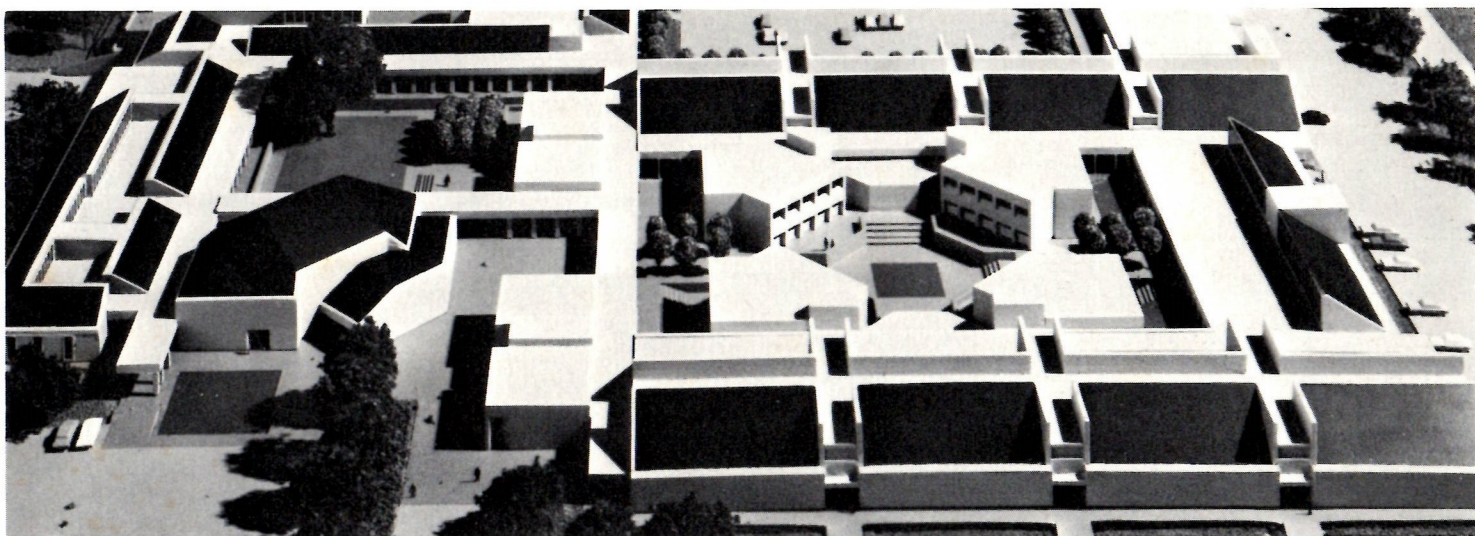


# Opening Bell at Grad Center



KWAKU MENSAH, metallurgist in Electrochemical Products Manufacturing, began the new year like most of us did—contemplating his plans and aspirations.

His plans focused on a master's degree program in metallurgy and material sciences at one of the nation's newest institutions of scientific learning—the Oregon Graduate Center for Study and Research, Tek's present next-door neighbor.

When the opening bell sounded last fall, Kwaku and 16 other Tek employees were among the first students admitted to OGC, Portland's answer to scientific centers at Cambridge and Pasadena.

By Christmas time, the Center had 11 full-time students (resident PhD candidates) and 18 part-timers (class enrollees).

Besides Kwaku, the other Tekers were Steve Blazo and Doug Jones, CRT Materials and Processes Develop-

ment; Einar Traa, Ralph Ulrich, Bernard Weijland and George Wilson, IC Engineering; Titus Ho, Jon Marshall, Ron Peterson, Pete Perkins and Jack Sachitano, Oscilloscope CRT Products Staff Engineering; Pete Burke and Dave Welsh, Chemical Support Lab; Jim McAlpin and Jerry Turnbaugh, Ceramic Engineering; and John McCormick, Hi-Frequency Instrument Development.

Kwaku enrolled in two courses last September, devoting 11 weeks to classroom work and problems in "Metallic and Ceramic Systems" and "Thermodynamics of Phase Reactions."

Now he'll apply for admission in the Center's degree programs. Once accepted, he'll meet with his advisors—three faculty members comprising an ad-hoc committee—to map out a degree which will fit his needs and to determine what directions to take in research projects





GRADUATE CENTER President E. Robert deLuccia (right) discusses opening of school with Dr. Lynn R. Sarles, vice-president for administration. Architect's model (opposite page) shows OGC's proposed \$7.75 million campus, which will be built on S.W. Walker road near Orenco.



and additional courses.

Most students from Tek are part-timers sponsored by the company. They divide their daily schedules between work and classes. Kwaku and four others are planning to pursue degrees. Others, like Titus Ho of Oscilloscope CRT Products Staff Engineering, are auditing courses to "touch base on what's going on" in their specific scientific fields.

As for the Center's teaching staff, Kwaku is impressed. Headed by Provost Dr. Arthur Scott of Portland's Reed College, the faculty is composed of 20 young men from all parts of the US and as far away as Austria and the United Kingdom. All are highly trained in present-day science and scientific research.

Their training fits well with the Center's concentration on the physical sciences—chemistry, physics and material sciences. Their research record is equally impressive—numerous projects ranging from kinetic theory of gases to structure of molecules and inorganic complexes.

Unlike MIT and Cal Tech, which have both undergraduate and graduate programs, OGC is strictly a graduate institution whose aim is to produce research-oriented Masters and PhDs. Students at the Center devote their time almost entirely to substantial original research and investigation. Classes, not formally required, serve as refreshers or aids to research topics.

Grad Center President E. Robert deLuccia, beginning his first year after serving as senior vice-president and chief engineer at Pacific Power and Light Company, Portland, compares his school's graduate training to an apprenticeship system: "Our students learn the art and science of scientific investigation by actual participation in an active and successful program of original investigation."

With the guidance, experience and inspiration of their faculty advisors, each PhD candidate is expected to

produce a thesis based on his own intelligence, ingenuity, perseverance and skill.

OGC currently has 11 candidates for PhDs, representing 10 states and one foreign country. Those accepted for PhD degrees receive \$4100 each calendar year as scholarships. "You can imagine," deLuccia noted, "that we screen students very carefully and try to select only the very best."

To obtain a PhD, chemistry majors can usually complete requirements in three years of full-time study and research, and physics majors, four years. The center's continuing 12-month school year makes it possible to complete requirements earlier than in institutions operating on an annual nine-month basis.

The Master's program, which Kwaku and others plan to pursue, entails familiarity with research techniques and strong preparation in a broad area of knowledge related to the student's professional interest. It can be recognized as an interim degree during pursuit of a PhD.

Developing a graduate center with no direct undergraduate base is a unique and exciting experience for the Center. Only Rockefeller University of New York City, organized 14 years ago from the former Rockefeller Institute for Medical Research, is the nearest thing to precedent in the US.

"Our experiences here will undoubtedly be watched rather carefully by a number of academic institutions and other organizations," deLuccia commented.

Although its faculty now outnumbers its full-time students, the Center plans to have a minimum ratio of about 80 students to 25 faculty members by 1975. This follows the school's belief that a low faculty-student ratio is the best method for producing research-oriented PhDs.

At present, 10 courses are offered at the Center, ranging from solid-state the-

ory to classical physics, in addition to weekly seminars by OGC faculty members and guest speakers. The Center also sponsors a series of seminars throughout the metropolitan area by distinguished scientists from across the nation.

A whole range of research projects has also been under way for many months, including research on enzymes and their reactions, studies of high-temperature wear-resistant metal alloys, and tests of properties of the atmosphere that contribute to clear air turbulence.

In addition to a top-flight teaching and research staff, the Center is also developing facilities and acquiring expensive, sophisticated scientific gear essential to present-day research.

Equipment already available to students are X-ray cameras, lasers, numerous types of furnaces, spectrometers, electron microscopes, spectrophotometers, electronic calculators and a Univac 1004 card-and-tape processor serving as a terminal to a Univac 1108 computer.

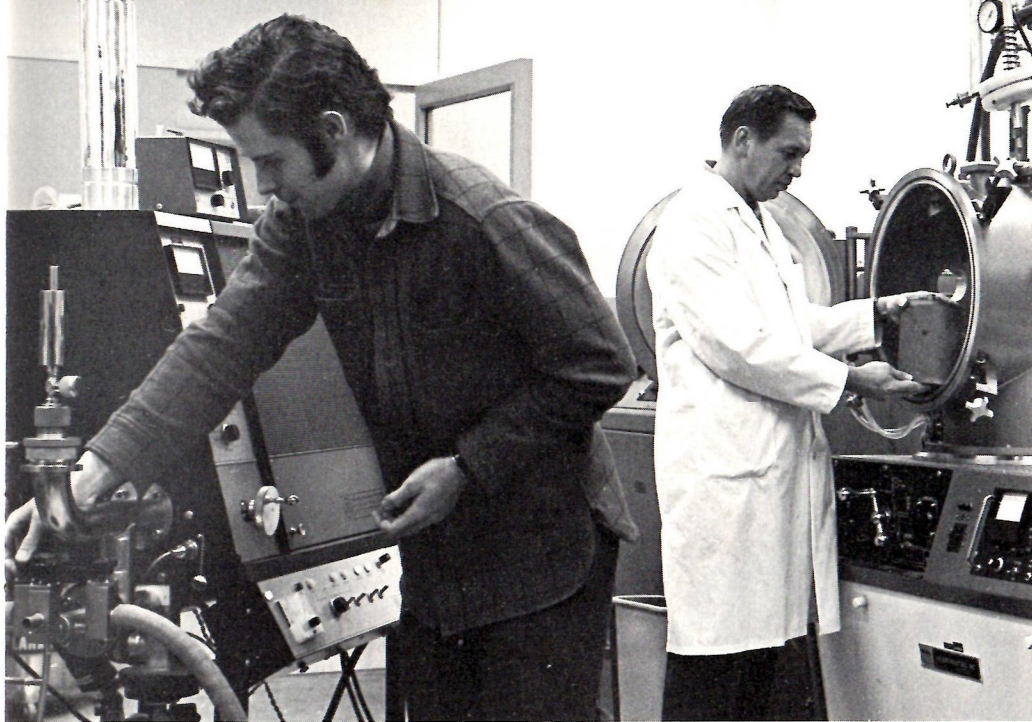
A \$750,000 materials research laboratory building, containing 15,000 square feet, was completed early last fall at the Center's new 75-acre campus on S.W. Walker road, adjacent to the Oregon Regional Primate Center. Another wing will be constructed this spring.

The new structure is part of an estimated \$7.75 million complex which will eventually house a library, auditorium, commons, physics and chemistry laboratories and administrative offices. Pietro Belluschi, MIT's dean emeritus of architecture, was consultant to Portland architects Wolff-Zimmer-Gunsul-Frasca-Ritter in designing the new campus.

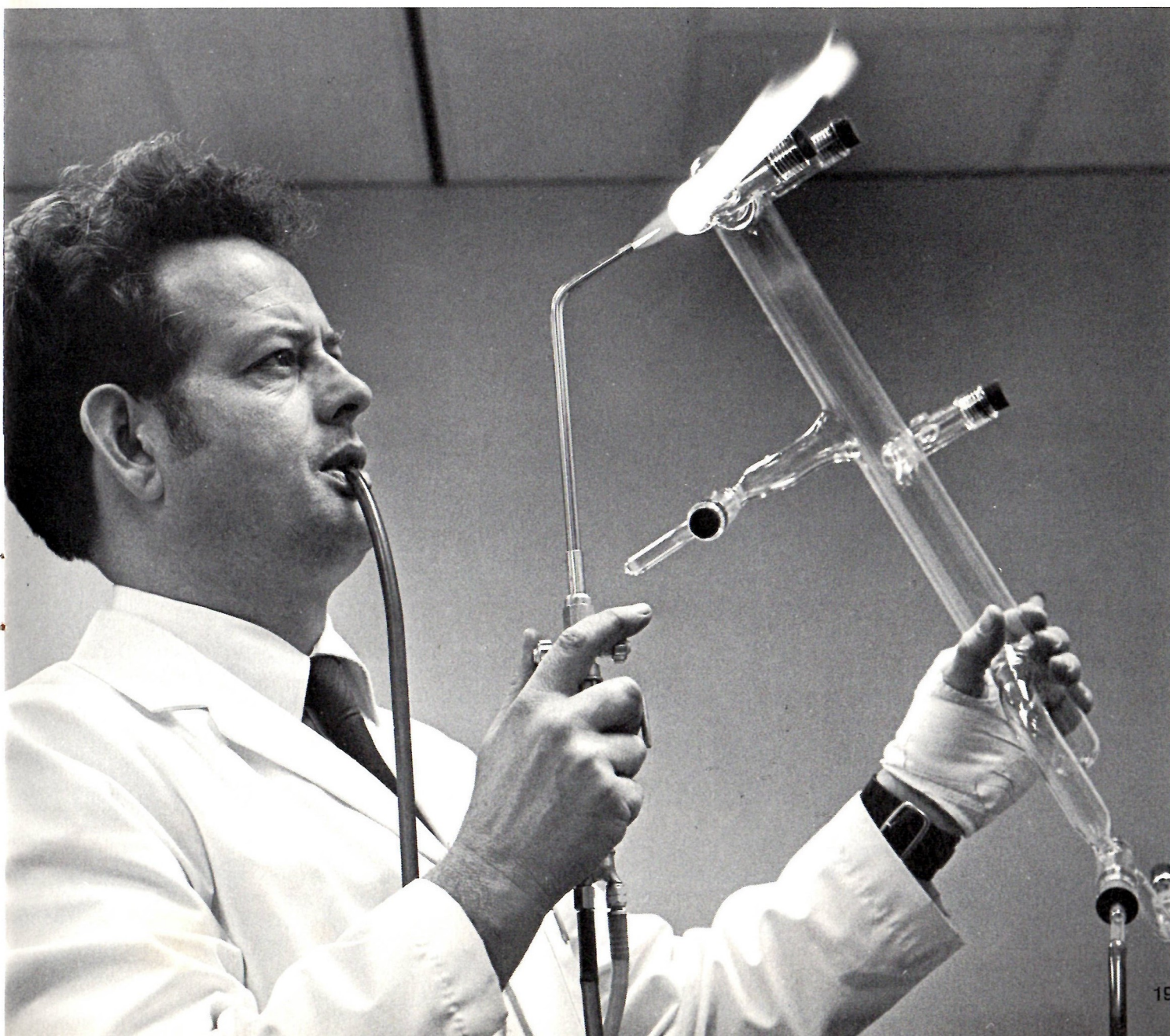
Two separate but related groupings of buildings will comprise the complex with covered walkways and terraces. Lab units will be located between student and faculty office levels.

In the meantime, the Center's administrative offices and additional lab areas remain at the former Martin





OGC FACULTY MEMBER George O'Leary (left) and James Hoffman operate equipment in metallurgy furnace room (left photo). Allan Ryall (bottom photo) operates glass lathe.





Marietta building, on S.W. Barnes road, next door to our Sunset plant.

While students were admitted for the first time last fall, the Grad Center has been in the making for over 10 years. The idea of a regional cooperative scientific study center, reports Dr. Lynn Sarles, OGC vice-president and formerly with Varian Associates, was conceived by local educators and business leaders in 1959.

In 1962, Governor Mark O. Hatfield's advisory committee recommended "rapid creation" of the Center and, by 1966, the school took its present form with the appointment of its first president, Dr. Donald L. Benedict, from Stanford Research Institute.

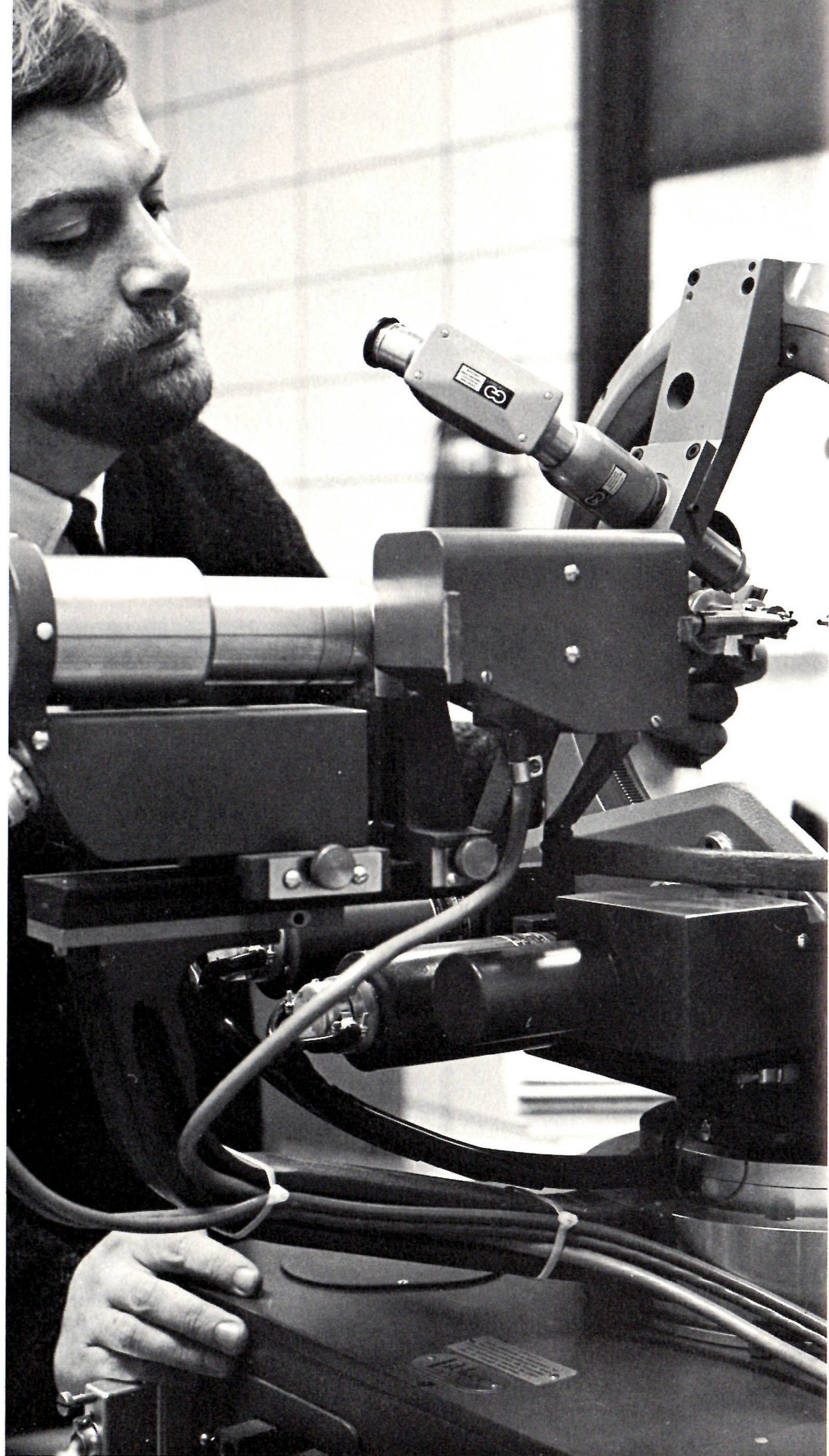
The Center's board of trustees, headed by Portland physician Dr. Sam Diack, first envisioned a school producing graduate scientists and conducting special research. Last year, board members felt that a closer link to science-related industries was not only desirable, but essential to the school.

As a result, Kwaku and other Tek employees were permitted to enroll for course credit at OGC on a part-time basis, and scientists at the Center were able to develop basic research programs of interest to an industry or group of industries.

For examples of research programs, deLuccia suggested that many local metallurgical-related industries could join together to support a particular research. Other possibilities: Research in pollution abatement, system sciences and chemistry.

Several research projects at the Center are already under way for lumber and forest industries, such as chemical means to eliminate the pine-shoot moth.

In addition to tie-ins with local industry, the Grad Center is also meeting with state educational institutions, such as Oregon, Oregon State, Portland State and Reed, seeking ways to closer cooperative work and pooling of equipment and resources.



COMPUTER-CONTROLLED X-ray diffractometer, first piece of major equipment to arrive at the Grad Center, is demonstrated by Roger Eiss, professor of chemistry. Tek students enrolled in "Ceramic and Metallic Systems" course (opposite page) are Pete Perkins (center) and Kwaku Mensah (right). Instructor (left) is Dr. Haran U. Anderson, associate professor of materials science.



As a private institution, the Center relies chiefly on funds from industry, private grants and foundations, and student aid from Federal grants and individuals. For the next five years, about \$2 million per year is needed for building and operating needs.

But going private has its advantages. Unlike publicly-supported schools, the Center can work on programs without fear of severe governmental cutbacks.

With the Center now in full operation, deLuccia and his staff are confident that the school can serve both industry and the public by producing trained scientific leadership and meaningful research.

"That's the reason I took this job," deLuccia explains. "Oregon needs a graduate center. It needs inspired, imaginative and highly-trained scientific leaders to meet our fast-growing technical society. We'll concentrate on producing such leaders and contributing to the environment in which they thrive."

Sharing these sentiments are Kwaku and a whole host of Tek employees, including President Howard Vollum, one of the Center's strongest supporters and a member of its board of trustees.

Realizing the absolute necessity of such a school to Tektronix, we've given

substantially through our Foundation to establish the Center and purchase land for its development. In 1965, Tektronix Foundation purchased the Martin-Marietta building as an interim facility for OGC.

Howard sums it up this way: "As Tektronix grows, the need for a graduate study center is even more strongly felt. The Oregon Graduate Center will provide our people with the help and stimulation required in their scientific development." □

