

1950-1970

# GOLDEN AGE of Research

*At the dawn of the space age, Syracuse University underwent a remarkable intellectual transformation.*

BY ALEXANDRA EYLE

**J**ust a few years after World War II, Chancellor William P. Tolley and Ralph Galbraith, dean of the College of Engineering, paid a visit to Cloud Wampler, head of Carrier Corp., a major air conditioning manufacturer based in Syracuse.

Tolley told Wampler that Syracuse could help Carrier solve some of its long-standing research problems. Wampler was skeptical but gave Tolley and Galbraith an unsolved, complex problem that required high expertise in mathematics.

"The next day," Tolley recalls, "Galbraith called me to say, 'You know, I gave the problem to the math department and I find that they've already solved it.'"

"I telephoned Cloud and said, 'We have a world-class mathematician on board and he gave us the answer.'"

"Cloud was impressed," Tolley adds. "'You've made your case,' he said. 'We're going to be in partnership with you in research from this point on.'"

"That experience shook the rest of the industrial community," Tolley adds. "It opened doors that had been closed."

For 75 years, Syracuse had been known primarily as an undergraduate, liberal arts college. In 1945, there were 4,000 undergraduates but barely 300 graduate students and only a handful of research projects. And while graduate enrollment climbed to 2,000 in 1950, fewer than 100 research projects were underway, supported by \$782,000 in grants. By 1968, however, Syracuse was working on 300 research projects funded by grants totaling \$13 million.

As word of Syracuse research projects spread, graduate enrollment rose steadily, from 313 in 1945 to 7,500 in 1969. The University's graduate programs, including engineering, mathematics, physics,

biology, religion, psychology, reading, public affairs, geology, and geography expanded and improved so dramatically that by 1967 Syracuse was admitted to the prestigious Association of American Universities.

In 20 short years, between 1950 and 1970, Syracuse had become known as an exciting new graduate research institution. Those who were there remember it as a golden era of intellectual excitement.

**A**lthough this transformation was touched off by Wampler's experience, it had its roots in social change. Following World War II, the GI Bill paid for the college education of more than two million World War II veterans, who swelled the

ranks of U.S. universities. Between 1945 and 1946, Syracuse's total student population almost tripled. As the student population grew, so did the budget, making more money available for research.

Research was also bolstered by outside support. During the war the federal government had, for the first time, contracted with universities to conduct military research. The partnership continued after the war, though it was not limited to defense work. Spurred on by the Cold War with Russia, the federal government poured money into universities for various types of research—military, electronic, medical, and environmental.

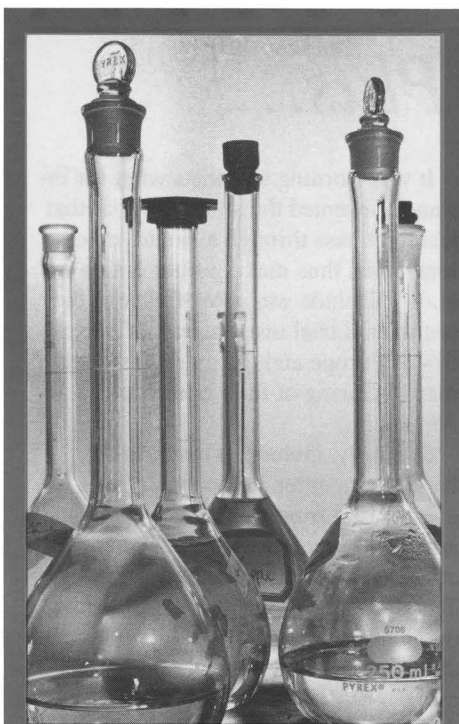
The commitment to research reached a new height in 1957, when Russia launched the first satellite, Sputnik I, and peaked once more in 1961 when Russia flung the first astronaut into space. In response, the United States promised to put the first man on the moon—and asked educators to shape a new generation of achievers.

The new emphasis on research spread to all areas of science. Cures for diseases such as polio were sought and found. Science fairs sprang up in high schools across America, and university engineering schools began to overflow with applications. By the 1950s, a favorite claim was that "ninety-five percent of all the scientists who have ever lived are alive today."

Chancellor Tolley took full advantage of the era and thus launched Syracuse as a major new research center.

**T**olley began with the research faculty. By 1950, Tolley had established an aggressive hiring policy designed to bring leading junior and senior scholars to Syracuse.

"The best people are a bargain at any



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price," Tolley says. "We went out to the Ivy League schools and bought people and paid them well above the going rate."

The strategy brought a wealth of talent to the University. Throughout the 1950s and 1960s a host of prestigious scholars joined the Syracuse faculty. They included Peter G. Bergmann, a former student of Albert Einstein, who left the National Academy of Sciences to join the SU physics department; William Merrill, a renowned geologist from the University of Illinois, who joined SU as its first geology chairman; and electromagnetic theorist Roger F. Harrington, who brought national attention to the graduate engineering program through his antenna research.

After bringing leading senior and junior scholars to campus, the administration offered all it could to keep them, including time to do research.

"We had one of the most generous leave policies of any university," Tolley recalls. "If we hired a brilliant young fellow from Yale or Harvard and nothing happened in the first two years, we'd say, 'What's the matter. Why isn't something happening?' And we'd light a fire under him."

Tolley's tactic worked. Word quickly spread—Syracuse was an exciting place to do research. "One of the main reasons I came to Syracuse," recalls Arthur Phillips, a professor of biology who arrived in 1954, "was that I knew I would be free to use my imagination and generate my own research projects."

Phillips came to Syracuse from MIT to start the first germ-free animal research laboratory dedicated to studying medical problems. His research resulted in the isolation, purification, and identification of anticancer properties of the enzyme asparaginase, now used in the successful treatment of lymphatic cancer.

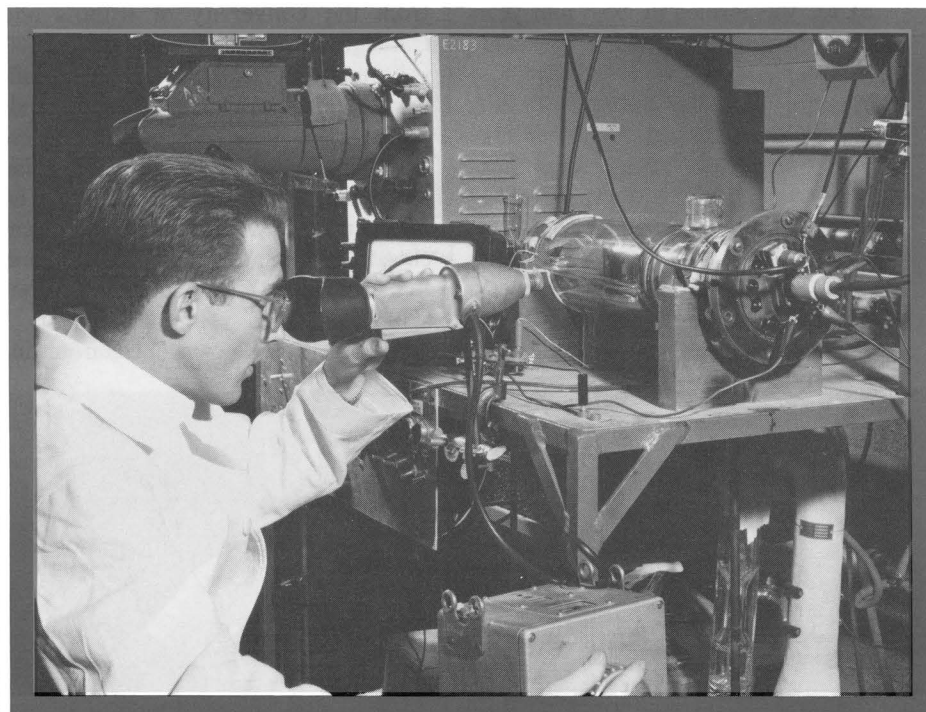
**T**he University also fueled the fire under researchers by helping them obtain grants. In 1946 Syracuse created the Institute for Industrial Research—later known as the Syracuse University Research Institute (SURI)—to act as the administrative arm for research projects. One of the first sponsored research support programs in the country, SURI handled all contracts for

fundamental or pure research. Its director, William C. Wheadon, wrote proposals on behalf of Syracuse professors, or accepted proposals and sent them to appropriate agencies. SURI also worked on behalf of industries and government agencies that had work to contract out; Wheadon helped them identify appropriate SU researchers.

In addition to SURI's services, the Tolley administration also provided research equipment. While some scientists had to set up shop for several years in the prefab buildings originally used to handle postwar

method for interpreting electrocardiograms. Physicists at Syracuse discovered two new atomic particles and conducted ground-breaking infrared research. A new metallurgical laboratory, headed by internationally renowned titanium specialist George Sachs, was used to conduct studies contributing to the use of titanium in aircraft that could fly at three times the speed of sound.

In the Maxwell School of Citizenship and Public Affairs, research projects ranged from the study of municipal growth



*SU research in atomic physics, mid-1950s*

growth, they were nevertheless given as much research equipment as possible.

"This was a new era in support of research activity," recalls chemistry professor Benjamin Burt, "and quite a change from the days when professors had to build much of their own equipment."

Last, but not least, came buildings. Crowded conditions eventually eased as a new biology laboratory and engineering, geology, and physics buildings were added to the main campus.

Syracuse's pursuit of research support quickly paid off with important research projects in every field. Richard McFee's engineering work led to an accurate

problems to the development of an international relations training program, dubbed "The Art of Overseasmanship." The audiovisual department set up an international program to help foreign countries use audiovisual aids in education.

By 1958, more than 400 professors and graduate students were doing research, and Syracuse's grant awards placed it 12th among U.S. universities involved in sponsored research programs. The University received both governmental and corporate support from such organizations as the Atomic Energy Commission; the U.S. Department of Health, Education and Welfare; the U.S. Air Force; the National

Science Foundation; the New York State Department of Health; Allied Chemical and Dye; American Cyanamid; Armstrong Cork; Ciba Pharmaceutical; Westinghouse; and General Electric (GE).

**T**he University formed one of its strongest relationships with the Syracuse branch of GE. This liaison led to the formation of a new University research organization, the Syracuse University Research Corporation (SURC).

SURC was formed in 1957, four years after the Korean War. It was the brainchild of electronics wizard W. R. G. Baker, vice president of GE. Upon learning that many of the 54,000 American casualties of the Korean War might have been caused by obsolete weapons, Baker became determined to aid the military through defense research. In doing so, according to Glenn Glasford, professor of electrical engineering, Baker also hoped to “make Syracuse the electronics capital of the world.” This

plan would not reach fruition, but a major part of the dream—the creation of a major research institute, focusing on electronic research—was achieved.

Working with Tolley and Galbraith, Baker modeled SURC after two similar organizations—the Stanford Research Institute and the Cornell Aerospace Research Laboratory in Buffalo, New York. Within weeks of opening SURC, Baker suffered a massive stroke, which partially paralyzed him, but he nevertheless managed to bring a staff of leading scientists and researchers from the University of Illinois and Carnegie-Mellon University to SURC.

Formed as a legally separate, nonprofit organization, SURC obtained its own funding and was staffed with full-time professional researchers and scientists, but it also had strong ties with the University. The members of SURC’s board of trustees were chosen by the University board, and Syracuse faculty members worked as consultants to SURC.

SURC became known for electronic in-

telligence communications and military electronics dealing with radar and sonar. Although SURC also conducted research in food protection, conservation, education, social policy, and urban affairs, it was military work—the development of electronic jamming devices, radar antennae, and the like—that made up the bulk of SURC’s research well into the 1960s.

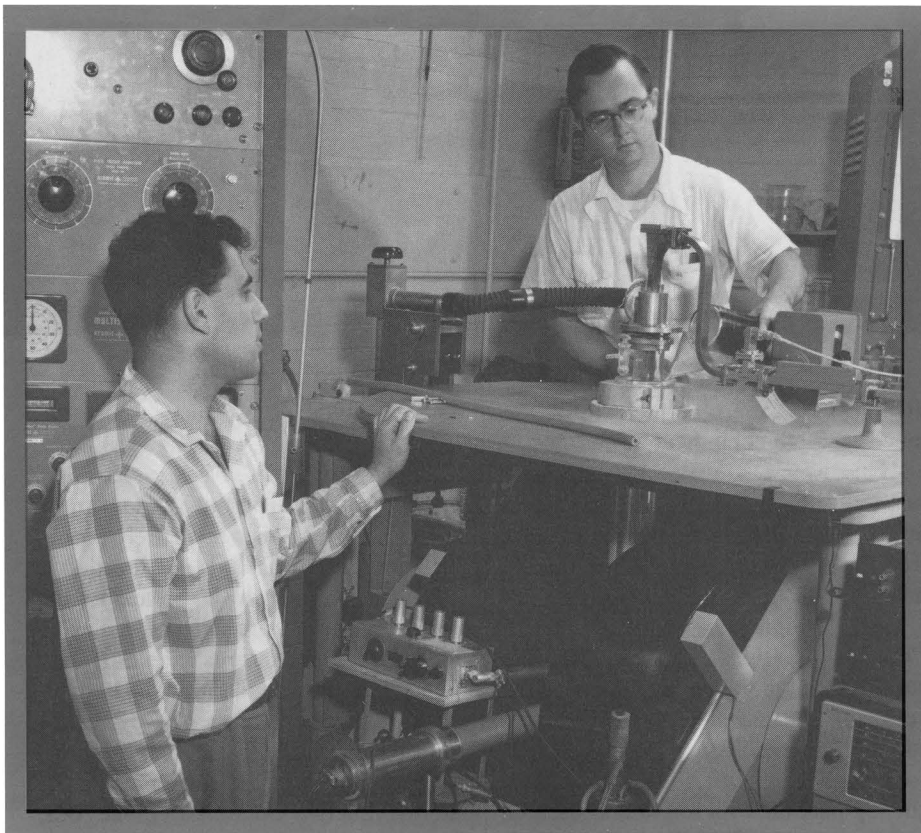
“We were very relevant in military work,” recalls Charles R. Wayne, a retired SURC director. “We developed an unbelievable reputation among the people who knew us.”

During the Vietnam War, SURC’s military research became a target of anti-war sentiment. By 1975, the University had disaffiliated itself from SURC. SURC became, simply, the Syracuse Research Corporation, or SRC. Nevertheless, some Syracuse faculty members, especially those in the social sciences, continued to act as consultants to SRC, and the University retained its strong reputation for electronics research—a reputation that had been bolstered, in part, by its work with SURC.

**T**he break from SURC was the only disturbance in Syracuse’s journey to becoming a major research institution. On all other levels, the effort was extremely successful and beneficial.

The greatest benefit could be found in the departments and schools. Before the war, Syracuse’s graduate engineering program had been modest. But the new group of engineers at Syracuse, recruited and led by Galbraith, was determined to lead the way in engineering research and development. As the school’s work in microwave antenna propagation gained national attention, more and more graduate students were attracted to the school. By 1960, the electrical engineering program was listed among the top ten by the National Council of Education, and engineers from around the world were flocking to the University’s Sagamore Center for conferences on engineering education.

“There was a high *esprit de corps* among the Syracuse engineers,” recalls Glasford. “We had the feeling we were building the department up from almost nothing and ac-



*Pouring liquid nitrogen - part of SU research in physics, late 1950s*



completing a lot.”

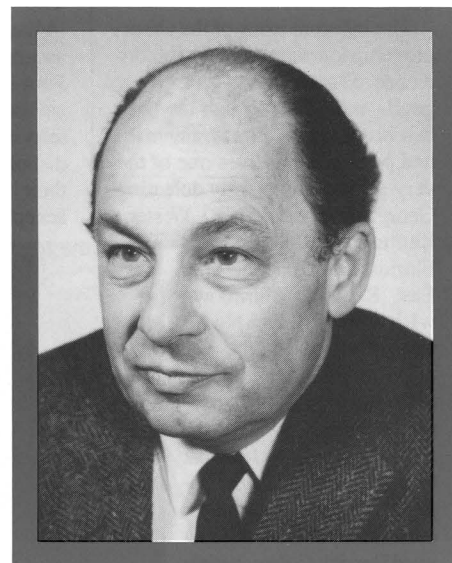
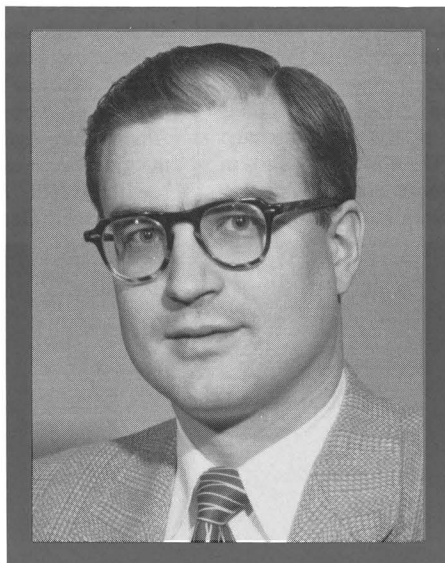
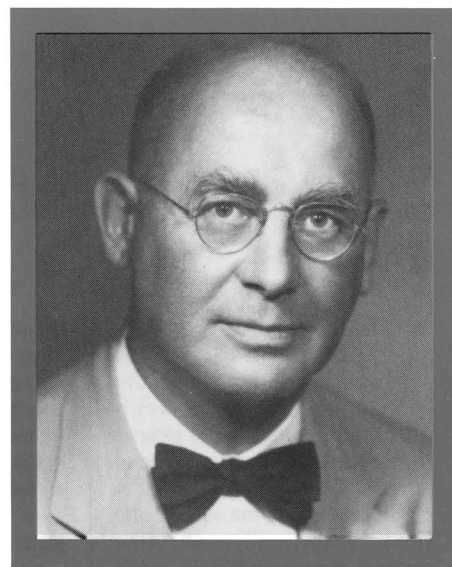
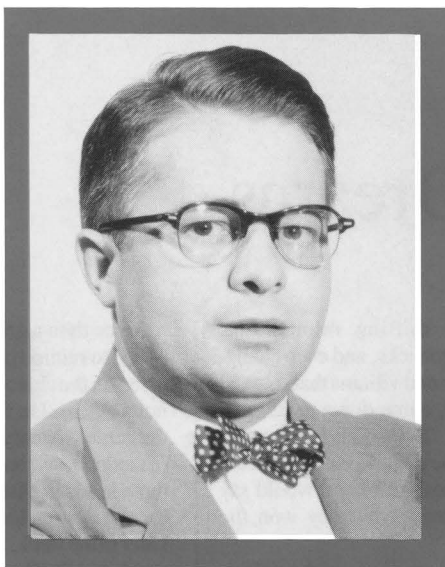
Departments were blossoming all across campus. Geology, for instance, separated itself from the geography department in the late 1950s, and William Merrill, the first geology chairman, was charged with bringing the department up to speed in plate tectonics theory, which was replacing a previous emphasis on natural history. A new undergraduate curriculum and Ph.D. program were established, and money was obtained for new research and laboratory equipment, library acquisitions, and salaries. The faculty featured some of the world's leading geologists, including Ernest H. Muller from Cornell and Dirk deWaard, who came to Syracuse after serving as a visiting professor at the University of California. The department became one of the strongest on campus.

“We filled the third floor of Lyman Hall to the gunnels,” recalls John Prucha, who replaced Merrill as chairman in 1963. “We needed a shoehorn to get everybody in there every morning. It was a place of intense work and enthusiasm. There was a kind of intellectual excitement in which students and faculty members worked day and night seven days a week.”

This feeling of excitement affected undergraduate as well as graduate students. In geology, undergraduates benefited from a new curriculum, taught by enthusiastic faculty members and teaching assistants. In biology, undergraduates worked on research projects as work-study students. “This gave them a tremendous opportunity to experience the excitement and discipline of research firsthand,” Phillips recalls.

As intellectual ferment spread across campus, past departmental divisions began to dissolve. “The whole academic community in Syracuse was so research-minded,” recalls Phillips. “People from physics, chemistry, biology, forestry, and the medical school were all very close.”

“Chancellor Tolley stimulated this getting together and collaborating with each other, knowing that this fertilization would develop each individual's research potential. He was very forward-looking in that respect. He had a sense of the kinds of things that were necessary to generate the optimum research atmosphere.”



*Prominent faculty members of SU's first research boom (clockwise, top left): Arthur Phillips, George Sachs, Peter Bergmann and Roger Harrington*

**T**oday, the Center for Computer Applications and Software Engineering and the new Science and Technology Center are two highly visible outgrowths of such forward thinking. But the legacy is much broader, affecting research and instruction throughout the disciplines.

The end result is that Syracuse is recognized today as a leader in *both* graduate research and undergraduate study. The University's rapid growth in research can be traced to a fortuitous conversation between its chancellor and a leading in-

dustrialist and to a national awareness, born 40 years ago, of the importance of research. Syracuse excelled in taking advantage.

“Syracuse was founded in 1870,” notes Prucha, “but in terms of its identity as a research institution, it is not even 40 years old. Yet in that time, it has accomplished as much as or more than almost any 200-year-old graduate institution. Its growth has been remarkable.”

*ALEXANDRA EYLE, a former staff writer, recently began work on a biography of conservationist Charles Lathrop Pack.*