells. These observations have profound implications for both clinical medicine and the field of immunology.

Most of us are acutely aware that doctors depend largely on how well patients themselves recognize symptoms and how promptly they report them; frequently, cancer is detected too late for effective treatment. The prognosis for many cancers would be much better if the presence of cancer cells could be detected in the patient before the cells had multiplied to a mass large enough to cause symptoms. If a colon cancer antigen test, for example, was positive and X-ray techniques still failed to show any cancerous lesion in the colon, a physician could then examine the patient at frequent intervals to detect cancer at the earliest possible point. Admittedly, such monitoring would place an added strain on the medical care delivery system; but it certainly would be a better alternative than for the patient and doctor to face a widespread cancer.

Before a reliable test can be developed, however, antigen research must be checked and re-checked at the basic laboratory level. These problems can be illustrated by what has happened following an important discovery in 1965 by Dr. Philip Gold and Dr. S. O. Freedman of McGill University. They isolated an antigen associated with cancer of the colon, which they called carcinoembryonic antigen (abbreviated as CEA) because it also appears temporarily in the digestive organs of the human fetus. In his first report on a test to detect CEA in the blood samples of both normal and cancer patients, Dr. Gold found that nearly 100 per cent of the cancer patients had CEA and all normal patients did not. In the past two years, however, more extensive studies by Dr. Gold and other researchers have shown test results with only 40 to 70 per cent positive CEA readings in patients with cancer of the colon.

In any case, it still appears that normal individuals practically never have positive CEA tests. Many research groups are currently evaluating CEA tests throughout this country and much work is ahead; but at this point the CEA test does hold promise as a potential diagnostic tool, which might be used along with standard examinations. The ultimate success of any test, Dr. Tillack emphasized, will be dependent on refinements in both testing techniques and in being sure just what antigen is being measured. "Until we really know more about an
antigen's specificity and chemical makeup, there will continue to be inconsistent laboratory results regarding pilot tests," Dr. Tillack added.

Doctors Tillack and Rosai have developed a new method for isolating CEA from the membranes of colon cancer cells. The method, which extracts much higher quantities of antigen, is also being used to isolate antigens from various other cancer tissues, including cancers of the lung, breast, and kidney. So far their results have been encouraging. They have identified lung and breast cancer antigens which appear to be very similar to CEA. If future analyses are successful in pinpointing a tumor antigen that is specific for one type of cancer, the Washington University laboratory will attempt to develop a blood screening test for it.

THE QUESTION arises that if and when highly specific and purified cancer antigens are identified and produced, could one safely stimulate an immune response in humans to a type or various types of cancer? While there have been a few encouraging developments, Dr. Tillack stressed that the present level of understanding of the body's immune reaction to tumors is still too insufficient to justify the use of immunotherapy in patients.

While it is true that immunological cells are now more clearly understood today than they were a few years ago, a brief outline of the main features of the immune system indicates just how complex it is: One class of cells in the system, the lymphocytes, consists of at least two types which are called B cells (derived from bone marrow) and T cells (derived from the thymus gland). T cells sometimes attack any foreign agents, and B cells produce protein antibodies that react against specific foreign substances. It isn't clear how these two types of lymphocytes function. Elucidation of the action of the other major types of immunological cells—histiocytes and macrophages—is also still incomplete.

The second class of immunological reactions consists of antibodies released into the blood by lymphocytes and plasma cells. These antibodies bind with antigens on
a foreign agent, a process which may lead directly to destruction of the agent.

Faced with this formidable set of variables, a number of scientists are nevertheless working on techniques to stimulate an anti-cancer response in humans. One individual who has the latter clinical possibility as a long-range goal is Dr. Richard Lynch of the pathology department, who also does research in the Cancer Immunology Laboratory. Dr. Lynch's work began in the laboratory of Dr. Herman Eisen, chairman of the University's department of microbiology.

Dr. Eisen, who is a nationally renowned immunology researcher, has worked for years studying antibody molecules with the aim of understanding the molecular basis for their exquisite specificity. In 1970, Dr. Sitaya Sirisinha of Bangkok, Thailand, working with Dr. Eisen, showed that mice could be induced to make antibodies directed against proteins produced by tumors in mice called myelomas. The cells in these tumors are cancerous plasma cells, and they synthesize large quantities of antibody molecules. The antibodies which are present in normal mice are made by thousands of different plasma cells and, consequently, there are thousands of different antibodies in mouse serum. The cells in a myeloma tumor are derived from a single cell, so all the cells in a myeloma tumor make exactly the same antibody molecule.

In order to get enough of the antibody protein they wished to study, Dr. Lynch and Dr. Eisen took a myeloma tumor and transferred it into hundreds of genetically identical mice. When the tumors had grown to a large size, each mouse had a large amount of the same myeloma protein in its blood. It was then possible to isolate large quantities of the antibody protein from pools of the mouse serum.

The stage was then set to see what would happen if other mice that were immunized with the purified myeloma antibody were then challenged with a lethal number of the myeloma cells. When this experiment was done, 91 per cent of the immunized mice failed to develop tumors and are still tumor-free a year later. Non-immunized mice challenged with the same number of myeloma cells all developed tumors which proved fatal in four weeks. The immune protection was found to be tumor specific. In other words, mice immunized with the antibody protein from myeloma tumor "X" were rendered resistant to "X" myeloma cells, but were not resistant to a different tumor, myeloma "Y."

This was the first demonstration that myeloma proteins could be made to function as tumor specific antigens. "Now we can attempt to describe and understand what cellular and molecular events are occurring inside an animal which rejects an otherwise lethal number of cancer cells," Dr. Lynch said. "We have a pure biological model to work with. We will have to find at what threshold this immunity will break down if the animal is challenged with higher and higher doses of cancer cells. There are many other questions, such as whether there are ways of chemically modifying the antigen to enable the immunization to be stronger and the animal able to withstand greater challenges of cancer cells."

He pointed out that to get answers to these questions may possibly take years of exacting analyses. "If—and it's a big if—we get to the point where we can reverse the growth of tumors already established in mice through a combination of therapy and immunization, we might fairly ask the question whether it might be attempted in human patients with myeloma. This is over-simplifying the research and is definitely a long-shot. Right now, our work with mice is still far from being a fair comparison with human myeloma," Dr. Lynch concluded.

Dr. Joseph Davie, who will use samples of Dr. Lynch's pure myeloma cultures in one phase of his research in the Cancer Immunology Laboratory, is interested in the possibility of producing mutations in these myeloma cells. The availability of mutant cells would provide the opportunity to measure directly the chemical events that take place when an antigen combines with an antibody. At present these events can be measured only indirectly. This is because the researcher in immunology is dealing with thousands of chemically different antibodies—even
if antibody molecules are generated by injecting a single, specific antigen into one laboratory mouse. The problem is simplified in the myeloma tumors, which produce only a single type of antibody.

Dr. Davie and his associates are working on methods of selecting a small number of mutant cells from among large numbers of myeloma cells. These mutants will produce antibody molecules which are defective in binding to antigens. The overwhelming odds are that such mutations will involve only those minute regions of the antibody molecule where the binding takes place. The assumption is that the fine chemical differences that might be detected in these large, complex molecules would be limited to the binding region. With the development of such a technique, scientists would have a tool to investigate various immunological problems.

Very basic research such as Dr. Davie's work could have unforeseen benefits to those working closer to the clinical level. To establish better lines of communication between basic and clinical research is one of the many goals of the federal government's new national cancer program. As part of the program, aid will be given to help establish centers to coordinate treatment, research, and training in the field of cancer at various institutions. Washington University is planning such a center. Dr. Philip Majerus, professor of medicine, is serving as planning coordinator for exploratory studies (funded by the National Institutes of Health).

However "distinct" approaches in seeking answers to cancer may seem on the surface, it is likely that cancer research could benefit from efforts at more interdisciplinary cooperation. Dr. Burnet, whose work was the foundation for current immunology theories, wrote in 1967:

... No matter what field one cultivates in the broad domain of the medical sciences, one soon finds tracks leading in many directions. For all of us the central theme is human biology, and whether we look at the pathology of the cell or worry about the origin and fate of immunocytes, we soon find common ground.
This past July, Professor Wesley Clark and his wife, Mary Allen, paid a three-week visit to China as part of a team of American computer experts invited by the Chinese to tour China's computer facilities and to discuss computer technology with their experts. Professor Clark has been director of Washington University's Computer Systems Laboratory since 1967, where his wife has been a senior member of the staff. This fall, Professor Clark left the University to become a computer design consultant in Cambridge, Mass., although he will continue as a consultant to the Computer Systems Laboratory. Mrs. Clark has entered Harvard Law School. On the following pages are excerpts from a diary Mrs. Clark kept on her Chinese journey and a few pictures of and by the Clarks in China.
CANTON, JULY 10, 6:30 p.m. A time loss of one hour from Hong Kong. China has assailed my senses for almost a full day and I lose impressions faster than I can capture them. A 9:36 train from Hong Kong and we are off into the New Territories. At 10:30 we arrive at Lo Wu, the New Territories' border station. We cross the bridge over the Pearl River, a narrow stream overhung with willows and subtropical plants. A peaceful limpid scene set to martial music which hits you as you step off the train and grows louder as you approach the bridge. Red flag higher than the British. A routine passport check, but the bags are not opened. A cute, pigtailed girl in a gray uniform makes a smiling but formal announcement in English, "The customs formalities are finished." She is the customs officer.

There is a formal introduction in our waiting room to Mr. Lu from the Scientific and Technical Administration of Kwangtung Province. Interpreters appear. We have a private waiting room, tea, filter cigarettes. Everywhere are piles of beautiful photographic magazines and little red books in all languages. "Please Help Yourself" says the sign. I see no "running dogs" signs. There is a mild "Long Live the People's Republic" and a "Long Life to the Unity of the People."

After over a year of waiting for the applications to be processed through the Embassy of the People's Republic of China in Ottawa, six Americans in the computer field were invited to spend eighteen days participating in a technical exchange with their Chinese counterparts. Wives, too, were "acceptable," and five of us managed to accompany our husbands. The group included Severo Ornstein of Bolt, Beranek and Newman, Inc. (formerly of Washington University), who was our prime mover and who served as "head of delegation." The others were Thomas Cheatham, Harvard University; Anatol Holt, Massachusetts Computer Associates, Inc.; Alan Perlis, Yale University; Herbert Simon, Carnegie-Mellon University, and my husband, Wesley Clark of Washington University.

Mr. Lu explained that there was no computer work to be seen in Canton, but we would still spend a few days there to "rest" and see some other things. We never learned what the Chinese mean by "rest," but the "other things" during the thirty-six hours after our arrival in Canton later that afternoon by train included an art museum, a kindergarten, a hospital where we saw two operations using acupuncture anesthesia, a full-length movie of one of the revolutionary ballets, shopping, a tour of the city, and a banquet given at our "Guest House" by the "responsible member" of the Scientific and Technical Administration of Kwangtung Province, Mr. Lee. We were to have six banquets in the next eighteen days, each complete with wine and Mao Tai. Stiff, but not as bad as advertised. Many toasts.

Several aspects of our first few hours in China came to characterize our entire trip. One of these was the extent to which our lives were completely arranged by our hosts. No detail and very few hours were left unplanned. Another was the "tea and cigarettes" ceremony with which all travelers to China are familiar. We were unprepared, however, for its frequency. Noting that we always gathered with our Chinese hosts over tea (or sometimes orange soda) and cigarettes both before and after every event or visit, we came to call the custom the "punctuation."

Our trip was characterized in another way by six gray Shanghai sedans which transported us everywhere, two per car, each accompanied by an interpreter. There are few automobiles in China, and riding in a caravan with six horns blaring and the People's Police at every corner turning the lights green adds greatly to the foreigners' conspicuous isolation.

CANTON, JULY 11. The routine for showing visitors anything or for entertaining: Enter, sit down, have tea and cigarettes. The interpreter introduces the relevant Chinese, which this morning at the hospital included the "responsible member" (read "chairman") of the Revolutionary Committee (read "administrative body") for the hos-
pital, the head of surgery, and two other doctors, one of them a woman. The responsible member gives an introduction which includes the following: a description of the event or place, a reference to Chairman Mao and the influence of his thinking on the event or place, a statement of humility which focuses on their need for “struggle, criticism, and transformation,” and an invitation to make suggestions which will help improve the endeavor.

It is difficult to describe the people in our immediate circle. They are warm and gracious, certainly not stiff, and seem to have a ready sense of humor. I think I expected more overt purposefulness. They seem eager to have us visit their historical things, not just history since 1911 or 1947, but the Ming and Ching treasures in the art museum. They also refer to the Cultural Revolution as just that, with some pride. Genuine enthusiasm shows when teachers or doctors talk about their work.

People in the streets are mostly going to other places rather than loitering, or shopping in the rather grim open shops which face on covered sidewalks. At least half are doing their going by bicycle. There are few cars except ours. There are also no dogs or cats to be seen. The streets are clean, the buildings mostly shabby except for landmarks.

En route to Shanghai, July 12. This morning up at 6:00 for a 7:20 plane. A 26-passenger Convair which stops at Changsha, Nanchang, Hangzhou, before arriving in Shanghai at about 3:00 p.m. We have seen six flies, three of them on the plane. This does not seem to throw the Chinese into a fly-killing frenzy, but Wesley and I have each killed one in Mao’s cause as well as our own.

Singing and dancing are the main activities at the kindergarten we visited. We were given a full-scale performance, about one and a half hours. There was one charming counting song and one other game song; all the others were political: heroic girls in the snow, Mao’s little soldiers, songs of virtue and hard work. There were no fairy tales. I was struck by the fact that our hosts and interpreters were simply delighted with the children’s competitive, even militaristic games and races; they laughed and clapped, clearly enjoying themselves.

Shanghai, July 13. The Shanghai Mansions Hotel overlooks the Bund, and the harbor activity is endlessly fascinating. The noise is constant, barges and boats, periodic exhortations over loudspeakers, and occasional music. The streets are noisy with construction and every powered vehicle honks constantly. There are few, mostly buses and army trucks. Bicycle bells jangle almost as constantly, but the people themselves are quiet. They do not talk to each other much, or to us, and there is no pushing, although sidewalks are crowded, and no raised voices. The People’s Police are in kiosks at every intersection. We pass several textile stores, each crowded with people. There are many colorful fabrics for sale, but most of the people are dressed in the common dark trousers and light shirts.

An old man sells bus maps and small pamphlets from a table set up on the sidewalk. We buy a map from him for five cents (Wesley’s Chinese cooperating beautifully). The crowd is fascinated with this small activity, but the old man takes it in stride and smiles. It is, after all, only the young who have never seen foreigners. I try smiling at those who stare. A few smile back, but most are too stunned to communicate and just keep staring, jaw dropped. A few narrowly miss colliding with lamp posts or other pedestrians.

Shanghai Computer Institute, July 13. During the preliminary punctuation, the “responsible member” tells us:

“When the institute was formed in 1969, we had only one computer, the transistor model, C-2. In late 1970, we started to develop the integrated circuit model 709, which was completed last December and has a speed of 110,000 calculations per second.”

Our delegation is introduced and we go to see the computers. The rooms are freezing cold and modestly decorated with one lovely script scroll and pictures of Mao and the New China. The engineers are alert and talkative.
The two machines we saw that afternoon were typical of the twelve different computers we saw either in Shanghai or later in Peking. They were conservatively designed, employing well-understood organizational and conceptual techniques. By our standards, they were medium to small machines in terms of their memory capacity. Both were one-of-a-kind models, built and used exclusively at the Institute. They use punched paper tape and line printers for input and output and magnetic drums for auxiliary memory. We saw little electronic display and no punched cards or evidence of time-sharing (in which several consoles can be used to communicate with the same computer.) The machines we saw were being used in applications involving weather forecasting, structural analysis, optical lens design, dam calculations, bridge design, artificial insemination, scheduling, and computational mathematics.

Our hosts everywhere were highly communicative about the technical aspects of their work and seemed eager to show or explain anything in this area about which we asked. We sensed evasion only in areas of production or yield and occasionally in response to questions about specific applications. They asked questions as incessantly as we, and were particularly interested in unpublished or recent material. They were clearly well informed in all areas of the computer field.

Shanghai Window Handle Factory, July 13. Both the Institute and this factory seem to be large “liberated” residences of somewhat shabby but comfortable charm. We are sitting in what appears to have been a dining or reception room, heavily paneled in a style almost indistinguishable from the houses in midtown St. Louis. A large, gentle Mao stares down at us.

Mr. Ho, the responsible member of the factory’s Revolutionary Committee, told us that there are 360 workers in this factory, which formerly produced handles for windows and doors. In September, 1970, it began to make an integrated circuit digital computer; the 709 was made in this small factory. “Most workers formerly were housewives and have a low cultural level,” Mr. Ho said.

Room 4. Three persons are testing transistors and capacitors; one man is trying to study. Neighbors hang over nearby balconies to see into the factory (there are seven cars in front, after all). We are not introduced as we go from room to room; I wonder if the “low culture” workers have even been told who we are. There are twenty-four of us and we really crowd the room. The “factory” is pleasant—open windows, trees, fresh air. We visit nine rooms in which different stages of computer-testing and assembly are progressing. The discussion afterward lasts nearly two hours.

Shanghai Science and Technology Exchange Center, July 14. Another grand old building with extensive wood paneling, too big for a residence. We enter a large room off to the side of the reception room. There are three tables of participants and one head table, all set like a banquet, with white tablecloths, tea cups, and cigarettes. The audience rises and applauds; we applaud in return and take our seats. The responsible member introduces my husband, who is to lecture on macromodules.

“Our program in macromodular computer systems,” my husband begins, “is only one of many in computer architecture and system design research. Macromodules are computer building blocks. Using macromodules, it is possible to build computer systems very quickly and to take them apart even more quickly. The same parts are in this way used many times for many different systems....”

Wesley continues into the lecture. Most of the seventy-four attendees are young men; I can see about six women. Most are intently taking notes in small books. Everyone has a glass of green tea and cigarettes; our tea is in small blue cups with hats to keep it hot. The room has three large arched French doors leading onto a balcony, and two other arched French doors leading out to hallways. Overhead three fans whirl and eight large police station light fixtures provide the only illumination other than the windows. The slide projector sits incongruously
on one of the typical ornately-carved Chinese fan tables.

Shanghai, July 15. The order in which we are assigned to cars is the same in Shanghai as in Canton. The seating at the two banquets was also the same (first two or three cars at head table). Why this particular order? I realized that we are alphabetical. Not only are we arranged alphabetically, but that is the order in which the names were sent to the Chinese. The Chinese seem in many ways remarkably uncomplicated, especially in small details. There is considerable lack of rigor in minor procedures. Our Emily Post contrives our daily relationships far more rigidly than the Chinese do theirs.

Shanghai, July 16. Three of us walked around Shanghai for most of the morning with the interpreter and a man from the travel service, who shooed people away from us. Why should the ordinary Chinese think we are friendly when other Chinese are so busy protecting us from them?

Peking, July 19. The city has a totally different character from Shanghai. People seem less well dressed than in Shanghai, and Peking is more rural. Outlying areas are farmed, not industrialized, and there are numerous sidewalk produce markets. The Palace Museum and Ten An Men Square dominate the city, and this walled courtyard style is everywhere. Ordinary streets are walled; doors lead into courtyards. Attractive but much duller for the visitor than the open facades of Canton and Shanghai. There are trees everywhere and several parks. Temples color the landscape.

We gather for a planning session to map out the lectures and discussions for the rest of the week. There are twenty-two at the table (seven Americans) and eight others sitting on the sidelines. Most are from the Institute. The Chinese ask for lectures and more introductions to the research work each American is doing.

During the next week, the Americans gave eight half-day lectures to groups of about eighty each, and there were two lectures by the Chinese. Each American also spent all or part of a day in intensive technical discussion with groups of about a dozen.

Professor Clark purchases a pipe at a commune store. The Clarks also found time on many occasions to walk around Chinese cities unescorted, shopping for souvenirs or seeking out restaurants on their own. They found the Chinese everywhere friendly and polite, but extremely curious about their visitors.

Peking, July 19. Institute of Computer Technology. We are miles outside of Peking. Room 2, Model 111 computer, probably China's most advanced machine. The room is air-conditioned, no smoking. Curtain are drawn so that we can all see the computer display on which appears WARM-LY WELCOME AMERICAN SCIENTISTS. At tea afterwards, Mr. Kao, the most responsible member present, said, "In old China we were oppressed by feudalism and bureaucratic capitalism. At that time we knew nothing about computers, science, and technology. We began to set up our Institute in 1956. At the beginning we had only a little more than a hundred people; now there are more than a thousand. We have ten laboratories.

"We also follow the policy of self-reliance and keeping development in our own hands. In the beginning, Russian scientists came to give us some help, but in 1960 they withdrew all their people. We have had to work by ourselves to develop the transistorized and integrated circuit computers and we have brought up a generation of scientists. Of course, compared with an advanced technology, there is a gap. But we will follow Chairman Mao's teaching. We have determination and we will catch up in the future. We hope you will give us your suggestions."

It is impossible to know how much of China's computer technology we saw. The Institute in Peking seems to be a major focus of talent and endeavor and it seems unlikely that work significantly more advanced than that reflected in the 111 Computer is going on elsewhere. China's reservoir of technical talent has been severely limited since the Cultural Revolution. Professors are assigned to work in factories, not only to combat elitism but because they are desperately needed to help China meet its industrial goals. It was also evident, at least during our visit, that people from the Institute, the university, and the factories enjoy a lively interchange of information and ideas. There were always representatives of all three at our lectures, discussions, and banquets.

Peking, July 24. Ching Hua University. Ching Hua, founded in 1911, is China's leading technical school.
There are eleven departments, specializing in forty-eight areas, such as electrical engineering, radio engineering, and precision instrumentation. Its faculty of 2600 includes 190 professors and one thousand lecturers. We were told that before the Cultural Revolution enrollment was about 12,000 and the university was run by the professors. Admission was based entirely on academic qualifications, and the five- to six-year study course was a rigid one of lectures, note-taking, and rote memorization.

The University's Revolutionary Committee was established in 1969 to carry out the "revolution in education." In terms of leadership, this means that the working class now runs the university, although some faculty and students are members of the Revolutionary Committee. Since 1969, teachers have gone to factories and farms to receive re-education for six months or a year, and some older workers have also been invited to be teachers. The students, who come from the workers, peasants, and soldiers, must now meet six admission requirements, including "good thinking and a determination to serve the people."

The three-year course of study requires eight months of classroom work and two-and-a-half months of practical experience each year. The students are supported when in school. The curriculum is designed to keep the students from becoming isolated from society and to provide "better moral, professional, and physical training."

The main problem with the new system we were told was that the "cultural levels of the entering students is different." Their middle school preparation is uneven and they forget a lot during the long break between middle school and university. The first half year at the university, therefore, is devoted to review. In general, they said, the problem lies in combining theory and practice.

Is this very different from some aspects of our "revolution in education"? It is more drastic certainly to us, but China's entire proletarian experiment is drastic. If it is more drastic, however, there is all the more determination to make it work. "Teachers and students are comrades in arms," the Chinese say. "We study for the Revolution. We teach for the Revolution."

Peking, July 25. The Great Hall of the People. We are guests of honor at what is clearly the main banquet of the visit, given by Kuo Mo-Jo, who is chairman of the Chinese Academy of Sciences and also vice chairman of the Standing Committee of the National People's Congress—a grand old figure said to be China's leading intellectual. In introducing his toast to friendship, he summarizes what we have seen and speaks of China's technical backwardness, saying that while China's computers perform a hundred thousand calculations per second, the United States computers operate at a hundred million per second. China's technology, he said, has a great deal to learn from the United States.

In some ways, Kuo's statement accurately reflects the difference in our technologies. The Model 111 is not remarkably different from many machines which have been in use in the United States for about five years. It is the fastest of the four integrated circuit machines we saw, and incorporates some common design features which makes it more sophisticated than the others. It is, however, a prototype. The machines we saw in production were considerably less ambitious. As a prototype, the U.S. has the Control Data "Star" computer, twenty times as large and five hundred times as fast.

The comparison is inaccurate, however, if we use it as a measure of "backward" technology. It was clear from the quality of the memory work we saw in the factories, for example, that China has the competence to make much larger machines. I do not doubt that if priorities called for one million word machines, China would make them. It is important that any assessment be made in the context of China's own political structure and economic realities. Until a few years ago, China was unable to feed herself. She has undergone a major revolution in the last five years which explicitly deflected attention from research and technology. In this context, I think it is fair to say that China's progress in the computer field has been both rapid and impressive.
Lucian Krukowski, dean of Washington University's School of Fine Arts, is a man who thinks big. When he came here from Pratt Institute in Brooklyn, his first concern was to find a house with high ceilings and plenty of elbow room for his outsized oils. This summer he was given painting room beyond his wildest dreams: some 7488 square feet of blank wall in the middle of downtown St. Louis. Dean Krukowski was asked to design the mural when the Art and Fountains Fund of St. Louis received a matching grant from the National Endowment for the Arts for a wall painting in the city. The wall finally chosen was ideal for the project: a blank, windowless expanse that had become visible when an adjoining building was torn down. When he agreed to do the mural, Krukowski thought first of scaling up one of his paintings to mural size, but after looking at the vast expanse of masonry, he decided to try to create a design that would “take the wall’s own dynamics into consideration.” The mural was painted by professional building painters from sketches made by Krukowski, who decided to limit the design to geometric forms, reasoning that human or animal forms on such a gigantic scale would be overwhelming.

Transferring the Krukowski design from the studio to the nine-story wall took a team of four painters three weeks and required 137 gallons of paint. The artist checked on proceedings from the ground, remarking that working nine stories in the air was above and beyond the call of duty. The finished mural has added a dash of color and excitement to downtown St. Louis that may prove contagious. Robert H. Orchard, chairman of the Art and Fountains Fund, has remarked hopefully, “St. Louis is full of walls.” As for the artist, now that he’s done a really big painting, he may turn to miniatures, but we doubt it. He’s thinking bigger than ever these days.
Alumnus A. E. Hotchner is the author of some 300 articles and short stories, several stage plays and television dramas, and the international best seller Papa Hemingway. His latest work, King of the Hill, is a moving and memorable portrait of depression days in St. Louis. Set in the hot summer of 1933, when Hotchner was twelve years old, the book describes his struggle for survival in a period when his mother was in a sanitarium, his father was broke and stranded in Oklahoma, and he was alone and barricaded from eviction in a cheap hotel room. In the chapter reprinted here, the young Hotchner survives one of the most severe trials of his lonely summer—his graduation from the grade school where he had struggled for so long to hide his terrible poverty from his classmates.

A Chapter From

KING OF THE HILL

By A. E. HOTCHNER, AB, LLB 40

I woke up at six o’clock on the morning of my graduation, too excited to sleep. I had taken out my graduation clothes the night before and lined everything up, so that first thing in the morning when I opened my eyes, there would be my black shoes on the window sill, white pants over a chair, blue jacket over another chair, and my shirt and tie on the table. I had washed out my socks, underwear, and a handkerchief the night before and hung them on a hanger in the window to dry. That St. Louis heat, they were probably dry before I fell asleep.

The white pants fit me absolutely perfect, and you know about the shoes, but I had a couple of problems with the shirt and coat. It turned out that Lester’s idea of too small for him didn’t mean small enough for me. The shirt wasn’t so bad, because I turned the cuffs of the sleeves up and buttoned them that way and that made the arms all right. Then I found that if I didn’t button the collar and just knotted the tie very hard into my Adam’s apple it pushed the collar in and it didn’t stick out from my throat. I really hate to see guys with ties on and the front of the collar is about thirty yards away from the guy’s neck.

There wasn’t much I could do about the coat, though. It was pretty roomy and the sleeves came down to about the middle of my palms, but Lester showed me that if I didn’t button it and just let it hang open you couldn’t tell if it fit or not. I tried walking around the room that way and looking in the mirror and I guess he was right. Besides, we weren’t actually wearing our coats for the graduation ceremony. As I told you, the school had these robes which we were supposed to wear, and from the looks of them they had probably been given to the school by old Admiral Dewey himself. We each had to bring fifty cents for having them cleaned afterward, so there went the fifty cents my father had given me.

I must’ve tried on my clothes about a dozen times waiting for it to be time to go to the graduation. I told you how I’m always looking past the bad things on to the good things ahead, and I was sure looking forward to (1) playing the violin in the orchestra (I had stayed at school and practiced every afternoon), (2) standing up there with Christina Sebastian and reciting our parts, (3) the party Billy Tyzzer was having for all the boys afterward, (4) the dance in the evening, from seven to nine, when I was going to have my first real date with Christina. Actually, my first date with anybody. Lester had given me the dollar for the dance. I hadn’t wanted to take it but it made Lester mad. Really mad. So I had to take it to keep peace.

We all assembled a half hour early to have a group picture taken in our robes, girls in front, boys in back, and if you wanted one for thirty-five cents you signed up. I would have liked one to take to my mother but it didn’t look like I’d have thirty-five cents for quite a while.

Those of us who were in the orchestra took off our robes and went out and tuned up. When the parents and everybody were all seated, Mr. Kelly, the music teacher, came in and bowed and got a big hand. He knocked his baton a couple of times to get our attention, especially the little kids, then he swept his arms up in the air and we all set off on Pomp and Circumstance. The little kids kept speeding up, so I guess it sounded a
little like we had an echo. But then came the part where
me and Wanda Fabian, who played the cello, had this
section all to ourselves. I didn’t feel a bit nervous and
my fingers hit every note right on the nose and so did
Wanda, so nothing sounded sour and when we finished
and everybody cranked up together again, the little kids
in the lead, there was a nice round of applause for me
and Wanda.

When it was over, Mr. Kelly took a couple more bows
and us graduators went back and put on our robes and
all of us trooped in and sat down on the stage, boys in
black left and girls in white right. Our principal, Mr.
Herbert P. Stellwagen, made a little speech and then we
went up in pairs and gave our recitations. Christina Se­
bastian looked so pretty in her white gown with her
blond hair falling out from under her cap that I almost
forgot my opening lines. But you could tell we had
really rehearsed and I gave it a lot of elocution and ges­
tures. Even though Christina was nervous at first, we
ended up with a bang.

The diplomas were handed out by Mr. Jansen K. Lit­
tle, who was superintendent of all the St. Louis ele­
camental schools, and as we had rehearsed, we took
with the left and shook with the right. Every kid’s group
in the audience gave him a big hand when he got his
scroll from Jansen K. Little, but I began to get worried,
as the alphabet got closer and closer to me, about what
would happen when he called my name. I knew Lester
was there—you couldn’t miss him in his white T-shirt—
but how would it sound with just one person clapping
for you? I began to get fidgety and it got very warm in
that robe of mine. I began to wish that Jansen K. Little
would never get to my name.

But he did, and I went over and took with my left
and shook with my right, and the only real applause I
got was Lester’s. He applauded as loud as he could, but
that made it worse because it stood out all the more.
There might have been a couple of other little palm
taps here and there but you could barely hear them. It
made me feel pretty miserable, I can tell you. On the
way back to my seat, I kept my head down so’s I
wouldn’t have to look at any of the other kids. Nancy
Inwood was already going up to get her diploma so
maybe it wasn’t as noticeable as I had imagined. But
when I sat down with my hands curved on the smooth
round of the diploma, I felt pretty awful, and the good
feelings from the violin and the recitation had washed
away. Why is it, I sat there thinking, that the good
things that pop up almost always get clobbered by these
miserable darn things that seem to choke out everything
like stinkweeds? I just sat there with my hands clenched
around my diploma, grinding my teeth together, getting
madder and madder, and shutting out, best I could, the
bursts of applause each kid was getting.

Finally, thank God, it was over, and Herbert P. Stell­
wagon took over again and blabbled about how we would
all be going forth to McKinley and Soldan High Schools,
carrying with us the treasures of knowledge we had
been given at Admiral Dewey. “I now take pleasure,”
Herbert P. Stellwagen said, “in presenting the Admiral
George Dewey Achievement Award to that member of
the graduating class who possesses that combination of
scholastic ability and extracurricular accomplishment,
good character and wholesome personality, sports ability
and pride in his work and school—in short, that com­
bination which best exemplifies what we seek in our
young people going forth toward a higher education.”
He then announced my name, but to tell you the truth
I was still feeling very sorry for myself about my diploma
applause and my mind was so far away from Herbert P.
Stellwagen that when I heard the biggest applause of
the day, with all the kids around me applauding, I just
applauded, too. Finally, Billy Tyzzer reached over and
gave me a big shove on the back and I sort of woke up
and everybody laughed and applauded all the harder.

I was all flustered and confused but I managed to walk
stifflegged over to where Herbert P. Stellwagen was
standing with a big smile on his face. First he handed
me a rolled-up scroll, which I took with my right and
shook with my left, then tried to shake with my right
but I stuck the scroll in Herbert P. Stellwagen’s hand
and everybody laughed. We finally got our hands to­
gether, and then he handed me a velvet box with a
medal in it and finally a gift box, tied with a ribbon, that
said, “P.T.A. Gift to Admiral George Dewey Achieve­
ment Award Winner.”

I thanked Mr. Stellwagen and started to go back to
my seat but he took my arm and held me there and
said, “Aaron, I just want you to know in front of all these
witnesses how much pride I take in having students like
you pass through the learning halls of Admiral Dewey.
As teachers, we have learned as much from you as you
have learned from us. Thank you from the bottom of
our hearts.”

Everybody burst out applauding and this funny feel­
ing suddenly swelled up inside me. I stood there with
Herbert P. Stellwagen holding my arm, trying to keep
this funny rising feeling down inside me, and I could see
Mr. and Mrs. Tyzzer smiling at me and applauding, and Mr. and Mrs. Sebastian carrying on like I was their son-in-law, and all my teachers applauding, especially Miss Mathey, who was right in the front row and clapping hardest of all.

Afterward, everyone out on the sidewalk patted me on the back and smiled at me and I felt simply wonderful. Lester drove me back to the Avalon in the Marmon. He said there wasn’t a pair of shoes up there on that stage that could’ve held a candle to mine.

I went on up to the room because I wasn’t due at Billy Tyzzer’s for about an hour. I opened the velvet box and took out the medal. It was bronze. Engraved in a circle, it said, “Admiral George Dewey Achievement Award 1933,” and then engraved straight across the middle was my name. I opened the scroll. It said just about the same thing, with my name printed in big letters. I never knew that seeing your name like that could make you feel so important. Like it was proof that there you were—somebody. I suddenly missed my parents very much. My father, too, because he’d be running around the lobby and all up and down Delmar with the scroll and the medal, showing everybody with that overpride of his, but this time I wouldn’t have minded because I was the Admiral Dewey Award champion. I wondered if the St. Louis Post-Dispatch would run it.

It didn’t seem right that there I was with that beautiful medal and scroll and nobody to show it to. Sure, I’d take them out to show my mother when I’d take them out to show my mother when...I’d take them out to show my mother when... I had opened the doorknob to leave when I suddenly remembered the P.T.A. present. Criminy, how could I forget a thing like that? The box was heavy. I took off the ribbon carefully and unwrapped the gold paper so’s not to spoil it. Inside the cardboard box there was white tissue paper. And inside the tissue paper was a large book—The Pathfinder, by James Fenimore Cooper.

I had a good time at Billy Tyzzer’s party except for the end, and that was awful. The party was in the back yard, and we played softball and had hot dogs and ice cream and a watermelon race. Each team had a watermelon and we had to race with it in a relay and then slice it open, divide it up, and the first team to eat its watermelon won. We were doing all right except for Perry Armbruster, who kept being very polite and taking the seeds out of his mouth and putting them on his plate instead of just spitting them out on the lawn like everyone else. But it was fun even though we didn’t win.

All that part of the party was fine, but then at the end came two hard knocks. One was that Billy Tyzzer discussed the dance with me. First he asked me if I was sending Christina a corsage of one gardenia or two. He said the guys who were sending two were just showing off, and he hoped I was just sending one like he was. He then said that after the dance his father and two other fathers were going to take a group in their cars to Medart’s on Clayton Road for hamburgers and shakes, and I was one of those invited to come, with Christina. Everyone was going to chip in a dollar and that way there wouldn’t be all that divvying up at the end. He told me where to meet after the dance. That was the first knock.

The second was when I went to the toilet before I left. I was in the toilet when several of the guys came into Billy’s room and they didn’t know I was in the toilet.

“Hey, did you see that jacket Big A Little a is wearing?”

“That’s not a jacket, that’s his overcoat.”

“Does he have a big brother?”

“Naw, he’s just planning for the future. That’s the way it is with Achievement Award winners.”

“What I like is the shirt. The collar is puckered like it’s on a drawstring.”

“Maybe he thinks it’s a costume party.”

“He’d win first prize, all right.”

They all had a good laugh. Of course I knew who belonged to the voices, especially Rudy Lavolette, who was jealous because he had wanted to go to the dance with Christina. I waited until I was sure they were gone.
before I came out. All the way home I kept telling myself I didn’t care what they thought of my jacket and shirt, they were probably just jealous of my Achievement Award, but when I got back to the room and started to think about the dance I got more and more deflated. I didn’t know about the gardenias; no one had told me. I didn’t even know what a gardenia looked like, for crying out loud. On the way back to the hotel, I had gone into the Woodbine florist and he had shown me one through the icebox window that he said I could have for fifty cents. So that, plus going to Medart’s, was a dollar-fifty and it would just as well have been five hundred. I stood in front of the mirror and looked at myself. Maybe they were right. Maybe that’s how I looked. I took off Lester’s jacket and threw it against the wall above the table and it landed on the table in a heap.

Even if I had a jacket that fit, how could I possibly get my hands on a dollar-fifty? There was the radio but I didn’t know how to pawn things, and besides I just didn’t know about the gardenias; no one had told me. Maybe they were right. Maybe that’s how I looked. I took off Lester’s jacket and threw it against the wall above the table and it landed on the table in a heap.

Even if I had a jacket that fit, how could I possibly get my hands on a dollar-fifty? There was the radio but I didn’t know how to pawn things, and besides I just couldn’t do that to my father, even if they let twelve-year-old boys pawn radios, which I doubted. Lester wasn’t there. When he dropped me off, he had said that he was driving to Rolla and that he was going to stay overnight.

The more I thought about how things were, the more I knew I couldn’t go to the dance. But I didn’t know what to do about Christina.

“Christina Sebastian?”

“Yes.”

“This is Dr. Diamond calling. I have bad news for you. Aaron is at death’s door but he says for you not to worry, that he’ll pull through and you’re to go to the dance and have fun.”

“Hello, Christina Sebastian? This is police headquarters. Aaron has been kidnapped and . . .”

“Hello, Christina Sebastian? This is the White House calling. Mr. Roosevelt has sent for Aaron . . .”

“Christina Sebastian, it is my duty to inform you that the Nautilus is forty-eight hours overdue and it is feared that Aaron and the complement of thirty-six men are trapped on the bottom of the sea . . .”

What I wanted to do was hide there in the room and do nothing. But I just couldn’t stand Christina up, could I? She had a right to go to the dance in her pretty new dress with a gardenia pinned on it, didn’t she? And to go to Medart’s afterward with a guy who looked like something, and have a hamburger and shake. She had the right, didn’t she?

I really didn’t know what to do. Usually when things really squeeze me I can think of something, some way to help myself, but no matter which way my mind squirmed around it seemed hopeless. Finally, knowing it was hopeless but trying anyway, I went down and asked Johnny Cafferetta. Just for a dollar. To loan it to me till my father got back. He said he would have if he could but he couldn’t. In fact, he said he didn’t know if he could open his doors one day to the next. So all that did was give me a new worry whether Johnny would go out of business and I’d have nowhere to eat.

I’m ashamed to admit that it even flicked across my mind that I might sell Skippy and his cage to Mr. Farley. But it was only a flicker. I had my cigar bands and my bag of marbles, but who would buy those in the next hour? No, you see, it was hopeless. In the back of my mind was forming the only solution I could think of. I didn’t want to think about it, but the more I couldn’t think of anything else, the more this rotten solution nudged itself up to the front of my mind, and I finally realized, the time being what it was, that it was just about the only thing I could do.

I went down the hall to the room with the telephone I used when I was soliciting for the gas workers’ picnic. I looked up Rudy Lavolette’s phone number in the book that was under the phone.

“Hey, Rudy, listen, this is Aaron. This thing has come up, I know it’s at the last minute, but I’ve developed this terrific stomach ache and the doctor thinks it might be my appendix, and I wondered if you could take Christina Sebastian to the dance.”

“Oh . . . sure. You bet.”

“I’m sort of in bed now and I’ve got to keep ice on my stomach, so I wondered if you would call her and explain everything and tell her I’ll call her tomorrow.”

“What if you’re in the hospital?”

“Yes, well, I’ll call her from the hospital.”

“Sure, Aaron, sure thing. Gosh, that’s a tough break.”

“I don’t feel like dancing, I can tell you.”

“Well, don’t worry about anything. Oh, one thing—have you sent her a corsage?”

“Oh, not yet. Matter of fact, I was going to pick one up on my way.”

“Gosh, I’d better hurry out and get one.”

“But call her first.”

“Oh, I will, I will. And I hope you’ll be okay.”

“Oh, sure, don’t worry about me. I’ve got an appendix like iron.”

I went back and took off my necktie and rolled up the sleeves of my shirt. I unpinned the Achievement Award medal from the jacket and put it on the crown of my feltite. Then I went on out and walked the gutter all the way down to Grand Avenue, looking for cigar bands and thinking about things. It was just like Old Lady Heinsen said when she heard her nephew was dead. The Lord giveth and the Lord taketh away. I guess when you came right down to it, the Bible made a lot of sense.
ANNUAL REPORT
of
WASHINGTON UNIVERSITY
1971-72
with
COMMENTS BY THE
CHANCELLOR
FOREWORD

Washington University is a private institution governed as a public trust. The following pages constitute a condensed report to the constituencies of the University on the management of this trust during the fiscal year ending June 30, 1972. This summary is presented in terms both of fiscal operations and of purposes which the University's financial resources have implemented. The good accomplishments reviewed in the report are a tribute not only to the people of Washington University—students, faculty members, administrative staff, and trustees—but also to the continuing support of the St. Louis community and of alumni and friends throughout the nation.

Charles Allen Thomas
Chairman
Board of Trustees

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COMMENTS BY THE CHANCELLOR

Fiscal Responsibility and University Administration
A full annual report of a university would take volumes. Because Washington University is a collection of separate persons with individual talents, goals, and aspirations, and because it is the function of a university to foster these special attributes and differences, a full report would have to describe the personal and intellectual growth of each student and faculty member. It would tell of hours spent in solitary wrestling with difficult abstractions and the struggle to bring new insights into being. The reader would learn of successes and failures. The report would document the flow of ideas from one person to another and would recognize the dedication of all who have made the institution possible.

An overview for the year is offered in place of such a report. It begins with a few landmarks:

Landmarks

With the opening and dedication of the Seeley G. Mudd Law Building, the School of Law has realized a long-time dream for much needed classroom, administrative, and library space. In its former quarters, the School could not increase enrollment or maintain adequate library resources, so important to legal study. The Seeley G. Mudd Building, enhanced by the Eugene A. and Adlyne Freund Library, corrects this deficiency. At the same time, the adjacent Social Sciences Building has made possible the physical unity of the social sciences by housing the departments of Economics and Political Science, contiguous with other related departments and institutes, in McMillan Hall.

Of note also are the University’s new Cancer Immunology Laboratories at the School of Medicine. They are part of an extensive basic research program on the immunological properties of cancer made possible by a grant of $2 million from seven tobacco firms and Tobacco Associates, Inc. This was the largest research grant ever made by the tobacco industry to a single institution. It is noteworthy that the grant is for fundamental research into the problem of cancer; it does not deal with tobacco or smoking.

In 1971-72, a record number of graduate degrees was earned. The undergraduate enrollment reached a new high.

During the year, numerous faculty members received professional honors, including a number of awards of great distinction. In the field of letters, Professor Howard Nemerov was elected a Fellow of the Academy of American Poets. Two members of the faculty received Guggenheim Fellowship awards and two were named Senior Fulbright-Hays Scholars. In the medical area, Dr. Carl V. Moore, Busch Professor and chairman of the John Milleken Department of Medicine, was given the 1971 Abraham Flexner Award for “distinguished service to medical education” at the eighty-second annual meeting of the Association of American Medical Colleges. Dr. Moore’s sudden death in August was a loss to his family, his countless friends, Washington University, and American medicine. Dr. P. Roy Vagelos was elected to the National Academy of Sciences, bringing to eleven the number of our faculty holding membership in the Academy or its Institute of Medicine.

In 1971-72, the University welcomed back to the faculty Murray L. Weidenbaum, who served two years in the Nixon administration as Assistant Secretary of the Treasury for Economic Policy. At the time Professor Weidenbaum departed for Washington, he was chairman of the Department of Economics; he returned as Edward Mallinckrodt Distinguished University Professor.

A most encouraging development of the year was the record number of private gifts the University received: $21.2 million. These private funds are essential for financing the operation of Washington University. Fiscal matters are a primary concern of this report and will be detailed in the section on the financial condition of the University.

Discussion of our educational programs, research progress, community service, and financial situation follows.

Students and Educational Programs

In the academic year just ended, the number of undergraduates and of graduate and professional students continued to rise slowly, reaching 7940 in 1971-72. This figure reflects record enrollments in nearly all divisions. With the inclusion of students registered in the School of Continuing Education, total enrollment was 11,174.

Growth in undergraduate and graduate enrollments over a twelve-year period is shown below.
At a time when freshmen enrollment in private schools across the country has been falling off significantly, ours has held its own. Last year, it increased slightly over the previous year to a new peak of 1043. Furthermore, 43 per cent of these entering students ranked in the top 10 per cent of their high school class. Another achievement is our increased retention rate. The proportion of freshmen who continue at Washington University for four years of undergraduate study has reached a level of 70 per cent. At the same time, the number of undergraduates choosing to transfer to Washington University has risen—to 275 students in each of the past two years.

Students represent a broad geographic mix, as well as a strong local group. In 1971-72, 28 per cent of the freshmen were from metropolitan St. Louis and 34 per cent of the undergraduates consider this area their home. In addition to students from virtually every state in the Union, sixty-six countries are represented on campus; almost 800 persons from abroad are associated with the University.

In 1971-72, the University granted 1121 undergraduate and 1044 graduate degrees, the largest number of graduate degrees ever awarded here. In view of widespread reports of a declining market for Ph.D.'s, it is noteworthy that of 131 doctorate graduates in Graduate Arts and Sciences last year, 126 had received appointments by late summer to positions for which their graduate education directly prepared them.

The continuing challenge before the University is to sustain a flexible curriculum that will enable teachers and their students to develop programs to meet the students' individual needs and the needs of a constantly evolving society. Last year saw the introduction of two innovations in the College of Arts and Sciences: the research assistant program enables a student to sign on and gives their students to develop programs to meet the students' individual needs and the needs of a constantly evolving society. Last year saw the introduction of two innovations in the College of Arts and Sciences: the research assistant program and the special major programs. The research assistant program enables a student to sign on with a faculty member to assist with his research. This first-hand experience adds relevance to a young person's study and gives him a realistic understanding of the work involved. In 1971-72, 160 student assistants conducted research under the aegis of ninety-six faculty members. The special major program was approved by the faculty for introduction this fall. This program allows the student to work out with his counselor an individualized curriculum in his field of concentration. In this way, the student assumes considerable responsibility for choosing the areas of study that are appropriate for him. Two other experiments were tried. One was a change in the academic calendar whereby the first semester ended before the Christmas break. This innovation was especially popular with students. It allowed a second experiment—the scheduling of an intersession between semesters—in which short, non-credit courses were offered, ranging from auto mechanics to Russian culture in historical perspective. Intersession courses drew varied reaction and will be appraised further in the coming months.

Because interdisciplinary study has become important in so many areas of study, several new degree and inter-school programs were instituted during the year. Three degree combinations involve the School of Social Work, although one has been in existence for several years. Each is believed to be the first of its kind in the country.

One is an arrangement with the Graduate Institute of Education whereby students preparing for a career in educational counseling qualify simultaneously for the Master of Social Work and the Master of Arts in Education. A second program, leading also to two master's degrees, was worked out with the School of Architecture. The third program permits the student to obtain a Master of Social Work degree along with a Juris Doctor degree. Each of these arrangements is designed to equip the professional with a broader insight into the social and community implications of his work.

In recent years the links between engineering and medicine have become more and more numerous. One of these programs, the Master of Science in Technology in Health Care, granted its first degrees in May. Designed to prepare engineers for positions in hospitals and other medical fields, the course sequence deals with areas of technology important in health care delivery, such as electrical safety, monitoring instrumentation, information retrieval and transfer, and intensive care design. Even in its short existence, the program has attracted more applicants than can be accepted.

Also of interest is an interdisciplinary, interdepartmental master's degree program in technology and human affairs, established last fall. Participants may choose to work toward the M.S. in engineering or the M.A. in arts and sciences. It is offered in response to a growing demand for persons with broad understanding and specialized training in the application of science and technology to societal problems. The program appears to have enjoyed good acceptance. As a consequence, a new course design has been developed for undergraduate engineers who may elect a major in technology and human affairs.

At the School of Medicine, in response to student concern about social issues and the role of the physician, a required course was introduced in the social aspects of medicine. It draws on scholars from many disciplines—such as economics, biomedical computing, and ecology—as well as on public figures from the community, to participate in teaching.

In addition to new courses and curricular development, one means of enhancing the academic environment is by bringing to the campus outstanding individuals from the world of the arts and of business to share their experiences and to engage in the give and take of the classroom. Three examples follow:

For the past five years, the School of Business and Public Administration has invited a distinguished businessman-in-residence to conduct an annual two-day seminar. Most recently, the Honorable Robert L. Hill, until last spring U.S. Ambassador to Spain, was businessman-in-residence.

The Fannie Hurst Professorship of Creative Literature has brought leading writers to the campus. Five well-known literary personalities served for three-week periods in 1971-72 as Fannie Hurst Professors. Last year, thanks to a grant from the National Endowment for the Arts, the School of Fine Arts inaugurated its first Visiting Artists
Program. During the year, eleven artists of national reputation spent varying lengths of time at the School.

It is not easy to measure student accomplishment and educational productivity. The performance of our entering class on the Scholastic Aptitude Test is well above the national average. More significant, 29 per cent of the undergraduates made the Dean's List in 1971-72. Another index of the quality of the student body is the number of premedical students accepted into the nation's medical schools. At a time when competition for available places has never been greater, 62 per cent of our applicants gained admission into medical school, compared with a national average of 37 per cent.

In December, a senior in engineering, Gerald Sauer, was named a Rhodes Scholar and is continuing his studies at Oxford University. In addition, five students—two seniors and three graduate students—received Fulbright scholarships for study abroad.

The cost of quality education continues to rise. For this reason, the University has reluctantly authorized tuition increases. Scholarship and loan assistance has, of necessity, grown steadily as tuition has advanced, reaching a high of $3.6 million in awards to undergraduate students last year. Thirty-six per cent of the undergraduates—almost 1500 students—received scholarships totaling $2.4 million. A similar number of loans was granted, totaling $1.2 million. Many students, of course, received both. Just under one million dollars of the loan funds was made available to the University through the National Defense Education Act.

The preceding graph illustrates the growth of undergraduate financial aid over twelve years.

At the graduate level, Federal fellowship funds—a major source of aid in the sixties—are rapidly dwindling. Unless we can extend our capacity to offer scholarship assistance, Washington University stands to lose many well qualified applicants who must depend on financial aid to meet a large portion of their educational expenses.

University administrators are agreed that the campus of a few years ago, frequently the scene of protests and turmoil, has largely returned to more academic pursuits. This quiet, however, does not reflect lack of activity. Rather, it indicates a change of emphasis, a more serious approach, a questioning: What is the value of my education? Where is it taking me?

In a recent letter to parents, James H. Laue, vice-chancellor for campus affairs, pointed out that there is indeed a great deal of activity on campus. This activity is directed toward study and out-of-classroom experience. Students have been especially interested in their own personal growth. They are uncommonly idealistic about their relationships with other people. Racism, war, the environment, poverty, and women's rights continue to be active concerns. Students, faculty, and others at the University have worked in a quiet, conscientious manner on these issues, and students have turned their efforts to preparing themselves professionally to translate their high ideals into more effective ways of changing society. Some of their services in the community are discussed in a later section of this report.

It is interesting that a more intensive attention to studies has been balanced by an emphasis on playing hard. Students organized and participated in many activities just for fun, including the sponsorship of two campus coffee shops, Apple Pie and Mother and Catcher in the Rye; presentation of the Red Rose Cotillion, a parody of a formal high school prom; and participation in intramural sports—15,600 players took part in 1150 athletic contests, compared with 10,300 players in 650 contests five years ago. Many students, of course, are active in more than one sport.

Faculty and Research

In any university dedicated to scholarship and learning, research and teaching form an inseparable partnership. Washington University has become recognized as a first-rate institution because its faculty is devoted to excellence in teaching and to the pursuit of scholarly research.

One index of the quality of intellectual endeavor here is the fact that six professional journals are edited on campus. Further evidence of scholarly productivity may be noted in the more than sixty-five books published by members of the faculty in the past year.

Because of the reputation of the faculty and its teaching programs, the University attracts considerable funding from Federal and private sources for research and educational projects. In 1971-72, grants and contracts totaling $37.5 million were awarded to Washington University for over 550 projects. Of this amount, $35.6 million
represents Federal commitments to the University, an increase of $6.8 million over the previous year. Two of the largest awards were one million dollars each. One of these grants continues support for the Biomedical Computer Laboratory, of which Professor Jerome R. Cox, Jr., is director. The other supports research in the Edward Mallinckrodt Institute of Radiology, conducted under Michel M. Ter-Pogossian, professor of radiation physics. For the past three years, Washington University has ranked from twenty-fifth to twenty-seventh in the nation in terms of Federal commitments to universities.

At any one time, there may be several hundred research efforts in progress in various parts of the University, ranging from the most basic investigations on which ultimate progress rests—in molecular biology, for example—to research having immediate technological applications.

A few examples of research and other creative work at Washington University follow:

Work in the Laboratory for Space Physics of the Department of Physics

Martin H. Israel, associate professor of physics, heads a group of six scientists who are building an instrument to be flown on a satellite tentatively set to be launched in 1976. Also participating in the project, supported by the National Aeronautics and Space Administration, is associate professor Joseph Klarmann. The other institutions involved are California Institute of Technology, the University of Minnesota, and the McDonnell Douglas Research Laboratories. The purpose of the instrument is to study the chemical composition of heavy, high-energy cosmic rays. This research was just getting under way at the close of the year. It is related to other work by Washington University scientists associated with Robert M. Walker, McDonnell Professor of Physics. They designed the radiation detector carried by the Apollo 16 spacecraft last April. Professors in the University's Laboratory for Space Physics—one of the leaders in studies of lunar material—collaborated in the Apollo 16 test with scientists from the University of California at Berkeley and the General Electric Company. Common to each of these groups is an interest in the heavier particles of solar and galactic radiation.

Work in the Specialized Center of Research in Thrombosis

A cooperative venture of considerable significance is the Specialized Center of Research on Thrombosis (the formation of blood clots) established during the year. Headed by Dr. Stanford Wessler, John E. and Adaline Simon Professor of Medicine, it uses the resources and facilities of the School of Medicine, Barnes Hospital, and the Jewish Hospital of St. Louis. Thrombosis cuts across the whole field of medicine. It is involved in the commonest cause of death, coronary disease, and in the nation's number three killer, stroke.

Physicians in the Center are collaborating with the School of Engineering and Applied Science. In one aspect of this study, specialists, knowledgeable in the area of fluid flow, are applying engineering techniques to the study of blood flow patterns in situations known medically to cause blood clots. They are examining the mechanistic connection between flow and clotting. It is known that retardation of blood flow, which may come with prolonged illness or aging, can cause clots. Not known is why the clots form. Working with the Division of Nuclear Medicine, investigators are using radioisotopes to measure the normal pattern of blood flow and the changes in the pattern of flow when clots are present. In this way, they hope to learn how to detect blood clot formation and, thus, to control clotting before it becomes a serious problem.

Work in Ecology

Ecology is another field that engages a broad spectrum of scientific study. At Washington University, faculty members in many disciplines are conducting studies related to environmental health and ecology. One such project is headed by Phyllis M. Hartroft, associate professor of pathology, and Charles Kuhn, assistant professor of pathology. They have drawn on a team of electrical, mechanical, and aerospace engineers to help investigate the relationship of environmental quality to disease processes. This group is measuring the effects of various levels of simulated air pollution on animals exposed to them for extended periods of time. In this way, they hope to understand better how air pollution causes or aggravates certain respiratory and cardiovascular diseases (emphysema, high blood pressure, heart attacks, and anemia). Most of this work is taking place at our Tyson Research Center, about eighteen miles west of the campus.

On other ecological fronts, Professor Owen J. Sexton in the Department of Biology is studying camouflage as it pertains to animals. He is concerned with determining the role of varying kinds of color patterns in protecting certain animals against predation. In the Department of Anthropology, Professor John W. Bennett is completing an investigation of the ecology and social anthropology of agricultural development in a 5000-square-mile region of Canada. He expects to show how population distributions, the rise and decline of towns and villages, and shifts in the farming economy, have resulted in cultural and ecological changes.

The Center for the Biology of Natural Systems is continuing its investigations into the problem of human ecology and environmental health. Physical and social scientists come together to study the origins and significance of alterations in the environment, especially in relation to modern technology. Their interests cover a broad range of problems, from genetic variation to rat control.

Work in the Institute for Urban and Regional Studies

A report of particular interest to St. Louisans has come out of a study directed by Professor Murray Weidenbaum and Professor Charles L. Leven, director of the Institute for Urban and Regional Studies. Made possible through a grant from the U.S. Department of Housing and Urban Development, the report traces the factors that led to urban decay in St. Louis and outlines steps toward a realistic improvement program. A team of seven analysts from several institutions collaborated on the report.
Community Service

Washington University's most important community service is education. Some 52,000 alumni form a part of this nation's educated citizenry, including more than 25,000 alumni who live and work in Metropolitan St. Louis. The University educates 33 per cent of the physicians and 37 per cent of the dentists who serve locally, plus many medical scholars and practitioners who assume leadership positions in other sections of the country. It has the only school of dentistry in the city, the only school of architecture in Missouri.

The School of Continuing Education offers a wide variety of opportunities enabling young people and adults to further their education on their own time schedule. It attracts part-time students from all parts of the metropolitan area. Members of the working community, housewives, and retired people take evening credit courses or courses that simply fulfill a postponed desire to take up portraiture, Roman history, or another personal interest. Students may work for a degree or for a certificate in fields ranging from data processing and real estate to classroom teaching. They may attend conferences, seminars, and special short courses in fields that contribute to their professional advancement, as in business administration and engineering. Last year, there were 6953 enrollments in University College and 2829 in summer school. In addition, 8600 students attended 120 short courses offered by the Division of Professional and Community Programs.

At the Washington University Medical Center, faculty and the young physicians under their tutelage, provide a substantial volume of the medical services available in the St. Louis area. Last year, they handled 217,000 patient visits to the clinics and emergency rooms of the Center. The Medical Center supplied 597,000 days of hospital care. Free medical services in the Center totaled $4.8 million. Dental faculty and students furnished continuing dental care in the clinics for over 5000 persons. In all, they treated patients having a total of 45,817 appointments during the year.

At the School of Medicine, the Division of Health Care Research is involved in a project having broad implications. With support from the Metropolitan Life Insurance Company and the Kellogg Foundation, the Division is developing and testing new approaches to health care delivery. A Medical Care Group, consisting of 824 individuals, representing 312 families, formed the basis for preliminary studies. Now in its third year, this endeavor has been successful. The Division has made plans to expand the Medical Care Group over the next three years to 25 to 30,000 persons.

A program whose impact reaches far beyond this metropolitan area is the Consortium for Graduate Study in Management. Through this program, Washington University has taken the lead in creating opportunities for able blacks and persons of other minorities to obtain the education necessary to compete successfully in business management positions. The University is fiscal agent for the Consortium, established in conjunction with Indiana University and the Universities of Rochester, Southern California, and Wisconsin. Last year, the Consortium broadened its interpretation of business management to accept students desiring careers with non-profit organizations. To date, 150 minority students have earned the Master of Business Administration degree through the Consortium. Graduates are working in major companies and community enterprises across the country.

In addition to these formal programs, other services are undertaken by students and faculty to help fill community needs as they develop or are brought to public attention.

A few years ago the School of Architecture established the Community Design Workshop to offer help and training at the community level to groups from underprivileged areas. A recent Workshop project was the development of a preliminary design to enable Kinder Cottage, an urban non-profit preschool, to enlarge and expand to a full day-care program. In another project, a construction system was devised for mass producing components to be used in the scattered housing program administered by the Union-Sarah Economic Development Corporation.

Students have also been involved in community service projects. Many law students are interested in making legal help available to groups or people who, they feel, have not been adequately represented under our judicial system. In the School of Law, the first year of a new program was initiated, in which students serve as volunteers with the Delmar Office of the St. Louis Legal Aid Society. The School contributes overhead for the facilities, and the full-time staff of the Society provides supervision for the participating students. This experience brings students into direct contact with legal problems of the poor. Twenty-five students participated last year, with many more volunteering than could be accommodated. Plans are being made to enlarge the program.

In addition to their formal training, students at the School of Dentistry are engaged in several activities outside the medical complex. On a rotating basis, all third- and fourth-year students examine and care for children at the dental clinic of the Herbert Hoover Boys' Club in north St. Louis. A faculty member in attendance from the School oversees their work. They handle approximately 1500 patient appointments annually. On a voluntary basis, students also cooperate with the St. Louis County Department of Health in providing dental inspections for children in the Special School District.

Many students today consider part-time, off-campus activities an important part of their educational experience. One campus agency that offers many opportunities for community service is the YMCA/TWCA. Over 1500 students were engaged in programs through the Campus Y last year. Among the most popular activities was tutoring in the Kinloch School District. Kinloch is an impoverished community with limited resources for support of the public schools. Approximately seventy-five students traveled the twenty-mile round trip to Kinloch four days a week in order to give individual attention and instruction to grammar-school youngsters.
Financial Condition of the University

The knowledge and service related products of a university can well be regarded as beyond valuation. Yet, the limitations imposed by available financial resources make consideration of costs an inescapable obligation.

Following is an overall view of total expenditures and support from various sources. Similar figures from the previous twelve years provide perspective on the steady growth of the sums involved.

Total Expenditures and Support

Expenditures

In the 1972 fiscal year, the costs of operating Washington University were $81,832,000. The costs in the 1971 fiscal year were $75,586,000. The increase occurred primarily in externally sponsored research and other expenditures at the School of Medicine.

Investment in the physical plant facilities of land, buildings, equipment, and library books increased $10,984,000. Expenditures for buildings amounted to $8,774,000. In fiscal year 1972, total investment in physical plant reached $126,532,000.

Support

The University has four major sources of support for the activities represented by its expenditures. These are:

— operating revenue from tuition, fees, and other charges
— grants and contracts from governmental agencies
— gifts, grants, and bequests from individuals, corporations, and foundations
— earnings from the investment of endowed funds

Operating Revenue

Total income from payments made by those who benefited directly from the University's operation amounted to $39,162,000. Student tuition and fees accounted for $18,027,000. Patient and laboratory fees for medical services provided by faculty and staff amounted to $6,374,000. Washington University also operates several facilities, such as the Edward Mallinckrodt Institute of Radiology, which are part of the Washington University Medical Center. Income from these organized activities was $7,136,000. The residence halls, food service, and bookstores are auxiliary enterprises with income in 1971-72 of $4,786,000. Other income totaled $2,839,000.

Government Grants and Contracts

Much of the research done by the University is sponsored by governmental agencies, almost all of which are Federal. This support comes in the form of grants and contracts for specific projects. Some of the Federal support is also devoted to programs of direct student aid through fellowships to individuals. Total income from governmental sources in the past year was $29,585,000, an increase of $3,288,000 over the previous year.

Private Gifts, Grants, and Bequests

Support from private, non-governmental sources amounted to $21,207,000. This was an all-time high.
Private Gifts, Grants and Bequests

Washington University
Source and Purpose of Gifts, Grants, and Bequests Received from Private Sources 1971-72

<table>
<thead>
<tr>
<th>Source</th>
<th>(Thousands)</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agencies &amp; Groups</td>
<td>1,303</td>
<td>6.1</td>
</tr>
<tr>
<td>Alumni</td>
<td>2,716</td>
<td>12.8%</td>
</tr>
<tr>
<td>Business Corporations</td>
<td>3,726</td>
<td>17.6%</td>
</tr>
<tr>
<td>Individuals</td>
<td>8,319</td>
<td>39.2%</td>
</tr>
<tr>
<td>Trusts and Foundations</td>
<td>5,143</td>
<td>24.3%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Purpose</th>
<th>(Thousands)</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student Aid</td>
<td>137</td>
<td>0.6%</td>
</tr>
<tr>
<td>Current Operations</td>
<td>5,903</td>
<td>27.8%</td>
</tr>
<tr>
<td>Plant</td>
<td>3,544</td>
<td>16.7%</td>
</tr>
<tr>
<td>Endowment</td>
<td>7,675</td>
<td>36.2%</td>
</tr>
<tr>
<td>Sponsored research and other programs</td>
<td>3,193</td>
<td>15.1%</td>
</tr>
<tr>
<td>Gifts awaiting designation</td>
<td>755</td>
<td>3.6%</td>
</tr>
</tbody>
</table>
The accompanying chart shows the breakdown of this support by source and purpose. Contributions from individuals included bequests of $4,858,000. A very large portion of the private gifts, grants, and bequests was given for special purposes such as plant expansion, endowment, and sponsored research and programs. Of the $21,207,000 total, $5,903,000 could be designated for support of current operations. Included in this amount was a gift of real estate which cannot be applied to current operations until liquidated. The amount available in the 1972 fiscal year for general current operations, exclusive of auxiliary enterprises, was $3,478,000.

**Earnings from Endowed Funds**

The investment of endowed funds resulted in earnings of $6,831,000 used to support University operations. This sum was an increase of $322,000 over the previous year. Gifts to endowment plus the continued appreciation of equities brought an increase of $8,798,000 in the market value of the endowment, which on June 30, 1972, was $163,207,000. The book value was $129,425,000. Of the total endowment at market value, $101,172,000 was invested in equities, $49,096,000 in bonds and short term securities, $5,755,000 in real estate, and $211,000 in other investments. The remaining funds were held in externally administered trusts and in cash. The graph shows the growth of the endowment both in market value and in book value.

**STUDENT AID**

A source of support not directly used for operating expenses is the loan funds available to students through the University. Student loans issued during the year amounted to $1,602,000. Notes receivable from current students and former students on June 30, 1972, totaled $7,627,000. Of that amount, $6,304,000 was underwritten by the Federal Government.

Non-loan aid in the form of scholarships, fellowships, and awards was provided through the sources already presented. In 1971-72, the total of such aid was $7,905,000, an increase of $216,000 from the preceding year. Private gifts and endowment earnings provided $991,000 of the total amount. Governmental funds provided $3,670,000. Tuition remissions and scholarships provided from operating revenue of the University amounted to $3,244,000.

**Current Operations of the Separate Fiscal Units**

Washington University has long pursued the policy of making its professional schools independent fiscal units wherever possible, beginning with the School of Medicine in 1910. Today the Schools of Medicine, Dentistry, Law, and Social Work conduct their operations as separate financial units. The Schools of Architecture, Arts and Sciences, Business Administration, Engineering, Fine Arts, and Continuing Education, plus general University activities and services, such as Olin Library, constitute the central fiscal unit. Each unit is responsible for supporting with its own income the expenditures related to its operation; each maintains its own reserve of funds that it carries forward from year to year.

The most meaningful report of Washington University's financial affairs can be given by presenting separately the summary of expenditures and income for the current operating funds of each unit. These summaries are somewhat similar to the profit and loss statements used in business accounting. In university accounting, as distinct from business accounting, many of the transactions affecting physical plant, endowment, and student loans do not involve current funds and therefore do not appear in these summaries. The central unit is credited for services provided to independent units.

**University Reserves**

In fiscal year 1972, the current operations of all independent fiscal units had income in excess of expenditures and transfers. The central unit had insufficient income to support its schools and activities. The net result was that the University had to draw on the reserves set aside for current operations. These reserves are distinct from other University assets, which continued to grow.

The financial resources of not-for-profit institutions such as universities are kept in the form of funds. Whenever money is given or designated for special purposes, it is set aside in a fund of its own. The University is accountable for thousands of funds. Three major groupings of special purpose funds are those for endowment, plant, and student loans. The size of each was reported earlier, and a more detailed accounting of each is given in the Statement of
Assets, Liabilities, and Fund Balances which appears later. Except for earnings from endowment, the resources in these funds are not available for current operations.

The remaining funds are considered current funds, and this group, too, includes a large number of funds from which expenditures are restricted to special purposes during the year, such as sponsored research. The general, or unrestricted current funds, consist of revenues from the various income-producing operations of the University, plus earnings from endowment and unrestricted gifts. In a given year, income to general current funds in excess of expenditures from general current funds and transfers to other funds is carried forward to the next year. The accumulation of these surpluses constitutes the reserves. Gifts that have been received and are awaiting disposition or designation are considered resources under general current funds, but they are distinct from reserves. Fund balances are the amounts that remain after all transactions have been accounted for in each of the various groupings of funds.

As reported in the Statement of Assets, Liabilities, and Fund Balances, the current funds balance at the end of fiscal year 1972 was $20,779,000. Of this amount, $10,844,000 belonged to restricted funds. Among the general

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**SUMMARY OF CURRENT FUNDS**

**EXPENDITURES AND INCOME FOR SEPARATE FISCAL UNITS OF THE UNIVERSITY, FISCAL YEAR 1972**

<table>
<thead>
<tr>
<th>Thousands of Dollars</th>
<th>Central Fiscal Unit</th>
<th>School of Medicine and Related Activities</th>
<th>School of Dentistry</th>
<th>School of Law</th>
<th>School of Social Work</th>
<th>Other Independent Organized Activities</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Expenditures</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Instruction and Departmental Research</td>
<td>$12,995</td>
<td>$9,268</td>
<td>$798</td>
<td>$699</td>
<td>$429</td>
<td>$0</td>
<td>$24,189</td>
</tr>
<tr>
<td>Sponsored Research and Programs</td>
<td>7,198</td>
<td>18,894</td>
<td>1,052</td>
<td>20</td>
<td>509</td>
<td>0</td>
<td>27,674</td>
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<tr>
<td>Libraries</td>
<td>2,028</td>
<td>497</td>
<td>46</td>
<td>132</td>
<td>80</td>
<td>0</td>
<td>2,783</td>
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<tr>
<td>Student and Scholarship Aid</td>
<td>3,924</td>
<td>323</td>
<td>62</td>
<td>181</td>
<td>57</td>
<td>0</td>
<td>4,546</td>
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<tr>
<td>Plant Operation and Maintenance</td>
<td>2,661</td>
<td>2,125</td>
<td>129</td>
<td>134</td>
<td>107</td>
<td>(24)</td>
<td>5,132</td>
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<tr>
<td>Organized Activities</td>
<td>0</td>
<td>5,153</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1,304</td>
<td>6,457</td>
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<tr>
<td>Auxiliary Enterprises</td>
<td>4,546</td>
<td>874</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>5,420</td>
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<tr>
<td>General Administration &amp; Student Services</td>
<td>4,227</td>
<td>1,121</td>
<td>64</td>
<td>111</td>
<td>95</td>
<td>13</td>
<td>5,631</td>
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<tr>
<td><strong>Total Expenditures</strong></td>
<td>37,579</td>
<td>38,255</td>
<td>2,151</td>
<td>1,277</td>
<td>1,277</td>
<td>1,293</td>
<td>81,832</td>
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<tr>
<td><strong>Transfers to Plant &amp; Other Funds</strong></td>
<td>(11)</td>
<td>1,676</td>
<td>11</td>
<td>70</td>
<td>3</td>
<td>34</td>
<td>1,783</td>
</tr>
<tr>
<td><strong>Total Expenditures &amp; Transfers</strong></td>
<td>37,568</td>
<td>39,931</td>
<td>2,162</td>
<td>1,347</td>
<td>1,280</td>
<td>1,327</td>
<td>83,615</td>
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<tr>
<td><strong>Income</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tuition and Fees</td>
<td>14,619</td>
<td>1,302</td>
<td>580</td>
<td>982</td>
<td>544</td>
<td>0</td>
<td>18,027</td>
</tr>
<tr>
<td>Grants and Contracts</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Support of Research &amp; Programs</td>
<td>8,105</td>
<td>17,853</td>
<td>1,091</td>
<td>24</td>
<td>510</td>
<td>0</td>
<td>27,583</td>
</tr>
<tr>
<td>Contribution to Overhead</td>
<td>1,427</td>
<td>4,152</td>
<td>20</td>
<td>5</td>
<td>30</td>
<td>0</td>
<td>5,634</td>
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<tr>
<td>Patient &amp; Laboratory Fees</td>
<td>0</td>
<td>5,864</td>
<td>510</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>6,374</td>
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<tr>
<td>Organized Activities</td>
<td>0</td>
<td>5,718</td>
<td>0</td>
<td>0</td>
<td>1,418</td>
<td>7,136</td>
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<tr>
<td>Auxiliary Enterprises</td>
<td>4,144</td>
<td>642</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>4,786</td>
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<tr>
<td>Other Income</td>
<td>1,429</td>
<td>1,394</td>
<td>8</td>
<td>5</td>
<td>3</td>
<td>0</td>
<td>2,839</td>
</tr>
<tr>
<td>Earnings from Endowment*</td>
<td>2,629</td>
<td>3,497</td>
<td>19</td>
<td>354</td>
<td>332</td>
<td>0</td>
<td>6,831</td>
</tr>
<tr>
<td>Gifts Applied</td>
<td>3,315</td>
<td>57*</td>
<td>83</td>
<td>20</td>
<td>3</td>
<td>0</td>
<td>3,478</td>
</tr>
<tr>
<td><strong>Total Income</strong></td>
<td>35,668</td>
<td>40,479</td>
<td>2,311</td>
<td>1,390</td>
<td>1,422</td>
<td>1,418</td>
<td>82,688</td>
</tr>
<tr>
<td><strong>Income Less Expenditures &amp; Transfers</strong></td>
<td>$(1,900)</td>
<td>$548</td>
<td>$149</td>
<td>$43</td>
<td>$142</td>
<td>$91</td>
<td>$(927)</td>
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\* Endowment at Market Value with Earnings for:

<table>
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<tr>
<th></th>
<th>$54,233</th>
<th>$83,765</th>
<th>$208</th>
<th>$7,062</th>
<th>$5,519</th>
<th>$0</th>
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<td>Support of Current Operations</td>
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<td>23</td>
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<td>0</td>
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<tr>
<td><strong>Total Endowment</strong></td>
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<td>$89,506</td>
<td>$242</td>
<td>$7,085</td>
<td>$5,519</td>
<td>$0</td>
<td>$163,207</td>
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</tbody>
</table>

\* Other independent organized activities are the Computer Systems Laboratory and the Euclid Power Plant.

\* A large portion of medical school alumni giving is applied to the Medical Teaching Fund, which is separate from funds reported here.
funds, gifts awaiting disposition or designation comprised $4,735,000, almost all of which will ultimately be restricted for purposes other than general operations. Another $2,032,000 in encumbered and committed reserves was made up of money committed for specific obligations or purposes. While the accumulated deficit of the central fiscal unit stood at $3,269,000, the uncommitted reserves accumulated through the operations of the independent fiscal units totaled $6,436,000. By long-established policy of the Board of Trustees, these reserves are held available for use in future operations of the fiscal units which generated them.

The presence of the reserves built by the independent fiscal units removed the necessity for the central fiscal unit to go to lending agencies outside the University to obtain the additional funds needed to meet its expenditures. The amount drawn by the central fiscal unit from the reserves of the independent units is treated as a loan rather than as a transfer. There are sound reasons why the policy of making schools financially independent was instituted and should be continued. The solid support that these schools have means that they can continue to grow. Carrying their own reserves forward for future expansion and innovation provides the schools with a strong incentive to make the most of opportunities they presently have for obtaining outside funding and for earning income through professional services. Besides having one of the highest rated medical schools in the country, Washington University is among the few universities today with a medical school that is not operating at a deficit.

The result of internal borrowing in this and previous years is that, at the end of fiscal year 1972, the net reserves which were not encumbered or specifically committed stood at $3,167,000.

Statement of Assets, Liabilities, and Fund Balances

The final summary of the financial condition of Washington University is contained in the Statement of Assets, Liabilities, and Fund Balances. Each of the major fund groupings is presented separately, and the current funds are divided into general and restricted. In order to present the total condition of the University, no distinction is made between central and independent fiscal units. It is apparent that Washington University in total remains very solvent.

A more detailed statement is presented in the audited financial report.

<table>
<thead>
<tr>
<th>STATEMENT OF ASSETS, LIABILITIES, AND FUND BALANCES</th>
<th>Current Funds</th>
<th>Student Loan</th>
<th>Endowment</th>
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<td></td>
<td>General</td>
<td>Restricted</td>
<td>Funds</td>
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<tr>
<td>Assets</td>
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<td></td>
<td></td>
<td>131,557</td>
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<tr>
<td>Cash $</td>
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<td>Liabilities and Fund Balances</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Liabilities</td>
<td>$ 3,295</td>
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<tr>
<td>Deficit</td>
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<tr>
<td>Encumbered &amp; Committed Reserves</td>
<td>2,032</td>
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<tr>
<td>Uncommitted Reserves (of independent units)</td>
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<td>Gifts Awaiting Designation</td>
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<td>Total Liabilities and Fund Balances</td>
<td>$13,229</td>
<td>$10,844</td>
<td>$3,352</td>
<td>$131,557</td>
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</table>
COMMENTS BY THE CHANCELLOR
Fiscal Responsibility and University Administration

As further interpretation of the report presented in the previous pages, I should like to present my viewpoint as Chancellor on the fiscal problems the University is facing. These problems must be understood and a realistic plan for their resolution pursued if we are to advance our commitment to quality education. The University is adjusting to the realities of financing higher education in the 1970’s. I want to discuss how.

My special concern here is the central fiscal unit of the University. As recorded earlier, its expenditures exceeded income. This outcome was budgeted and occurred in the previous year also. These results should quite naturally raise questions about the fiscal responsibility of the administration of Washington University. Why has this been allowed to happen? What is being done to correct the situation? Where is the University headed? I want to answer these questions as fully and honestly as I can.

What Happened?

Let me begin by saying what is well known to observers of higher education. Financial problems such as ours have in recent years become the rule rather than the exception among American colleges and universities. The New Depression in Higher Education was the title of a report published in 1971 by the respected Carnegie Commission on Higher Education. References to a financial crisis among our institutions have become commonplace. Where once the journals and research reports administrators read were filled with analyses of campus unrest, they now feature articles on better utilization of resources and new sources of income. We at Washington University have fared better than many other schools. We are not yet ready to say that we have reached the crisis stage. But the problems are real, and they will not go away by themselves.

In brief, the new fiscal phenomenon is a declining rate of growth in income coupled with an increasing rate of growth in costs. In the late 1950’s and through the 1960’s, stimulation of growth in higher education was a high priority for the Federal Government. Private donors, too, saw the desirability of offering a greater proportion of the very large number of young people progressing through the nation’s school system the kind of advanced education needed in a complex society. Priorities now appear to have changed. This shift is partly a result of successes in achieving the desired growth. There has undoubtedly also been some negative reaction to the turmoil that gripped campuses across the country in the late 1960’s. Changing priorities have meant that for a number of schools support from some sources has not only stopped growing but is actually decreasing.

Leveling off of support would not pose serious problems if costs were also holding constant, but several factors have combined to increase costs. Knowledge continues to expand, and the expectations for what institutions of higher education can and should contribute are increasing. Universities have become major employers in the economy and are expected to reflect this status in wage and salary scales that keep abreast of the rising standards of living in our society. On top of these demands has come the impact of the serious inflation affecting the whole economy. Inflation has been especially hard on schools because of their labor-intensive activity. Increases in productivity through technological advances have been only minimally available as an offset to inflated costs.

Figures from previous years show some of the effects these forces have had on Washington University. In the 1968 fiscal year, funding from governmental agencies supported 29 per cent of the central fiscal unit expenditures other than tuition remissions. Among the many other grants and contracts that year was part of a large National Science Foundation grant intended to enhance teaching and research in the natural sciences. In the year just ended, governmental support dropped to 25 per cent. In 1968, 301 graduate students received Federal fellowships. This year 128 received them. In 1968 again, support from private sources included a portion of a $15 million Ford Foundation challenge grant to promote innovation and excellence at this University. The Seventy by Seventy fund-raising campaign was also well under way. In that year, gifts from private sources supported 17 per cent of the expenditures. This year, 10 per cent of the expenditures were supported by private gifts.

On the expenditure side, salaries and wages have been increased between 4 and 5.5 per cent annually during recent years. Increases in faculty salaries have been necessary to help Washington University keep up with comparable universities; yet, our faculty salaries are still somewhat below the average for similar institutions. Raises in salary levels have also been necessary to enable our employees to maintain an average income comparable to that of other workers in our economy. The following chart compares the changes in average compensation of Washington University faculty with the changes in national per capita personal income and in the Consumer Price Index of the Department of Labor. The lines for our compensation and for national personal income just about merge across the chart. Both lines rise at about double the rate of the rise in prices. The latter comparison is worth noting because, when an organization such as ours has wages and salaries as its major expense, the escalation in the "cost of doing business" is reflected much less by changes in prices than by changes in compensation.
A few other examples show what has been happening to our costs. In 1968, the cost of operating and maintaining the University's physical plant was three million dollars. This year the cost was $5.1 million. Figures provided by the library show that in just the years from 1969 to 1971 the cost of periodical subscriptions for all fields went up an average of 25 per cent, and in chemistry and physics the increase was 44 per cent. From 1967 to 1971, the average price of hardback books went from $8.43 to $13.25 per volume.

What Is Being Done?

These examples of income and expenditure can have the unintended result of picturing administrative officers standing helpless before the opposing forces pulling the University financial structure apart. There are many actions that can be taken in the face of these pressures. I should like to report on some of the things we have been doing.

First let me make it clear that cutbacks in operations have been more than talked about. They have indeed happened. These cutbacks are most accurately reflected by expressing expenditures in terms of deflated, constant-dollar amounts. In such terms, the central fiscal unit expenditures other than tuition remissions peaked as long ago as 1968. While in current dollars the 1972 expenditures were the highest ever, the constant-dollar amount was a full 8 per cent below the 1968 figure. This reduction represents a sizeable decrease in level of activity. When expressed as constant dollars, that portion of expenditures not sponsored by the Federal government has gone down 2.5 per cent in four years.

The reduction was possible because of a variety of efforts to control costs. To prepare for the actions that had to be taken, my predecessor, Thomas H. Eliot, appointed a Priorities Committee five years ago to make recommendations for the most effective use of funds to meet our goals and objectives in a time of tight finances. That group has now been established as the Budget Advisory Committee. It is composed of faculty, administrators, and students.

Under its guidance, the budget for the year just ended incorporated rather difficult decisions involving reductions in staffing. Thirty-five faculty positions were left unfilled. This action contributed to increasing the 1971-72 ratio of students to faculty in the full-time divisions of the central fiscal unit to 11:1, which is close to the ratio that existed ten years ago. A number of graduate assistantships were also eliminated. Expenditures for non-academic staff were reduced by more than 10 per cent.

Further savings have been made in equipment and maintenance. Departmental equipment budgets were con-
solidated and cut in half. Most contract painting was eliminated and the cycle for routine painting was lengthened. Almost all window washing, tree trimming, and sidewalk maintenance was deferred. Janitor services were reduced in many areas, and maid service in the residence halls was eliminated.

These are savings that come at the expense of service. Increased attention has been given to finding savings through greater efficiency. The application of participatory management processes has enabled the professional staff to make greater use of non-professional staff in library operations. This saving has freed duplicating services. Computing equipment expense was lowered while greater capability was achieved by changing to different peripheral equipment that became available. A more efficient staffing of the food service was accomplished through careful reorganization and realignment of functions. This year the transfer from an outdated accounting system to a new management information system was completed, allowing more timely and comprehensive reporting.

On the income side of the operation, one of the steps we have taken with sources of revenue directly under our control is well known. Tuition for the year just ended was $250 higher than the previous year. Another sizeable change is in effect for the year now underway, and another one has been announced for the following year. These decisions have been very difficult. They involve placing a much greater burden on students and their families, and they are part of an unfavorable long-range trend limiting access to the education we offer. But they were necessary. Less evident are the changes in pricing that dollars and staffing positions have with the conviction that quality education is most likely to happen in a community where a great variety of interests and abilities are represented—where senior scholars and junior scholars of many disciplines, advanced students and beginning undergraduates of many backgrounds, experienced researchers and their assistants in many branches of the sciences, are all present, along with the books, material, equipment, and administrative support needed for their work. We can never know for sure that we have the optimum mix. We do believe we have a good one. The challenge for the future is to improve it. Neither sacrifice of one part or another nor the use of a blunt tool to carve out broad-scale cutbacks moves in that direction.

Quality of the sort evidenced at a first-rate university unfortunately (for budget cutters, that is) does not lend itself well to quantification. We know of no precise relationship that dollars and staffing positions have with growth in knowledge and insight, or with creativity, or with the inspired search of personal and social values. If we did, we could with confidence reduce the numbers in places that would affect the output the least. Because we don't, retrenchment has to be approached with great care to avoid lessening the quality associated with all parts of the University environment. Intellectual vigor and imagination, the determination to make learning experiences alive and meaningful, the willingness to enter into helping personal relationships, the commitment to long hours of experimentation and mastery of abstractions—these things happen when people feel their effort is needed and appreciated. Time demands have to reflect the priority on individual initiative. Quality has to be respected as a standard. Significant actions which demonstrate that quality can no longer be afforded may easily have the effect of changing the whole environment.

Proposals of many sorts for cutting costs have been advanced. Persons at times suggest eliminating some departments or schools. Fewer faculty would be needed if teaching loads were increased. Or classes could be enlarged. Or scholarship aid could be reduced. Or non-academic staff could be sharply cut. Or salary increases could be

Where Is the University Headed with Its Finances?

I am able to report that operating revenue has been significantly increased and that operating expenditures have been significantly reduced. Despite these efforts, however, expenditures outstripped income. What is evident in looking toward the future is that deficits must be eliminated. This is going to have to happen in the only two ways we have available—spending less and finding more income.

During the last several years, the University has gained considerable experience in holding expenses down, which might suggest that the task should get easier. But the success of past efforts means that the options have become more limited. Decisions among alternatives are getting very difficult.

From a distance, it would seem that universities should be able to react to tight conditions the way many businesses do: identify and cut out the least productive components of the organization or, at least, order the necessary percentage of cutback for everyone, regardless of how painful this may be. I have now been facing these decisions up close as Chancellor for one year. Let me share some of my considerations while I grapple with these decisions and their implications.

My most basic concern has been to preserve the high level of quality which has become characteristic of the University. I see excellence in educational and research pursuits as the chief reason for the existence of this private institution. Without a reputation for quality, it would be difficult to attract students to a high-tuition school. For a long time Washington University has operated with the conviction that quality education is most likely to happen in a community where a great variety of interests and abilities are represented—where senior scholars and junior scholars of many disciplines, advanced students and beginning undergraduates of many backgrounds, experienced researchers and their assistants in many branches of the sciences, are all present, along with the books, material, equipment, and administrative support needed for their work. We can never know for sure that we have the optimum mix. We do believe we have a good one. The challenge for the future is to improve it. Neither sacrifice of one part or another nor the use of a blunt tool to carve out broad-scale cutbacks moves in that direction.

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be eliminated. Options do exist.

But such savings would all carry with them tremendous costs. All schools and departments are here because they offer something of intellectual and educational value, and their presence makes up the diversity basic to the university environment. Besides, it is by no means clear that closing a school would save any money. The variable costs which could be thus eliminated are probably not in excess of the operating revenue which would be forgone. Increased classroom activity of the faculty means less time for personal consultations, research, and other original work; college professors on the average put in a sixty-hour work week. The burden of faculty reductions must fall on junior professors and the special contributions of their youth. Some departments would be in danger of losing the critical mass of scholars sufficient in number to represent the diverse viewpoints that keep a discipline from stagnating. Larger classes, aside from their possible effects on the learning experience, lessen the distinctiveness of a private university and render the high tuition not only less justified but also competitively less viable. Ample scholarship aid is necessary to permit selectivity and to ensure heterogeneity in the student body. A sharp reduction in staff brings the confusion and inefficiency of poor administration, and the lack of administrative support diverts attention and energy from primary functions. Failure to maintain increases in compensation even with those in the rest of the economy runs the risk not only of institutional injustice but of our losing outstanding people whose contributions are highly sought.

I discuss these considerations not in order to dismiss the possibility of further cutbacks. Should financial survival necessitate strong action in the future, hard decisions will be made. I do believe that facing the implications squarely highlights the need to concentrate on the other means of eliminating the deficit: increasing income.

While it is possible to raise income somewhat through improvement in operating revenue, large escalations in the tuition rate cannot be repeated indefinitely. We are going to have to look for more help from other sources.

Such aid now appears to be on the way from the state and Federal government. The State of Missouri authorized a modest student assistance program in the last general session of the State Legislature. Funds sufficient for setting up the necessary administrative structure have been appropriated. A state scholarship program should help Washington University with student financial aid, but the program will have to be expanded if it is to reach the real level of need. In some states, efforts are being made to enable the state to contract with private higher educational institutions to fill specific educational needs—undergraduate, graduate and professional. Such a plan would make sense in Missouri.

At the Federal level, the Higher Education Amendments of 1972 broke new ground in student and institutional aid programs, but funding of the new programs has not yet taken place. A national estimate of returns to any institution cannot be made at this time because of funding uncertainties. The concept of aid to institutions, however, has been authorized. Strong and continuing representations must be made to secure realistic funding.

We need look also for more help to the many supporters who may not be directly involved in Washington University activities but who maintain an interest in her goal of excellence. I believe there are many who can be counted on to stand by our University to ensure progress towards this goal. The number of our alumni who have demonstrated their willingness to help is growing.

In my Founders Day address this spring, I discussed the reasons I can hope that the St. Louis community will provide the support needed to help a first-rate university in its midst. The quality of education we offer many of its citizens is appreciated. Our center of excellence provides one of the major intellectual and cultural foci that make life attractive in a metropolitan community. I believe that Washington University is one of the community's contributions to mankind. A successful university is a noble institution, a statement of faith in the value of human thought and the benefits it creates when it is at its best. I trust this faith will be kept.

Over the years, the resources of a progressive, first-rate university have almost always been under a challenge to meet the responsibility it is asked to assume. It would be tragic if tightened financial circumstances were allowed to undermine Washington University today, at a time when it has achieved a high point in superb human and physical assets and possesses national stature. Our present successes are a testimony to the perseverance of our predecessors in facing their problems. It is for us now to prove that we can meet the substantial challenges of a new era in higher education in a way that will provide an institution worthy of the demands of the future.

William H. Danforth
Chancellor
October, 1972
Gloria White is the antithesis of such phenomena as the Faceless Administrator or the Silent American. Outspoken and lively, she gravitates to the center of problems that others avoid. Director of the University’s Career Scholarship Program since 1968, she also serves as Senior Member of the University’s Affirmative Action Team. The latter group was formed to ensure compliance with civil rights legislation on equal employment opportunities for minority groups and women. Whatever her job, she can be counted on to say exactly what she thinks.

I’m very unsophisticated. Whatever I feel, I say,” Gloria White said—with feeling. She was discussing a subject that produces a characteristic lightening in her eyes. It is one of her pet peeves: the tendency for many people who cynically or innocently “play games and roles that they think other people want them to.” This, she pointed out, often passes for sophistication.

Gloria is not sophisticated in the above sense of the word. As director of Washington University’s Career Scholarship Program and as a counselor and former teacher, she has been a positive force in the lives of literally hundreds of students because she always is herself. But there is another way of being sophisticated which does fit Gloria. One meaning, according to Webster, is that sophistication refers to: “... persons made wise, especially worldly-wise, through experience, cultivation, disillusionment....” Gloria has had too much experience with this world’s realities not to be sophisticated in the latter sense. She has been lucky enough, she feels, to have come out of some of the harsher jolts with hopefulness instead of bitterness. As a counselor, she has a happy blend of pragmatism and compassion. Gloria has gotten out of bed in the middle of the night to help a student in a jam. She will talk to anyone with problems who approaches her in good faith. But, and this is a significant but, Gloria will tell you the bitter truth about yourself, gently if the situation calls for it, or, on occasion, not so gently. Her speech is always to the point, a trait that is abrasive for some, but acceptable to most because of her unaffected sense of humor and irony about herself.

At the center of Gloria’s personality, however, is a kind of toughness, but not toughness in the usual sense. It is a toughness that springs from self-knowledge and a fervent persistence that she calls “just plain stubbornness.” To understand this, it helps to know about a few challenges that faced Gloria early in her life.

As a teenager, for example, Gloria was part of a significant chapter in the history of education in St. Louis. She and another young woman were the first black students to integrate a St. Louis high school. On the opening day of school in September, 1947, Gloria marched apprehensively with her books up the walk to Rosati-Kain High School, a Catholic school on Lindell Boulevard. White parents were also marching up and down the sidewalk in front of the high school; only they were holding signs bearing various racist slogans. It wasn’t the pickets, however, who made Gloria apprehensive. “You see, my family had taught me not to be afraid. And I wasn’t. I was apprehensive about how well I’d do with my schoolwork,” she said. Gloria recalled that the pickets did not block her way or sustain much of a protest. As far as she was concerned, her classes went routinely on that historic day.

After school, she returned to her home, the St. Frances Girls Home in St. Louis County. While she was taking her turn washing dishes in the cafeteria, the Sister Superior...
asked her to take a phone call. To be allowed to interrupt a chore for a phone call was very unusual at the St. Frances Home, where the Order of the Oblate Sisters ran a tight ship. The Sister Superior did not tell Gloria who was on the phone, but when she answered, she found herself talking to a newspaper reporter.

"Did any one bother you in school?" asked the reporter.

"No," said Gloria.

"How did you feel?"

"Fine."

"Are you sure no one mistreated you?"

"Yes."

And in this vein the conversation continued for several minutes with the reporter pressing to get a more dramatic response from Gloria. "I really had nothing more to say than all those stupid yes or no answers," Gloria said, "and the Mother Superior finally whispered to me, 'Well, for goodness' sake! Aren't you going to say more than that?' But there was no more to say. The next day the paper printed all those 'yes's' and 'no's.' It was a dull story."

An incident that occurred several weeks later at the high school also tells a lot about Gloria White. She was in study hall when the teacher in charge decided to give a lecture about being "fed up with overbearing teenagers"—especially with students who she said "began feeling very self-important after they got their names in the paper." Gloria had forgotten the newspaper story and at first didn't know she was being attacked for her color.

"It was the only problem I had as far as bigotry was concerned in my four years in high school," said Gloria. For this rather extraordinary record in the history of school integration, Gloria gives the credit to the nuns at St. Frances and Rosati-Kain, her family, and her fellow students. Her experience in high school was an example of what Gloria feels is the most important act of which human beings are capable: "Getting together and working things out before there is a crisis."

"I have never seen much real progress if people don't act until after a crisis," Gloria continued. And sadly, she added, the latter state of affairs seems to have been the predominant theme in this country in the years since her high school days and the Supreme Court decision in 1954 on school desegregation. Despite what she feels has been a tragic lack of "really significant progress" in America's race relations, Gloria has a spirited determination and belief that her ideals will prevail if more Americans gain the will to act to eliminate racism.

"I have friends today who are arrested just because they're black. I know many people who still think we're inferior because we're black. What gives me hope is that there are also many people who judge you on your merits alone. So I don't get preoccupied over the bigots. But I agree with the philosophy that we have to be tough. The saying that the 'meek will inherit the earth' is a lot of baloney. 'Tough' needs a definition, though. It means that I've done my homework, and that I'm prepared to take a stand and suffer the consequences. That means, to me, trying every peaceful channel to effect change.

"Before changes are made," she continued, "you have to think everything out. I tell my students that change isn't much good if it comes simply as a response to a crisis. The Career Scholarship program, for example, has been so well organized that if I had a heart attack tomorrow the program would go on without difficulty. No matter what happens now, the program will have a lasting effect. That's significant change. I have to look at someone's demands for change in the light of whether they will have a lasting effect and be meaningful to all of us."

The Career Scholarship Program was begun by the University administration in 1965. Its first director was an energetic and farsighted young man, Charles E. Thomas, who devoted three weeks of each month to the then pilot program (supported by a Rockefeller Foundation grant) and one week to his family's lumber business in Arkansas. Thomas decided to take a faculty appointment in the anthropology department, and in 1968, Gloria, who was associate director of a campus enrichment program for high
school students called Upward Bound, was named full-time director of Career Scholarship. The program is geared for St. Louis high school graduates with small family incomes. A key part of it has been building up relationships with area companies to find compatible jobs for the students, who receive full-tuition scholarships from the University in day or night school. Roosevelt Davis, who is job placement counselor of Career Scholarship, now devotes full time to locating the right jobs for students before graduation. The program also recognizes that there are students whose pre-college training is often far below the preparation received by a large number of Washington University undergraduates who come from affluent school systems, public and private, which stress readiness for the top-ranking colleges.

The economic realities in many of the families of Career Scholarship students force them to interrupt or drop out of school to contribute to the family budget. There are often no alternatives simply because the family has to have more money to pay the bills. Not surprisingly many people doubted that few, if any, students with such pressing economic and other demands at home could last at an especially demanding university. Despite the expected high rate of school interruptions, Gloria's annual report on the program last year did show some remarkable results. She reported that a total of thirty students has earned degrees or night school certificates to date, and thirteen of that total graduated last May.

In her report, Gloria wrote that the present hopeful outlook for the program "is the result of a realistic view of human nature and the environment in which we operate, coupled with the unfailing support, cooperation, and confidence of numerous colleagues and businessmen who do more than give lip service to 'equal opportunity for all.' "

Gloria is very knowledgeable about talk coupled with little or no action when it comes to "equal opportunity." She grew up in an era when few whites even gave lip service to the subject. In the early 1900's, her grandparents moved from their home in Centaur, Missouri, to the St. Louis suburb of Wellston, where they and other blacks—almost all from small Missouri towns—lived on four segregated streets. Despite this fact, Gloria recalled, the black-white relationships in Wellston were never overtly tense. "When I think back about those days it always surprises me that there were no racial confrontations. One thing was that we blacks in Wellston were a closely-knit group that did have its own identity. The whites on the other hand never harassed us."

Gloria was the oldest of seven children of Rev. and Mrs. James Thomas Waters. Her father, a Baptist minister, did not have a congregation in Wellston. He taught at Elmwood School and in the adult education program at Sumner High School to support his large family.

When Gloria was eight years old, Rev. Waters was offered a parish in Hot Springs, Arkansas. The family immediately envisioned a better life ahead, at least economically. After settling all the arrangements for his ministry in Hot Springs, Rev. Waters returned to Wellston on Father's Day of 1942 to take his family to Arkansas. All nine Waters packed into the family car and headed south. It was a rainy day, and when the family reached the village of Coldwater, Missouri, the car skidded and smashed into a concrete embankment. Gloria's father, three brothers, and a sister were killed instantly; Gloria, her brother George, her sister Thomasina, and her mother received multiple injuries.

After emergency treatment in Coldwater, the survivors were taken back to Homer G. Phillips Hospital in St. Louis. At first, Gloria's mother wasn't expected to live, and, if she did survive, doctors were certain that she would never walk again. After a year of hospitalization, Mrs. Waters left the hospital with only a slight limp. "Not only that, she went back to school for secretarial training so that she could earn a better living for us. And she continued to give piano lessons, too," Gloria said.

Gloria and her brother and sister lived with their grand-
Gloria White begins a long work day counseling Career Scholarship student Gloria Givens.

parents while Mrs. Waters recuperated. When Gloria's mother went to work, the family felt that Gloria and her sister would be better off boarding at the St. Frances Home, where there would be good schooling, supervision, and friends from similar circumstances. They were accepted and lived at the home on weekdays and spent their weekends at their grandparents' and mother's home in Wellston. "My grandparents were fundamental Baptists, but they knew that the school would be good for me. They had to pay part of the tuition—whatever it was, I knew it was more than they could really afford," Gloria continued. "So we went to mass every morning and to Baptist services on weekends.

"When I reached the eighth grade, I broke the news to my devoutly Baptist grandparents and mother that I wanted to become a Catholic. They refused at first, but later they relented when the Sisters told them that I'd have to be a Catholic in order to enter Rosati-Kain High School. They felt that going to that high school would give me the best education I could get."

To go to Rosati-Kain also represented a chance for a black person to get a better job. At the time, employment alternatives for blacks were extremely limited. While Gloria attended Rosati-Kain, the only work she could get to supplement the meager family income was carrying trays at Barnes Hospital and scrubbing floors in private homes. She took a secretarial course at high school which led to a part-time job in her senior year as a clerk-typist at an Army Finance Center. From that job she hoped to save money to pay travel expenses to Baltimore, where she planned to attend the Oblate Sisters Novitiate. After graduation, however, she decided against becoming a nun.

"My grandparents and mother wanted me to go to school. I wasn't sure about what was best for me and there were no guidance counselors in those days. I had thought about being a doctor. But the only school we could afford was Stowe Teachers College. It cost $15 per semester, plus books. I resented going to Stowe because I didn't want to be a teacher. I was stubborn about it, but my grandparents and mother stuck to their guns and I entered Stowe. I threatened to quit each year, but they talked me out of it. By my junior year I began to look forward to teaching," Gloria said.

Gloria graduated from Stowe on a Thursday night and began teaching kindergarten the next morning at Blewett Elementary School. Jobs were scarce and she had to take the first opening. She disliked teaching kindergarten, and asked her principal to transfer her. Fortunately, he did. For the next eight years, Gloria divided her teaching between the first and eighth grades.

I never had a class I didn't like, and today I still know several of the kids from my first grade classes. I have two juniors in Career Scholarship from those classes," Gloria added. While teaching eighth grade, Gloria entered a Graduate Institute of Education program at Washington University to earn a master's degree in counseling. After she received her degree in 1962, she was appointed counselor at Roosevelt High School in St. Louis, becoming the first black to be a counselor at the high school.

In 1967, she joined the Washington University staff as
associate director of Upward Bound—one year before taking charge of Career Scholarship. She realized that counseling at a university would be more complex than working with high school students. Gloria feels, however, that her years on the campus have been the most rewarding of her career in education. "I have had a lot of support on this campus. The people in the admissions office have always been in back of me as a student and in my job. I've had support all my life—from my family, my husband, and the nuns. But there are thousands of blacks who haven't had that kind of support. Career Scholarship is just one answer. But, at least, working with my kids I feel that I'm doing something real—a lot more anyway than people who just lend their names to committees."

On committees, Gloria has earned the reputation as a working and vocal member. She admits her bluntness tends to irritate adults, and even some of her "kids," remarking, "No matter who a student thinks he or she is, I tell them all the same thing: If you don't produce here, you'll be going out. And they know I mean it." Gloria continued. "I'm aware that new black students are told by both blacks and whites that this is a racist institution. Well, this is a predominantly white institution, and, of course, you're going to find racism. But I'd assume that a student knew at least that much before he came here. In the last couple of years there is much less feeling by black students that 'people are out to get us.' I know there are bigots, but that's their problem. When we blacks get jobs, we can't afford to be mediocre. In my job, I want to be known as someone who will give good information—not simply as a black speaking to a black. I came to this job on my own merits, and I would leave immediately if I thought that I wasn't being accepted on that basis."

Gloria added that she would leave the campus too, if she didn't feel that significant change was possible. As far as people acting on their own before a crisis occurs, Gloria referred to a recent example on campus. "A number of us found that many scholarship students were not getting adequate medical or dental care because they simply didn't have the money. Mainly through the efforts of Rita Whiteley (also a counselor on campus) an informal committee was organized. Rita found some sources of money and now we have a Special Medical Assistance Committee which provides medical and dental care for students who need it." The spontaneous and unsolicited action which led to a permanent campus medical aid committee—of which Gloria is now chairman—is what gives life to any institution in Gloria's way of thinking.

"So often we in America don't seem to move until something dramatic happens. I want to see people talking because they want to, and not because they're afraid of each other. In order to see any basic changes in our society, we're going to have to start caring about what's going to happen to the other guy. Our society has seen too much of some economic or other group feeling superior to what it thinks is the next lowest rung on the ladder.

"And if you're out to make change, you won't succeed if you're trying to be popular. There's no guarantee that the guy you try to help is going to be your friend."

In her recent annual Career Scholarship report, Gloria also touched on those who manipulate others in seeking popularity. She wrote, "We are elated continually when our students earn their degrees and certificates. At the other end of the continuum is the disappointment in coming to the realization that young and not so young people do play games with each other; that openness and honesty are not the order of the day. The tragedy of this trend is that many of our young people perceive playing games as 'the way to get over,' albeit a philosophy which appears to be a contributing factor in the success of more mature models. While we cannot condemn another's philosophy, we are not in step with the beat of that drum."

Probably as a direct result of not wanting to conform to any group's stereotypes, Gloria manages to accumulate her share of friends among students. While she was a counselor at Roosevelt High School, the students decorated her office on April Fool's Day and gave her a surprise birthday party. Last year on Valentine's Day, about 150 of her students gave her a surprise Valentine's Day party. They went to elaborate lengths to make sure that the party would be a complete surprise, enlisting the help of her husband, Glenn, who made less-than-open arrangements to take his wife to a "reception for the director of admissions, Oliver Wagner."

For two months, the students planned the event and chipped in their own money to buy Gloria a diamond and emerald ring and a special plaque. When on February 14 the "Wagner reception" turned out to be a splendid party overflowing with affection and gifts from her students, Gloria admitted that she was both touched and shocked. "I'm the person who lets nothing get by," she said.

After the party, Gloria had recovered enough from the surprise to poke fun at herself. When an adult observed that Gloria certainly had evoked considerable popularity, Gloria laughed and said, "Well, I hope that they're not trying to blackmail me, because tomorrow it's going to be business as usual." Then, very seriously, she added, "This is one of the greatest things that's ever happened to me."

As Gloria's friends know, she is not easy to describe. They know that despite her denials, she is sophisticated in the more flattering sense of the word. Her mind has many quick parts with generous shares of insight, irony, and humor. She sees through bunk and tells you so. These are surface qualities, however interesting or irritating, as the case may be. In Gloria's career, whatever else you may be doesn't count if you don't act. As far as 'her kids' are concerned, one woman student summed it up, "She has been mother, sister, adviser, tutor, and friend to us."

Gloria White
THE MEANING OF EDUCATION

Ashley Montagu, noted anthropologist, social biologist, and humanist, was the keynote speaker at Washington University’s Freshman Orientation Week this fall. An authority on race, human relations, and man’s heredity and development, he is the author of more than thirty books on a wide variety of subjects. Among his more recent works are Man, His First Two Million Years, Immortality, Religion, and Morals, and Touching. Given here are the highlights of Professor Montagu’s searching, witty, and, above all, humane comments on the true meaning of education.

THE MEANING of education reminds me of a time some fifty years ago when the provost of my college was welcoming the students and telling them what education was about. From that welcome, I gathered that education was about the engorgement of large quantities of rote-remembered facts, and of certain ceremonial occasions called examinations. If you disgorged these facts upon blank sheets of paper well enough, you were eventually granted that invidious distinction, the B.A. degree. If you were bold enough, you could then ascend to the M.A. degree or the M.S. degree, and if you were really quite adventurous, you could even aspire to a Ph.D. degree. At that moment, I gained the impression that the function of a university was to enable the student to die both intellectually and spiritually by degrees. I rather fear that it was then that I began to question what was happening in this particular college, and I have never ceased to query what was happening in such institutions all over the world, particularly in the United States of America.

The United States has more educational institutions, more colleges and universities, than the rest of the world put together, and practically no education whatsoever. What passes for education in the western world, and particularly in America, is not education at all, but instruction—instruction in the three R’s. You go to school, where you are instructed in the three R’s—reading, writing, and arithmetic; then you go to college, where you are instructed in the higher three R’s—remedial reading, remedial writing, and remedial arithmetic. You end up with those invidious distinctions, the degrees, which enable you to go out and perform similar operations upon the delicate minds of other creatures.

The root origins of the word education, which is always mistymologized by learned professors of education in their textbooks, is educare, or to anglicize it, edu-care. That’s a very good way to pronounce it, because what it really means is to care for, to nourish, and to cause to grow. As an anthropologist, I will attempt to show what man is designed to have cared for and cause to grow and nourish. This is no longer a theory, but is in the area of very viable facts which anyone can check for himself if he will take the trouble to do so. Therefore, they are scientific facts, although they are not absolute certainties. Absolute certainties are the privilege of only one class of human beings, namely, absolute fools. But, for a scientist, certainties merely are the highest degree of probability which attaches to a very viable judgment at a particular time. That means that it is modifiable and improvable, and even perhaps capable of being shown to be wrong.

MAN IS A CREATURE who has descended from an ape-like stalk, not the gorilla, chimpanzee, or orangutan, our contemporary living great ape relatives. This creature originated from a stalk which itself originated some thirty-five million years ago. That stalk eventually gave off the line which led to our existing ape relatives and ultimately to another line, some thirteen million years ago which gave off still another line some six million years ago, which resulted in ourselves. It took a long time for the evolution of the primates, the order of animals which includes the
monkeys, apes, lorises, lemurs, and all forms of men living and extinct.

The primates are all forest dwellers, with the exception of the baboon and man, who are savannah or grasslands creatures. Largely as a consequence of climatic changes in the southern portion of Africa, which resulted in deforestation of great masses of this territory, large numbers of ape-like creatures were stranded out on the grasslands, where they had to forage for themselves.

If you live in a forest, you're a vegetarian. All you have to do is push out your snout and pull in some plant laden with fruits, nuts, or whatnot, and eat. The table, as it were, is laid and there is no great challenge to change. But, when you are expelled from this Garden of Eden to the grasslands, you must enlarge your economy, your way of earning your living, because the vegetation isn't sufficient to maintain even a small population, as these populations were. You would then be forced to gather in small animals, the slow-moving ones first, and then eventually you would go after the large ones, and you would begin hunting. When you begin hunting, you start on those changes which eventually but inevitably lead to man.

What hunting does is place a very high premium upon your problem-solving ability—the ability to make the most appropriately successful responses to the challenges with which you are faced.

That is the definition of intelligence: the ability to make the most appropriately successful response to the particular challenge of the situation. Hence, there would be a selected pressure on those individuals who had the ability to make appropriately successful responses, and they would be more likely to contribute to the gene pool than those who did not have this ability. Such would be the course of development in a population, with intelligence being highly favored, with the upright posture, the ability to make tools, and increasingly to become dependent upon that tool-making ability for survival. With the knowledge that all of this must be shared with other members of the tribe comes a deep involvement in the welfare of your fellow human beings.

Those who are not so involved are not likely to be competitively successful in the struggle for existence in such communities, as we know from the study of primitive societies like the Eskimo or the Australian aborigine. We know that these primitive tribes are composed of warm, loving people with a highly developed sense of humor and a great insight into the world in which they are living. They communicate a profound involvement not only in their fellow human beings but in the whole of nature, inanimate as well as animate. They relate not only to living creatures but also to the clouds in the sky, the sun, the constellations, the water holes, the rock formations, as parts of the world in which they are equal partners. They do not consider themselves as superior to any inanimate object or other living creature. They behave, therefore, with the kind of respect for the rest of nature that you would expect from people who believe what they say.

The early food-gathering, hunting peoples had a high premium placed upon the ability to relate in such a manner to others that you confer survival benefits in a creatively enlarging manner upon them. It not only enabled them to live, but to live more fully realized than they otherwise would have done, and in the course of evolution there has been the highest premium placed upon the genetic constitutions of individuals who were able to exhibit this profound involvement in the welfare of others. Man has been genetically selected for an ability to be good, to be a warm, loving creature, deeply involved in the welfare of his fellow creatures and the whole of inanimate nature.

I believe that this is the answer to the question, "What is man on this earth for?" The answer to that question is to live as if to live and love were one. This is genetically inbuilt in the constitution of human beings. Insofar as human beings are caused to depart from this way of life they become mentally ill. This is why I believe that the American family can best be defined as an institution for the systematic production of mental illness in each of its members, because of its focus on values which are likely to make each member of that family disoperative, an unloving creature—in short, a success, which is the supreme value of Americans. After all, if you're not a success what are you? You're not even a good American. You're a failure! The essence of being a good American is to be a success, and if you're not a success, you dare not face the fact, and you have to behave as if you are a success by all the external validations of that kind of success. In that way, madness lies.

In the course of man's evolution, as a consequence of his having to learn as much as he has learned from his environment, he must have a warehouse in which to pack all this information, so he has to have a large brain. His brain, which weighs sixty grams at the age of six fetal months, jumps to 350 at the end of nine months, a tremendous acceleration. From birth to one year, it jumps from 350 to 850 grams, and at the end of his third year, the child has an adult-size brain, about 1250 grams. He has only another 150 cubic centimeters or so to add by the time he is 29.

This, of course, is designed for that period in the first three years when enormous amounts of packing have to be done for the journey which is to last him for the rest of his life. The important thing to realize is that because
his brain has to grow at such a rapid rate before he is born, in readiness for what he’s going to experience, man has to be born when he is. If he isn’t born when he is, his brain will not be able to pass through the birth canal and he will die, his mother will die, and the whole of the rest of nature will rejoice.

So, man is born only half gestated, in a very immature state, and he completes the second half of his gestation period outside the womb. All of his developmental periods are enormously prolonged: childhood, infancy, adolescence, maturity, adulthood, senility; but the one period that is the same as it is in the anthropoid apes is the period spent in the womb.

When a human baby is born, his mother has been beautifully prepared for seventy-eight million years to minister to his needs. Behind her are seventy-eight million years of mammalian development. The very word mammal is from mamma, the breast, the integumentary specialization by which these animals feed their young. What’s the breast for? Well, we all know that it certainly isn’t designed for feeding babies, because 96 per cent of women don’t feed their babies and haven’t for thirty years in America. Instead, they employ a bottle with a rubber tire at the end of it, which you can always leave with the baby. It is a splendid substitute because you can go out to the movies and leave the baby with it and you don’t even have to be there. The very word “obstetrics” means to be there. That’s what obstdi means, to stand by, and that’s what mothers were created for, as beautifully expressed in an old Eastern saying, “Since God could not be everywhere, He created mothers.” It’s biologically a very sound dictum.

The first language that a baby has, the first communication, the only language, is through tactile stimulation, the contact of two bodies and the harmony of two souls. Without that tactile stimulation, a tremendous loss is suffered by both. For example, three of the biggest problems with which the obstetrician is confronted are the post-partum hemorrhage, the beginning return of the womb to normal size, and the completion of the third stage of labor, which is the detachment and ejection of the placenta. What no obstetrician can do, a newborn baby put to nurse at his mother’s breast can achieve within five minutes by setting up those reflexes which cause massive contractions and produce a substance from the pituitary gland which causes enormous contractions of muscle bands of which the uterus is composed, and of the vessels, thus retarding the bleeding and, at the same time, causing the detachment and ejection of the placenta.

What does this indicate? I suggest that it indicates that there is more intelligence in the upper and lower lips of one newborn baby than in all the brains of all the obstetricians and pediatricians put together. But today we sever the cord because we have grown far too clever for our own good.

Of course, the medical man is the victim, just as all of us have been victimized by our culture. He too has to become a success. What doctors are taught to be interested in is disease, not health. They have little understanding of health and particularly of mental health. Mental health is the result of the evolutionary history of our species as cooperators, as hard workers, and as creatures with a sense of humor and playfulness. These are the three great cords of mental health, which can be defined as the ability to love, the ability to work, and the ability to play. One is as necessary to the other as each are to the product, which is the involvement in the welfare of others in a creatively enlarging manner.

Man, born as prematurely as he is, is looking forward to a continuation of the life that he spent in the womb and has every right to expect. This is his birthright: to be loved. He had spent 266 days in the womb, on the average, with a constant pressure and temperature. The second law of thermodynamics states that where the temperature and the pressure are constant, no work is required or done. To put it in the vernacular, the human conceptus in the womb leads the life of Riley. Then he experiences a dramatic series of changes in which he is catapulted out into this atmospheric world. In rushes the so-called air into his lungs, which operate for the first time and press against his heart. What he had been looking forward to was a continuation of the life that he had led in the womb. He was looking forward to a womb with a view, and what he got was a very dusty answer. Instead of being taken into his mother’s arms and put to nurse at his mother’s breast long before the cord is cut, he was rudely expelled into the world. The cord shouldn’t be cut or clamped for at least an hour after the baby is born because there is a precipitant fall in the oxygen supply in the baby’s blood during the process of labor and he needs the oxygenated blood in his mother’s placenta. It then automatically clamps itself, and you don’t have to do anything about it. But it will be fifty years before this will get around to American obstetrics, even though the facts have been published by American investigators and Scandinavian investigators before them. It will be fifty years because doctors are too busy practicing medicine in a detached, dehumanized way.

I don’t believe that there are many human beings walking around in America. There are millions of people, but very few human beings. A human being is a humane being—one who acts as a humane being acts, namely, in such a manner that he communicates to others what a loving mother communicates to her baby. He communicates to others that he is deeply interested in their growth and development and their increase in dimension and complexity. He communicates to them that he will never commit the supreme treason of letting them down when they most stand in need. He communicates that he can depend upon you, that you will be standing by ministering to his needs for being the kind of human being that you are being to him, that you will give him all the support and sustenance and stimulations that he requires as the unique creature that he is, different from anyone who has ever lived on this earth, and that you will help him to realize his potentials whatever they may be and in whatever direction they may seek to develop.

If you can communicate this to another, then you can be said to love him, and that is what I believe that human beings communicated over the six million years of human
This is what genuine education should be about. This is what we should be learning in our colleges and universities, the scientific facts and the history of the manner in which they were discovered. This is the information, knowledge, and the result of very detailed research gathered by scores of thousands of investigators which we can now put together and see clearly what it really means. It means man actually is born to be a lover, to be a cooperator, in spite of Conrad Lorenz, in spite of development—a gathering of knowledge which is for, his evolutionary history tells us clearly what it really means. 

We can now put together and see clearly what it really means.

It is extremely important for us to understand that knowledge is not enough, science is not enough, even astrology is not enough and, still more, even drugs are not enough. What is important is for a human being to be a humane being. If he isn't that, no matter what else he is, he is a failure. Worse than that, he is the most dangerous creature on this earth, because he has an enormous amount of knowledge and doesn't know what it is for.

I was once on a London bus when I was eighteen, and there were two girls seated in front of me discussing all their acquaintances. When one of them mentioned the name "Arby," dropping an aspirate in the process, the other one said, "Oh 'im. He knows everth' think except what it's for". I thought that was one of the most profound statements that I had heard up to that time, even though I was studying philosophy, for not one of the philosophers had uttered anything as profound as that. And that is what man is now, at this stage of his development—a frightfully knowledgeable monster who doesn't know what his knowledge is for. But what his knowledge is for, his evolutionary history tells us clearly and in high relief, is to live as if to live and love were one.

The writers extrapolate from findings on graylag goslings and other creatures to man. But, man is a totally different kettle of fish, to mix a metaphor. He's had a totally different kind of history. What applies to graylag goslings does not apply to him and is demonstrably not applicable. Nevertheless, these books sell in millions and are being translated into every readable language in the world. Why? Because it is very gratifying to be told, as those writers tell you, that you are originally sinful, that not only in Adam's fall did we sin all, but in our ancestors, who went around banging baboons on the tops of their skulls.

If I tell you that you are instinctively, innately aggressive, that you're a born hostile, aggressive wretch, then this relieves you of all responsibility for being what you are. It relieves you of the burden of guilt that you've been carrying around, because if you were born that way, it's not your fault. Nobody ever tells you that even if you were born that way, that doesn't for a moment relieve you of the responsibility of making yourself over into what you ought to be. That's hard work.

That is what one hears in church. When one goes to church, one falls upon one's knees and receives absolution for one's sins and then one rises and falls upon one's neighbors during the rest of the week. Repeating this cycle is very gratifying, and that is why the church has been such a huge success. One can also go into a classroom and pledge allegiance to the Flag of the United States of America, one nation under God, with liberty and justice toward all. Now the amazing thing about this is Americans can do this day after day, year after year, and at the same time go out and behave towards Blacks the way they have been behaving for 350 years and find this not one bit irreconcilable. They have grown up in the belief that this contradictory behavior is perfectly reconcilable.

This is the stage to which our so-called educational institutions, our home, parents, schools, and colleges and universities have brought us to. Princeton, Yale, Harvard, the University of California, the best universities in the country, are all engaged in the same process of perpetuating outmoded ideologies and misconceptions as to the nature of man and what man is on this earth for. What we should be doing in these institutions is teaching the facts about the nature of human nature and the evolution of human nature in a free discussion between students and teachers in which they equally learn from one another. It should be built upon the method of science, namely, verification. I don't claim for a moment that science is enough, but it has a method which is a good one, the only one by which you can actually verify a theory.

What I have been discussing are verified theories which are now the facts that we, at this late date, near the very edge of doom, have to pay some attention to. What I would recommend to students, at the very most important part of their lives, is to examine the best that is being said and done and thought in the world, to remain highly critical of what they hear, and not to go through the process voluntarily of engorging large quantities of rote-remembeered facts and then disgorging them and hoping that the most capable digeror gets the highest rewards. But rather, in the meaning of the Greek word criticism, to remain critical, to use their best judgment of all the established values and verities. The only true religion, the only true knowledge, the only true science, is love, is goodness, is the ability to confer survival benefits in a creatively enlarging manner upon others. Reading, writing, and arithmetic are important, but only as secondary skills in the greater enlargement of this capacity. This is the meaning of education.
PROFESSOR OF PARABLES

There is a sign on his desk that says "The Mad Planner." A gift, it was undoubtedly meant a bit facetiously. But in a very real sense it is true. For the man who sits behind it has a grand scheme, a scheme that goes beyond his roles as teacher, administrator, consultant; beyond his work as a behavioral scientist; a scheme that has to do with you and me and the guy next door, and where we are now and where we will be at some future point in time.

The man behind the sign is a Washington University alumnus, Warren H. Schmidt. His colleagues at the Graduate School of Management of the University of California at Los Angeles know him as teacher, writer, assistant dean; the more than 18,000 individuals who each year participate in extension programs through the School of Management know him as director of continuing education; hundreds of persons across the country know him as the man who talked to them about leadership, communication, and purpose. An even wider audience is beginning to know him for his films.

A behavioral scientist whose specialty is facilitating group action, he has conducted workshops on leadership, management, communication, community involvement, understanding how groups work, the prevention and control of civil disorders, and dozens of other subjects. His participants have included groups as diverse as the American Alumni Association, the National League for Nursing, and the Internal Revenue Service.

Whether his skills come from charisma, common sense, commitment, or perhaps all three, they seem to work. As one participant said, "He is the guy who can make things happen . . . who can get a group of people to do what they set out to do."

Schmidt explains his work this way: "Most programs fail because people haven't thought through what it is they are trying to accomplish . . . what's supposed to be different in the world when these two or three days of meeting are over. If you can push people toward saying where they are in the beginning, what assumptions they are making about the people that will attend, then you're in a position to design a program."

Speaking to businessmen about management or to educators about motivation, Schmidt's approach is basically the same: to create a learning environment where spectators become participants and where participants can learn to think systematically about the problem at hand.

Establishing that environment presents the greatest challenge. Too often, those who attend conferences come with the attitude, "Tell me what to do . . . then I'll go home and do it." In Schmidt's opinion this attitude is contrary to a good learning experience: "What really counts is what the learner learns, not what the teacher teaches. In the final analysis all learning is really self-learning with the instructor facilitating the process through stimulation, resources, and setting." His techniques? Illustrative presentations of concepts, films, questionnaires, discussion. When the appropriate teaching tool isn't available, he devises one.

As consultant to a major ice cream store chain whose executives were interested in helping their store owners to understand their young employees, Schmidt devised a quiz. Both the store owners and the high school and college students who work for them were asked to rank their own values, then to rank what they perceived to be the values of the other group. The results were enlightening and provided a basis for discussion.

In Schmidt's own opinion, scientifically, the quiz wasn't a very good instrument: "It hasn't been tested. But basically, I'm not a researcher: I'm a practitioner and a programmer. I enjoy getting people to think about things. This quiz, for example, did serve the purpose of helping these people think a little more systematically about values."
Alumnus Warren Schmidt is a teacher, administrator, consultant, and behavioral scientist. He is also a spinner of parables—one of which has appeared in book form and as an animated short film that won an Academy Award. Of his work, Dr. Schmidt says, “I’m a practitioner and a programmer. I enjoy getting people to think about things.”

Washington University alumnus Warren H. Schmidt, assistant dean and director of continuing education at UCLA’s Graduate School of Management.
Easy going, with a natural inclination for putting others at ease, Dr. Schmidt speaks with vigor about his work, with seriousness about his films. The first film came about quite by accident.

On October 15, 1969, Dr. Schmidt was scheduled to discuss trends in adult education at a statewide nursing conference. But he, like so many other Americans, had something else on his mind that day. October 15 was also the day of the first national moratorium protesting the war in Vietnam. He woke up early and put some of his thoughts on paper. The result was a short parable, "Is It Always Right to Be Right?" about the debilitating effects of polarization on society.

It began: "There once was a land where men were always right. They knew it, and they were proud of it. It was a land where a man was proud to say, 'I am right, and you are wrong.' For those were words of conviction, strength, and courage. No one was ever heard to say, 'I may be wrong' or 'You may be right.'"

He used the parable in his presentation that day with some executives in an informal seminar at UCLA. "When it found its way to the front page of the Sunday Los Angeles Times, four producers contacted Dr. Schmidt about making it into a film.

THE FILM that emerged is colorful, short, and to the point. Done in animation, it presents a close-minded stagnant society where young and old, black and white, are pitted against each other. A powerful film, it is also an optimistic one that continues: "Then, one day, a strange new sound was heard in the land. Someone said, 'I may be wrong.'"

Produced by the creators of Mr. Magoo and narrated by Orson Welles, it won eight film awards, including an Academy Award for the best animated short subject of 1970. Today it is being shown in movie theaters and used widely in industry and education to initiate discussion about conflict and communication.

Encouraged by the response to this first film, Dr. Schmidt is currently working on a sequence of five films, of which "Is It Right to Be Right?" will ultimately be a part. A film on freedom was released last year. The others will deal with the importance of choice and commitment, cooperation and collaboration, and a sense of the future.

Briefly describing the films, Schmidt explained: "I'm concerned about the feelings of helplessness that descend on people, the feelings of frustration and inadequacy that rob us of vitality and purpose. This series is intended to provoke, to stimulate, to bring into focus, some of these...

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A Child of Change once asked a Man of Wisdom, "How should one handle a problem he has never known before?"

A Man of Wisdom replied:
"Each person in his time tries many ways to deal with that which is new...
And it is in such moments of stress that he learns most about himself.
I will show you three places where people go when they confront difficulties which they cannot fully comprehend...
"

And he took the Child of Change by the hand and began the journey to the Places of Response...

They came first to a pleasant grassy knoll from whose summit they could see a panorama of the city that stretched from the restored Pioneer Village to the newest country club. Only the slums were hidden from view behind great buildings.

The hillside was gay with flowers and flags—but the faces of the people were strained and preoccupied.

They listened in silence to one who spoke with a voice of great confidence and pride.

"The problem of which we hear so much these days has been exaggerated beyond its importance. The Nervous Nellies and Hand-Wringers in our midst have grown blind to the greatness of our people and our hallowed traditions. They speak only of what is wrong with us and ignore what is right with us. Thus they seek to frighten us into rash action... But we know that we have sustained far greater crises than that which now besets us. Our times call for a remembrance of that greatness of our past, the strength of quiet trust and the positive patience to wait for calmer, brighter days to return...
"

The Man of Wisdom said to the Child of Change, "This place is called the Hill of Reassurance. The people who come here are afraid of the future—and they seek an easy peace of mind from those who will assure them that their troubles will pass and they need take no new responsibility themselves."

The Man of Wisdom and the Child of Change walked down the Hill of Reassurance in silence with the others... and kept walking until they came to a great coliseum.

Here there was noise and excitement... shouting voices and blaring music.
This was the famous “Place of Pointing Fingers.”

The Man of Wisdom said, “Some people come here in times of great stress when they do not know how to deal with the crises of their day. Here they can play or watch a game whose pattern is always the same. Watch.” They joined the spectators around the coliseum and saw two groups of people shout and point fingers at one another. The first group—poorly clad—pointed at those who seemed more powerful and prosperous and shouted for a “to hear:

“These are the irresponsible and incompetent lot to whom we have entrusted our power. They have neither the vision to see the desperate needs of our people nor the will to take action. Their confusion and selfishness and poor judgment has brought us to the brink of disaster. The time has come to take back the power from those who are no longer worthy of our trust.”

Then those who wore the mantle of leadership would respond,

“The problems which beset us were not of our making. They have grown from the accumulated neglect of those who preceded us. We are making steady progress—but our power is limited and the tasks have a complexity which these dissidents cannot appreciate. They speak with the ease of irresponsibility—and are a danger to us all.”

Having thus established their positions, the contest would begin

A contest of words and epithets
A struggle to fix the blame and demean the opposition
A game to prove whose power was the greatest

Words flew as fingers pointed . . .
“Right wing”—“Left wing”
“Conservative”—“Radical”
“Reactionary”—“Revolutionary”
—and some labels less savory

The excitement grew as the struggle went on.
Epithets become more demeaning.
At times the original issue was forgotten as opponents sought only to prove themselves more popular and more powerful.

Those who watched the struggle also took sides—and the conflict spread to the stands.
It was an event of violence and exhilaration . . .

As the Man of Wisdom and the Child of Change left the Place of Pointing Fingers, the Child asked,
“What happens when the contest is over?
What do people do then?”
And the Man of Wisdom replied, “Usually nothing much. But some people think that when the blame for a problem has been placed on someone else, they can feel free from the responsibility to act themselves.”

From the Place of Pointing Fingers, the Man of Wisdom and the Child of Change went to another place of action.

In this arena people milled about and talked with one another.
They moved among tables and typewriters, books and computers—
Always looking and always asking questions.

Questions like:
“What are the facts we need to know?”
“What goals do we seek?”
“What obstacles must be overcome?”
“What alternative paths might lead to our goals?”
“Who needs to do what to move ahead?”

As the Child of Change looked on, the Man of Wisdom explained
“This place is called the Arena of Choice. The people who come here believe that wherever there is freedom there are choices to be made.
For a society—or an organization—or a group cannot long survive where none will choose and all will let things drift.
Where people cannot decide, their problems will accumulate.
Where people will not make commitments, their lives will be filled with crises.
Where people will not vote, their freedom will erode.

You see, free people live within walls that have doorways of choice.
The people who came here are looking for those doorways.”

As they left the Arena of Choice, the Man of Wisdom said to the Child of Change, “You have seen three places where people go in time of turmoil and uncertainty. And each person, in making that choice, makes a silent statement about himself . . .”
problems, to give fresh perspective and some feeling of hope.” The films say a great deal about society today; they also say a great deal about the author, who is first and foremost a scientist, but hardly a dispassionate one. Running through the series is a basic philosophy of optimism and a sense of purpose and hope, reminiscent perhaps of Dr. Schmidt’s first calling.

After receiving his bachelor’s degree from Wayne State University, Schmidt attended Concordia Theological Seminary with the intention of making a career in the ministry. Upon graduation he accepted a position as minister of the Glendale Lutheran Church in Glendale, Missouri. To improve his counseling skills, he enrolled in graduate level classes in psychology at Washington University, earning his master’s degree in 1948. The following year, he became a full-time doctoral student. Looking back, he recalls that these were the most productive years of his life: “As a Ph.D. candidate with a wife and little money, I had to finish my dissertation quickly. In the process, I learned a lot about how you go about moving things and how to make them happen.” After receiving his Ph.D. in 1950, Schmidt never returned to the ministry, but went on to teach. In 1955, he joined UCLA as a lecturer in psychology and head of the department of conferences and special activities for University Extension.

In his present post, as assistant dean and director of continuing education for the Graduate School of Management, he heads an extension program which offers a full range of certificate programs, conferences, and seminars, and is this year initiating an experimental, part-time Master of Business Administration program.

In some respects, Dr. Schmidt is an enigma . . . on one hand a practitioner, a programmer, on the other, a modern day Don Quixote, jousting with a broad spectrum of human concerns. But in Warren Schmidt, the two don’t seem inconsistent. He approaches both philosophically, optimistically, and systematically. Perhaps his greatest talent is inspiring others to do the same.

The film version of Is It Right Always to Be Right?, produced by the creators of Mr. Magoo and narrated by Orson Welles, won eight awards including an Academy Award for the best animated short subject of 1970. With their Oscar are Nick Bosustow, the producer; Stephen Bosustow, chairman of the company; Warren Schmidt, and Lee Mishkin, the director.
A shy but proud merchant shows off the rather unusual merchandise he has for sale at the local marketplace. Leopard skin, anyone?
Ethiopia is more than anything else, a land of contrasts. According to tradition, the rulers of Ethiopia are descended from no lesser personages than King Solomon and the Queen of Sheba. But even with a history of such grandeur, Ethiopia is a country whose residents have a life expectancy of only thirty-five years. Situated on the northeast coast of Africa, the Empire of Ethiopia is bordered by deserts and the Red Sea. Life, like the land, is rugged, and the variety of Ethiopia's topography is rivaled only by the variety of its peoples and languages. The people—Amharas, Tigreans, Gallas, and Falashas, to name only a few—speak fifteen languages and more than a hundred dialects.

It was precisely these many cultural contrasts that most impressed Washington University senior Bob Schaefer who, while on a mini-world tour, vacationed in Ethiopia this past summer and took these photographs. Bob, who was traveling with his sister Monica, a Ph.D. candidate in Semitic languages at the University of California at Los Angeles, found the contrast between the lives of Ethiopian men and women the most astounding. It is more than coincidental that there are no women in these pictures. According to Bob, a woman in Ethiopia is not supposed to argue with a man under any circumstances. Apparently, this social custom extends to American women, such as Monica, who greatly upset the men around her when she argued with a restaurateur over a luncheon check. What would have happened to her had she persisted remains a mystery, since Bob and Monica decided that the time had come to move quickly on to another country.
The softness and harshness of Ethiopia is emphasized as a flock of ostriches pause in the rugged central highlands.
A wild bird, resting on the limb of a scrappy gnarled tree seems to underline the fact that life in Africa is exquisitely beautiful, but also incredibly hard.

EPISODE IN ETHIOPIA

Ethiopian children, like children everywhere, are fascinated by a new face in the neighborhood. Here two young Ethiopian gentlemen check out the visiting Americans.
Stix International House, the University’s new center for international studies and foreign students, had a double Grand Opening this fall. On Saturday, September 30, there was a formal dedication and on Sunday an informal picnic and open house.

The sixty-year-old, three-story mansion, donated to the University by the family of the late Ernest Stix, long-time trustee and friend, will serve as headquarters for the International Studies Office and the International Office, and as a focal point on campus for foreign students. Renovation of the house was made possible through the generous contributions of a number of friends of the University. The Washington University Women’s Society was responsible for furnishing the house.

Speakers at the formal dedication included Chancellor William H. Danforth, former Chancellor Thomas H. Eliot, now president of the Salzburg Seminar in American Studies; Stanley Spector, director of International Studies, and Suan-Neo Tan, president of the Cosmopolitan International Student Club.

Among the dignitaries who attended the formal dedication were the Consul General of Japan, Tateo Suzuki, who came from Chicago for the occasion, and representatives from the St. Louis consular offices of the Netherlands, France, Switzerland, Great Britain, the Dominican Republic, and Norway.

On the Sunday following the dedication ceremonies, the Washington University Women’s Society sponsored a picnic-reception for international students, who showed up in large and enthusiastic numbers. Special entertainment was furnished by members of the Philippine Dance Association who were in town for Stix, Baer and Fuller’s Far Eastern Festival. Chairman of the Women’s Society committee which planned the highly successful opening party was Mrs. Whitney R. Harris.

It is fitting that the Stix House should become the international headquarters for Washington University, and hopefully for the city, for the Stix family has long been interested in persons of other nations and cultures and in international affairs. Foreign students have been living in the Stix House as guests of the Stix family since the early 1940’s. Today, it is their house.

The first annual Black Arts Conference for St. Louis Black Artists was held September 29-30 at Washington University. Sponsored by the Department of Black Studies, the Office of Student Affairs, and the School of Continuing Education, the conference was the first of its kind in Missouri.

Designed as a practical conference dealing with practical aspects of black artistic development, the two-day meeting consisted of workshops, seminars, and panel discussions of such basic topics as grants, proposals, copyrights, and the recording and publications fields. Opening speaker was Dr. Tifftord Brooks, superintendent of music for the East St. Louis Public Schools and lecturer on black music at the University. Alvin Major, Jr., black artist in residence, was conference chairman.

The conference was based on the conviction of its sponsors that there is a crucial need for such a meeting not only for black artists but for all persons of the community interested in both the problems and the potential of black art. The first conference was a productive beginning for what it is hoped will be an annual event.

After the death of Dr. Carl V. Moore on August 13, Chancellor William H. Danforth wrote in a letter to the faculty and staff the following about Dr. Moore: "He was one of the world’s great physicians. He was an outstanding teacher and a research worker who contributed much to medical knowledge. He built the Department of Medicine to be second to none in clinical skills and in the production of excellent research. "As the first vice chancellor for medical affairs and the first president of the Medical Center, he led the Medical School and Center successfully through a most difficult time. . . All of these accomplishments do not explain the sense of almost disbelief that was evoked by news of his death. Carl seemed the essence of stability, almost of indestructibility, the most dependable of men. Faculty and staff counted on him always. His presence gave surety to discussions and comfort to conclusions. It was not so much that he led others, although many tried to emulate him, but rather that his character and stability provided a compass pointing always towards excellence as he conceived it to be. . . ."

There isn’t much we can add to those words. For his achievements Dr. Moore received many of the highest honors that can be accorded a medical scientist and educator in this country. Few people outside the medical profession, however, were aware of Dr. Moore’s tremendous stature. Not many laymen were aware, for example, that he and his associates at the Medical School were the first to clarify how much iron is absorbed in anemic patients and in the average person. General diet recommendations drawn up by an American Medical Association committee were based largely on their findings. It was typical of Dr. Moore always to praise his co-workers and give them the credit for research efforts.

As a teaching physician the quiet example he set in his dedication to patients was an inspiration to countless students and colleagues. But a quality that perhaps will be remembered most by many of his friends was his immense capacity to be considerate and kind. Although he maintained an unbelievably heavy work schedule, one of his long-time associates, Virginia Minnich, pointed out, "One of his biggest assets, one of his nicest features, was that he always had time for everybody." A neighbor of Dr. Moore who knew little of his preeminence in medicine told a reporter, "He was courtesy personified . . . he was just a very fine person." He was indeed a big man whose depth of character will live on in the minds of all who were fortunate enough to have known him.

—FO’B
Two weeks before the 1972 Battling Bears football season opened, Don McCright learned that he had been named to replace Head Coach Dick Martin, who had resigned to go into private business. Don, who had been on the coaching staff since 1967, not only stepped into the breach; he leaped into it, leading the Bears to five straight wins in their first five games. McCright is out to win football games, no question, but he has other priorities, too. In a recent interview, the new coach said, "My goal is to see every boy I recruit finish his four years of college and receive his degree."

Bruce J. Melin may well be the only director of athletics at a major university with a background as a trainer. For many years, Bruce has been one of the best known athletic trainers in the country and has also been much more than a trainer. During his twenty-three years at Washington University, Bruce has been a leading member of the Physical Education faculty, teaching anatomy, physiology, and kinesiology, and rising to the rank of full professor. He holds both a bachelor's and a doctor's degree from the University of Minnesota, and for many years has been a visiting lecturer in the orthopedics program at the School of Medicine. Associate director of athletics since 1968, Professor Melin has also been deeply involved in personnel, budgets, scheduling, the care and maintenance of the physical facilities, and the other more prosaic aspects of running a major physical education program. The new athletic director and the new head football coach share the same basic philosophy about the place of athletics at a university. Among immediate plans for the future, the new athletic director intends to develop an aggressive recruiting program to attract "student-athletes" in all sports.