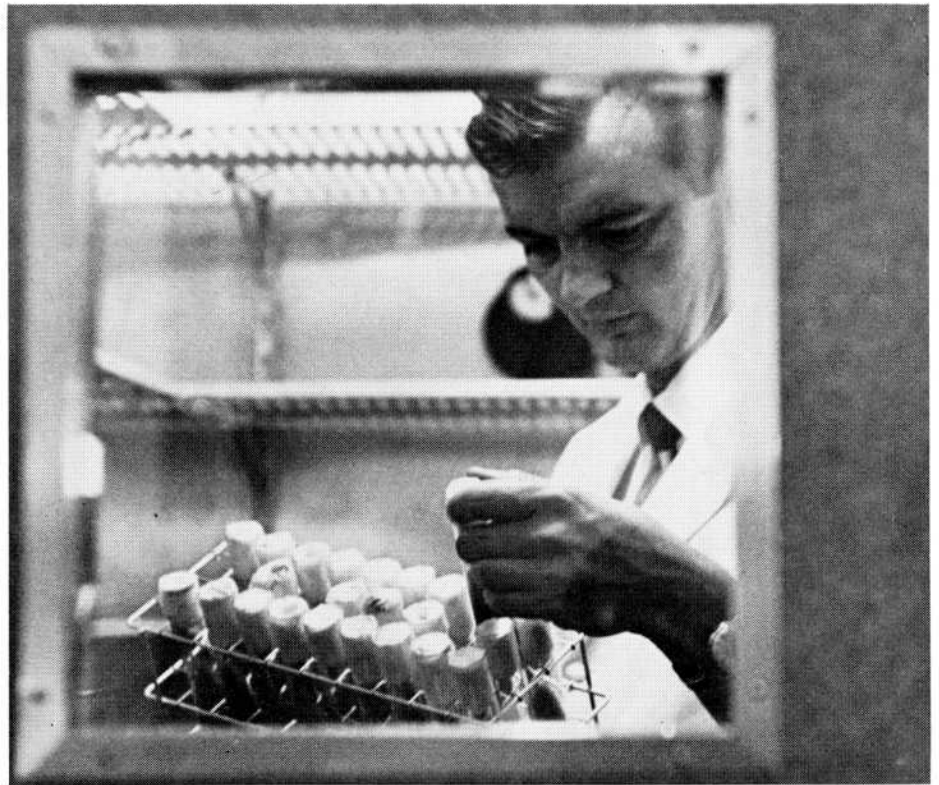


Window in the Future

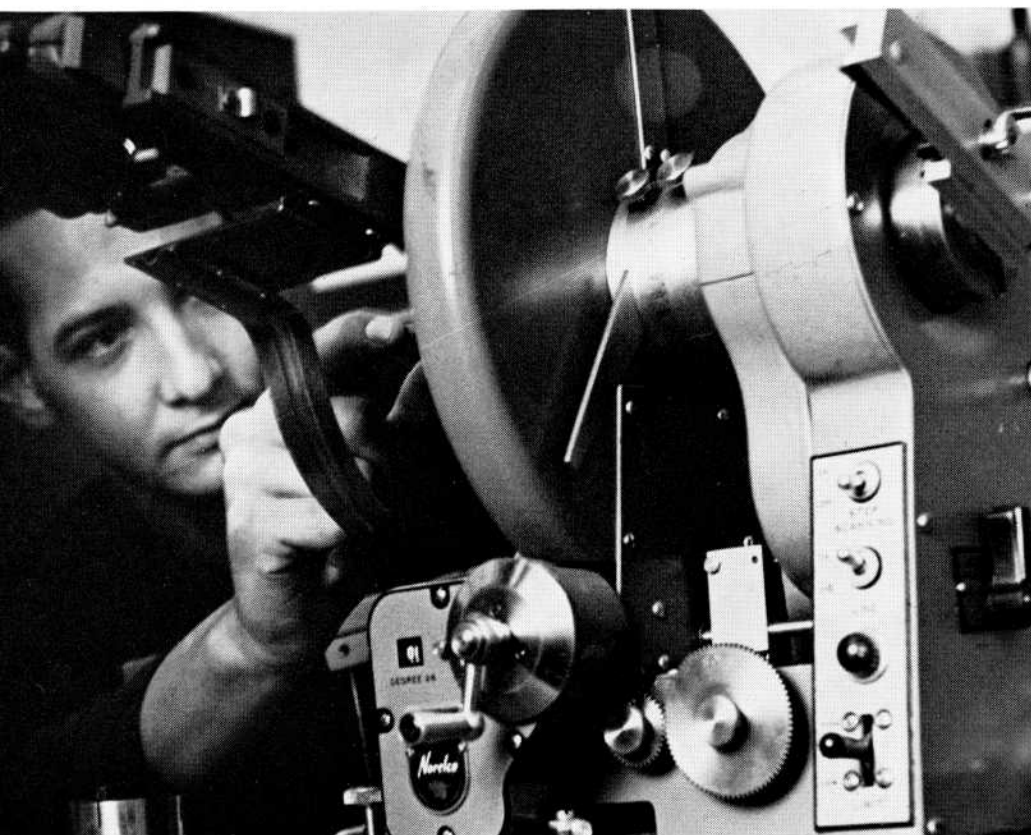


RESearchers are dreamers with the ability to put dreams into action. Given the chance, their theories can become full-scale research projects probing for the answers that will provide a guidepost for the future. Research at the University of Oklahoma is a complex blending of these dreams with the highly specialized facilities and brainpower needed to implement them. The mere presence of such scientific endeavor is bringing recognition to the University, outstanding professors to the faculty and superior students to the campus. The strengthened University, in turn, is bringing industry to the state, providing jobs for young people who have been trained at the state's expense. Research at O.U. is the many-sided story which is told on the following pages.

Window in the Future

research is building a better tomorrow
for the university, state and nation

By CAROL J. ROBINSON



This special research equipment is for "x-ray absorption spectrometry," a process used by O.U. petroleum engineers to complete reference tables on physical properties of chemical compounds.

THE image of the starry-eyed young scientist in his converted garage laboratory has been dear to the hearts of enterprise-loving Americans since Tom Edison invented the incandescent lamp. But time and advancing technology are making drastic changes in this popular concept.

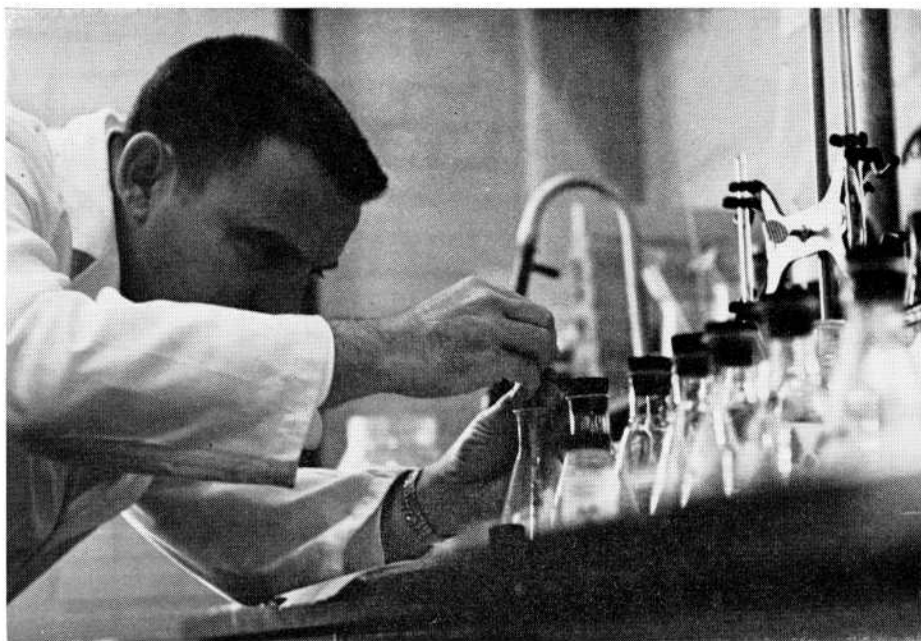
The carefully trained young men and women who are the Edisons of the 1960s can usually be found in highly specialized laboratories equipped with the latest, most complex and costly scientific apparatus. They are faced with the problems of a future which involves atomic energy and space travel and survival of holocausts that were beyond comprehension in Edison's day. At the same time they are expected to cure cancer and the common cold, to discover new sources of food and water and to find answers to mysteries that have baffled mankind for generations. Many of these solutions are dependent upon the use of computers and reactors and devices with names that the layman finds difficult to pronounce, much less understand.

Securing up-to-date, fully outfitted facilities is not primarily a scientific endeavor; it is rather a business proposition that should be carried out by an efficient business organization with a solid foundation of scientific know-how. The University of Oklahoma foresaw the need for such an organization in 1941 when it established its Research Institute as a separate, non-tax-supported, non-profit corporation to coordinate Sooner research projects.

The primary responsibility of the Re-



This specially modified analog computer is part of new equipment for process dynamics study.



In this radioisotope laboratory University civil engineering researchers are experimenting with a newly developed technique which may result in an improved method of secondary oil recovery.

search Institute is to find the financial support for the University's skilled researchers. The man charged with this task is Executive Director Verne C. Kennedy, Jr., a forceful 42-year-old metallurgical engineer and physicist with a 30-man administrative staff and a full-time scientific staff of 50.

Wherever the research contracts are to be found—from business, industry, private philanthropic and scientific foundations or governmental agencies—the Institute personnel must seek them out, prepare the proposals, negotiate the contracts, then work with the scientists to secure the proper laboratory facilities and necessary equipment. Throughout the project, which may last months or years, the Institute relieves the researchers of the business details by auditing the operation, helping them prepare reports and finally charging the clients for the work done.

Some of the research going on at the University will result in tangible products or processes applicable to present day living. Other projects are more basic in nature, delving into the unknown for the sake of the knowledge itself. The aim of such continuing spadework is to fill in the gaps in our understanding of the world around us. Tangible results from basic explorations may be many years in coming. Understandably these fundamental research projects are more difficult to sell to a business or industrial client. The Institute itself supports many such projects with grants from its working funds.

It is no accident that the Research Institute—the focal point for research in Ok-

lahoma—was established by the University of Oklahoma and has become such a vital part of this institution. A university environment is the logical source of scientific investigations. Within a university there is a concentration of trained personnel that would be difficult to duplicate. The inspiration for research already exists in the minds of these men and women. The basic laboratories and equipment are already present. All that remains is bringing together the questioning minds, the available facilities and the agencies willing to pay for the answers.

PROXIMITY to the University and its resources is the basis for the recent establishment of the University of Oklahoma Research Park, a 900-acre tract of developed land on the North Campus, which is available for the construction of research facilities for private business and industrial firms and government agencies. The University will provide such organizations with a functionally planned building on a long-term rental basis, offering a protected research site, a readily available source of skilled scientists and technicians and specialized research facilities.

Twelve research units have already been located in the Research Park; others are under negotiation. The first industrial firm to establish a permanent research center in the Park, Oil Recovery Corporation of New York and Tulsa, announced plans for its new building early this year. The other Park residents are ACF Industries, Aero-Commander Inc., Federal Aviation

Agency, Aero-Medical Research Institute, Computer Systems Engineering Inc., Nelson & Associates Consulting Paleontologists, Rouge Companies Research Laboratories, U. S. Public Health Service and U. S. Weather Bureau.

While most of the research is conducted in existing University facilities, the Institute has also been instrumental in obtaining highly specialized research tools on various parts of the Main Campus and within the Research Park as well. The recently installed low-temperature Cryogenic Laboratory, for instance, will be able to produce liquid helium, hydrogen and nitrogen for experimental purposes in industrial and educational laboratories throughout the Southwest. New dimensions in biological research are possible in the Animal House, a building specially designed for the safe study of contagious diseases, while O.U.'s chemical engineers can conduct high pressure and process dynamics studies in their new facilities. The pride of the Park, of course, is the newly completed high-speed digital computer, which was built by University electrical engineers.

The Research Institute has proved its ability to attract the support of outside agencies for University research, but it has also proved a most valuable attraction for outstanding faculty members and graduate students. One of the keys to recruitment of the highest quality professors is the accessibility of the facilities needed to carry on their research. Likewise the presence of outstanding researchers and teachers has a

continued

the only way to hold Oklahoma-trained scientists is to provide jobs in Oklahoma

strong magnetic effect on other researchers and teachers and students.

Evidence of the Institute's support of the University's graduate education program can be measured in money as well as in the calibre of the faculty it helps to maintain. At present 150 of the 250 Institute and University personnel receiving monthly checks from sponsored research funds are students working toward advanced degrees in all the sciences.

Yet research at the University of Oklahoma does not merely benefit the institution internally and the clients for whom the research is done. The contract value of research has grown from \$41,000 in 1942, a year after the establishment of the Research Institute, to \$3,500,000 in 1961. This money comes into Oklahoma primarily from outside the state and is put into circulation within the state.

In addition the presence of extensive scientific endeavors in Oklahoma has considerable influence on science-based industry looking for a home. Providing more in-state jobs is the only way to stop the exodus of scientists trained in Oklahoma at state expense.

The contribution which this research center can make to Oklahoma's growth and that of the Southwest is important to be sure. Its role in building a great university is also important. But of even greater consequence is the far-reaching effect which the research being done at the University of Oklahoma can have on the lives of the people of Oklahoma, the Southwest, the nation—indeed the world—and not only for today, but for generations to come.

One University scientist, Dr. Kenneth S. Mills, is studying the tiny cells of the nervous system to discover exactly how the messages are passed along to all parts of the body. His success will open the way for further research, possibly directed at the effects of drugs and alcohol on the nervous system or at a better understanding of mental illness.

At a time when survival in the event of atomic warfare is a prime topic of concern, O.U. researchers led by Dr. Richard A. Goff, '39ms, are seeking to learn more about the effect of radiation on living cells,

a project begun in 1955. Determining whether crops can be developed that would be "radiation-proof" is one goal of this work, but it could even evolve into protection of man from radiation through altered cell structure. Whether or not such utopian accomplishments ever come from this particular project, the addition of even a small piece to the total knowledge of radiation effects is a significant advance.

Dr. Howard Larsh, O.U.'s leading microbiologist, has already received national recognition for his studies of histoplasmosis, a fungus-caused lung disease occurring in warm, humid climates and frequently misdiagnosed as tuberculosis. His discoveries have led the way to the development of an antigen which has improved diagnosis and may result in a cure for this disease.

The saline water project undertaken by Dr. George W. Murphy involves an electrical means of removing salt from water. The ultimate aim, of course, is an economical method of making sea water fit for human consumption on a scale large enough to supply the mushrooming needs of growing cities and towns, industry and agriculture.

The work of University civil engineers under George W. Reid has centered for the



The Research Institute with Executive Director Verne C. Kennedy, Jr., is responsible for securing the contracts to support O.U. research.

past several years on the algae growth on industrial wastes and sewage. At most municipal sewage disposal plants the organic material is removed from the waste but much of the rich nitrates and phosphates remain. These compounds, which are needed in fertilizers and nutrient animal feed, serve as fine food for algae when discharged into rivers and streams—but they also pollute the water. The scientists are seeking a way to grow the algae at the plant where it will not harm the water and can be harvested for fertilizer or animal feed.

The Fisheries Research Center, located at Noble and headed by Dr. Howard P. Clemens, is tackling such problems as increasing the reproductivity of fish as a food source for the much publicized "population explosion." The possibility of using hormones from fish for medical purposes in human beings is also being investigated, and several studies are underway on the effects of environment on the reproductive cycle of fish.

These are only a few random examples of University of Oklahoma research. In all there are more than 130 projects now under the auspices of the Research Institute. As Director Kennedy puts it, "We've just about reached the saturation point as far as the amount of research being done by our personnel in our present facilities." But this does not mean that this is all the research that remains to be done by the O.U. faculty and graduate students. With more and more agencies turning to the University and its researchers for the answers, the expansion of the research staff and facilities becomes increasingly vital to the progress of the University, the state and the nation. As the bright young men and the distinguished older scientists are added to the faculty, they will bring with them new and varied interests which will result in an accelerated program of research and development, and the University must be ready for them.

Perhaps some of the romance of young Edison in his makeshift laboratory is missing in the picture of the modern day research scientist, but the prospect before him has lost none of its excitement. His work is our window in the future.