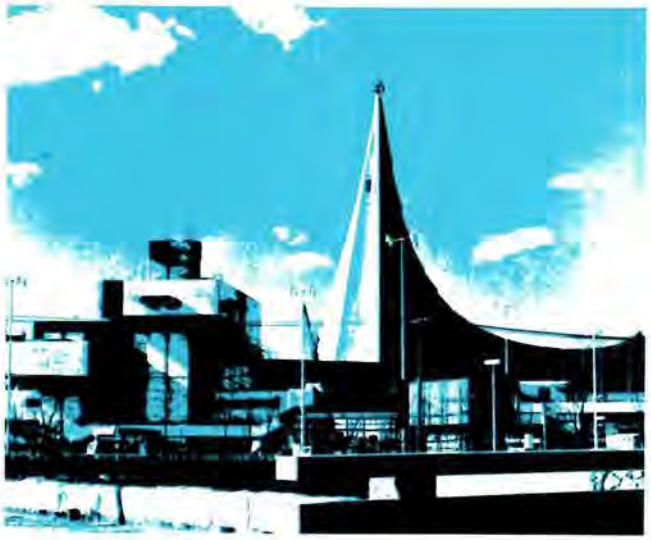
tek talk

Winter 1970

SKI-TEK:
Name of the Game Is Fun



In This Issue

Take your choice from Ski-Tek to Expo '70...

WINTER IN Oregon this year, unfortunately for skiers and lovers of snow, has been all rain (heavy at times) and warm temperatures.

To brighten spirits, however, we've brought the snow to Tek Talk, with a four-page glance at Tek's evergrowing employee ski club, Ski-Tek and skiing in general.

Ingrid Louiselle, associate editor, and Al Hill, both active Ski-Tek members, teamed up efforts for our special ski report, assisted by the photographic talents of Larry Hudetz.

Al, Industrial Design, is cartoonist for the Portland IEEE's publication, The BEEEP, and devotes his spare time (when not skiing) to such projects as designing the Ski-Tek patch or a series of Ski-Tek posters.

Larry, an accomplished photographer, enlisted the aid of Ron Lang, certified part-time ski instructor at Mt. Hood's Ski Bowl, for the dramatic shots adorning our front and back covers. Larry works in Component Evaluation and Ron in Electronic Industrial Engineering.

Outdoor fans will be interested in Larry's plans for a series of pictorial books on Oregon. The first volume will be devoted to Eagle Creek on the Columbia Gorge.

* * * * *

Swinging from the ski slopes to the mystic Orient, we called upon Takashi Kumakura, senior management director at SONY/Tektronix, for information and photos on the upcoming Expo '70 in Osaka, Japan.

Some photos in our Expo feature on pages 28-31 are by SONY/Tek employees with the remainder courtesy of the Expo '70 Society and the Japanese Consulate in Portland.

Sayonara. □

tek talk

Volume 16—Number 1, Winter 1970
The Tektronix Employees Magazine

On the cover of TEK TALK:
Ski jump by Ron Lang (Electronic Industrial Engineering) is captured in mid-air by Photographer Larry Hudetz (Component Evaluation) at Mt. Hood's Ski Bowl. For more of Larry's work, see back cover of this issue.

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SITZMARK . . . downhill . . . wedeln . . . stem christy . . . gelandesprungen . . . bear traps . . . avalement . . . foen . . . boilerplate . . . mogul . . . bierstube . . . "clyde crashcup" . . .

Sound like the slang of a race apart? In a sense it is, because this is ski-jargon, and you're likely to hear it in any ski area from Vail to Val d'Isere, from Crystal Mountain to Courchevel, or Mt. Hood to Mont Tremblant.

SKI-TEK:

Name of the Game Is Fun

by Ingrid Louiselle • drawings by Al Hill

Here in the Pacific Northwest, we're fortunate to have some of the better ski areas in the nation, and although some of us gripe occasionally about the scarcity of snow, visitors from the eastern part of the US marvel at how easily we can leave the city behind and climb through tall evergreens to snow country.

In recent years, many a Tektronix employee has discovered for himself the exhilaration of standing at the top of a chairlift for the first time, with the wind daring him to breathe, then launching himself off the overhang onto fresh snow and realizing that it's not ***quite*** *as steep as it looks, and that he really might make it to the bottom without incurring mortal injury!*

For many of these intrepid souls, introduction to the unequalled sport of skiing has been made through Ski-Tek, one of the largest and most active of the many activity clubs formed by Tektronix employees.

Ski-Tek's success and rapid growth in the three years since its beginning have paralleled the strong surge of popularity that the sport itself has enjoyed.

The group was formally begun in January 1967, by several Teks who had skied together and shared an interest in encouraging the sport.

Now, with some 200 active members, including families and some non-Tek friends, the organization holds a place near the top of the list of employee-run ski clubs in the Pacific Northwest, in terms of numbers and activities.

Each autumn before snow actually flies, the club meets to welcome prospective members and to begin organizing the coming season's fun. Ski-school lessons, trips, informal races and most other shenanigans relating to skiing are available at one time or another during the six months (give or take a snowstorm) that make up the skiable season in Oregon and environs.

The club meets on a fairly regular basis, but the watchword is always "informality"—films, fashion shows, demonstrations of the latest equipment, and the inevitable "after-ski practice" (socializing) offer members a chance to get together, compare ideas and swap yarns.

Strongly believing that organized lessons are an excellent means of enjoying the sport fully, the club offers an inexpensive ski-class package in cooperation with one of the ski schools at Mt. Hood. Snowbunnies and schussboomers alike enroll in the classes, since most skiers will admit that "you're never too old, or too good, to polish up your technique."

One of the most rewarding things that skiing ability can give is a sort of "passport" to exciting places. Once able to navigate fairly well, even the novice skiier can enjoy almost any hill in the world since most areas have slopes for all levels of ability.

Ski-Tek helps members and their families take advantage of new terrain by organizing several short jaunts to nearby areas each season, plus one week-long trip further afield.

The resorts in Oregon and Washington—Bachelor Butte, Hoodoo Bowl, Anthony Lakes, Crystal Mountain and Mt. Ashland—are all easily accessible for weekend trips, while the more exotic atmosphere of Aspen, Colorado; Bogus Basin, Idaho; or Big Mountain, Montana are attractive lures for longer treks. The latter combine new territory, spirited night-life and that most desirable of all ingredients—Powder Snow.

Last year, the determined few who visited fabled Aspen had uninterrupted good skiing, good weather and good fun, and this year's planned week at Big Mountain near Whitefish, Montana, promises an equally festive experience for those who go.

One of Ski-Tek's charter principles is that of furthering the sport,

with emphasis on safety and courtesy on the slopes. To this end the group supports local ski patrols, shows films and sponsors demonstrations of safe skiing techniques for all members.

After all, it isn't necessary to break a leg or an arm or rend ligaments in order to be a "real" skier! And romantic television commercials notwithstanding, it's not as much fun to sit in the lodge with a cast on your leg (even in the French Alps) as it is to be out skiing (even on Mt. Hood).

And that's the name of the Ski-Tek game—good fun—through capable, safe skiing and companionship of people who share the same interest.

But we can always use some more snow, and if everyone will pause a moment and concentrate on lowering the freezing level, we might be able to stretch the season into April . . . □

CRT CERAMIC STYLE...

MANY COMPANIES' completed products are far less complicated than some components for oscilloscopes.

Our most complex probably is the cathode-ray tube. To make one, you need to employ a wide variety of technical and scientific disciplines, from physics to biochemistry.

The CRT was one of the earliest Tek-made components. We started building our own in 1953. Those then commercially available didn't meet our needs for increased sensitivity and writing speed and for displays free of geometric distortion.

Technology advanced, bringing with it increased demands on oscilloscopes and their components. As scopes grew in complexity, the limits for further performance improvement would be found in a particular part or piece. And, more recently, the limits to some component's development have often been found in the material of which it is made.

This has been true of CRTs.

Most of our new tubes and over half of our tube production are ceramic

The CRT bulb (also referred to at Tek as "bottle" or "jug"), which houses the cathode and gun assembly in a vacuum, was first made of glass. (Most CRTs in industry still are.) But several years ago we began to suspect that glass itself had inherent limitations that impeded the kind of advances we needed to make. We began to investigate other materials.

A likely possibility seemed ceramic. At least, we could find out. Tektronix already possessed not only a large, well-equipped ceramic plant but also a sophisticated ceramic technology, including expertise in isostatic pressing, a fairly uncommon skill.

Our first ceramic tube was produced in 1962-63 for the type 564 oscilloscope. Now most of our new tubes use that material, and over half of our tube production is ceramic. No other scope maker has followed suit—yet—but at least one is experimenting in this direction.

When you talk about the advantages of ceramic envelopes, the first thing to admit is that Tek isn't yet realizing all of them. Many will depend on increased automation and addition of new processes (and others still probably remain to be discovered). But what we **have** achieved is substantial, and the benefits already are considerable.

In actuality, the total advantage of ceramic results from an accumulation of a great many subtleties. We'll discuss here only some of the more pronounced ones.

For one thing, ceramic is very strong. Our characteristic funnel glass has a flexural modulus, or bending strength, of 6500-7000 p.s.i. (pounds per square inch); forsteritic porcelain, our ceramic material, 20,000 p.s.i.

This means you can build lighter-weight tubes, with thinner walls. Also, scratches in the tube's surface have little effect on its strength. Glass, which has a different crystalline structure, may become greatly weakened by even minor scratches.

Scope faceplates used to be round, simply because glass CRT bottles were round, and the faceplate was part of the bottle. Today, most faceplates are rectangular, to provide maximum display area; thus they require tubes that are rectangular in cross-section. In ceramic tubes, the glass faceplate is fused (or "fritted") onto the ceramic envelope.

That is, glass bottles **are** truly "bottles"; ceramic envelopes are more like sleeves, or funnels, open at both ends. Such a rectangular envelope requires great structural strength; to make one of glass would mean very thick walls, thus a much heavier tube. (TV cathode-ray tubes, for example, are not rectangular, but bowed on all four sides to achieve the necessary strength. That's why your screen is the shape it is.)

Another benefit of ceramic, to us, is that we're our own supplier. This offers a lot of advantages:

1. The supply is reliable. Last year, strikes in the glass industry cost us delays and a lot of grief and dollars.

2. We can provide envelopes that meet Tek's exact needs, rather than have to accept the characteristics of commercially available bottles and build around them. By controlling the specifications of the finished material, we can match the material to the scope system in which it will be used. The electrical characteristics of ceramic may be modified in a variety of ways. This is not true of glass.

3. We do away with the need for incoming inspection. We trust our "supplier" to meet our specifications.

But the biggest gain from using ceramic and having our own plant is this: Speed of introducing new tube designs.

Tektronix can get a new design built for evaluation very quickly because ceramic is so easy to work with and requires such simple tooling. A precision, close-tolerance tube can be built in a matter of days, whereas it might well take months with glass, and the tooling would be very costly.

The nature of ceramic, and of ceramic processing, gives us increased ability to hold close tolerances—and tolerances are getting tighter all the time. A glass bottle is spun, or blown, **inside** a cavity; a ceramic one is formed **outside** of a mold. This gives us control over the internal geometry of the tube —particularly important in post-accelerator (helix-type) CRTs.

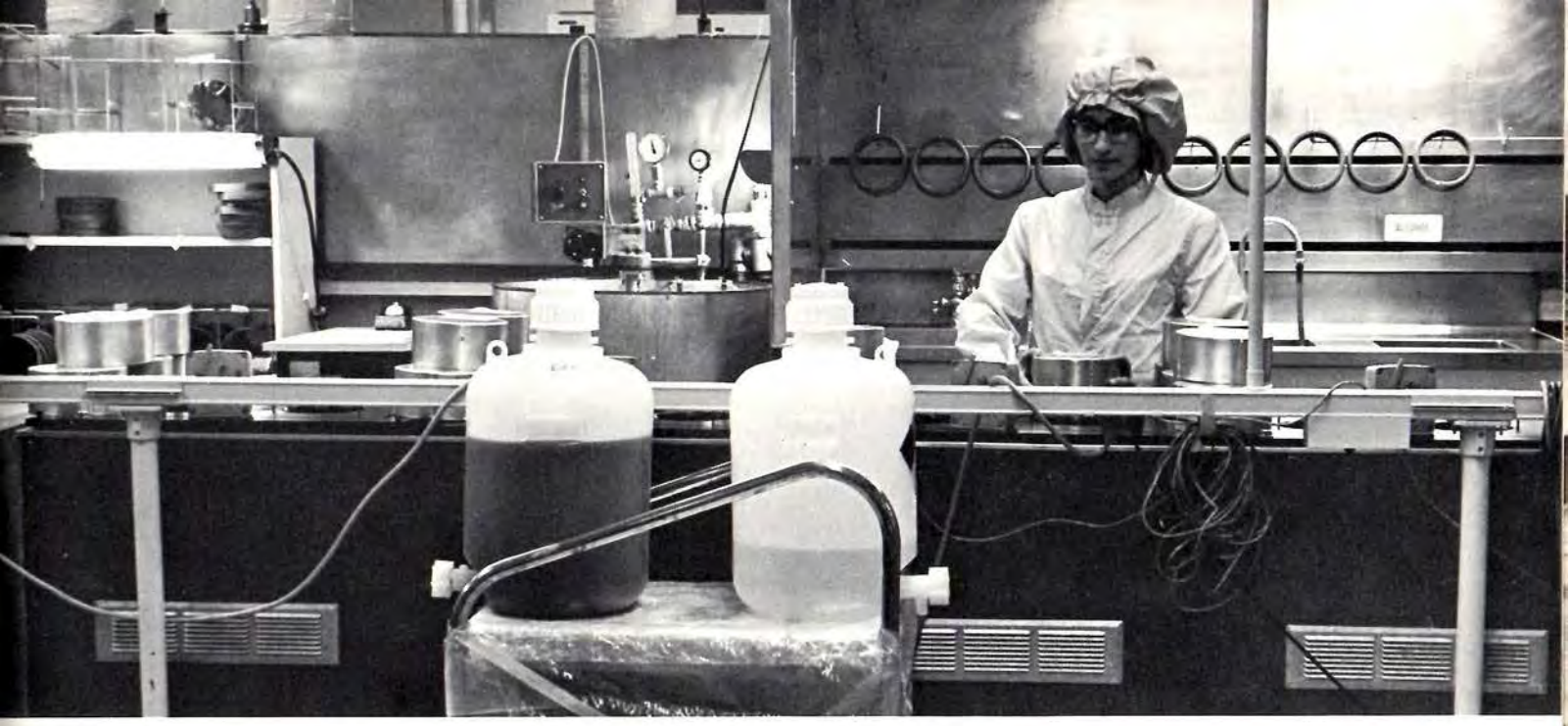
Because ceramic is so strong, we can cut sharp corners, allowing us to conserve space within the instrument.

Because ceramic can stand high temperatures, we're able to fuse special materials (for instance, high-reflective glass coatings) onto the funnel walls. Glass bottles subjected to the same temperatures would themselves melt.

In particular, the large-screen CRTs required for our display units and computer terminals rely on ceramic envelopes for the necessary strength, fidelity of image, close-tolerance geometry and reasonable cost.

In our CRTs, the internal graticule is lighted from the edges of the screen. Ceramic envelopes, being opaque, provide a better contrast between edge-lit graticule and phosphor screen. Glass tubes, transparent, allow some of the light to "leak out" through the glass sides.

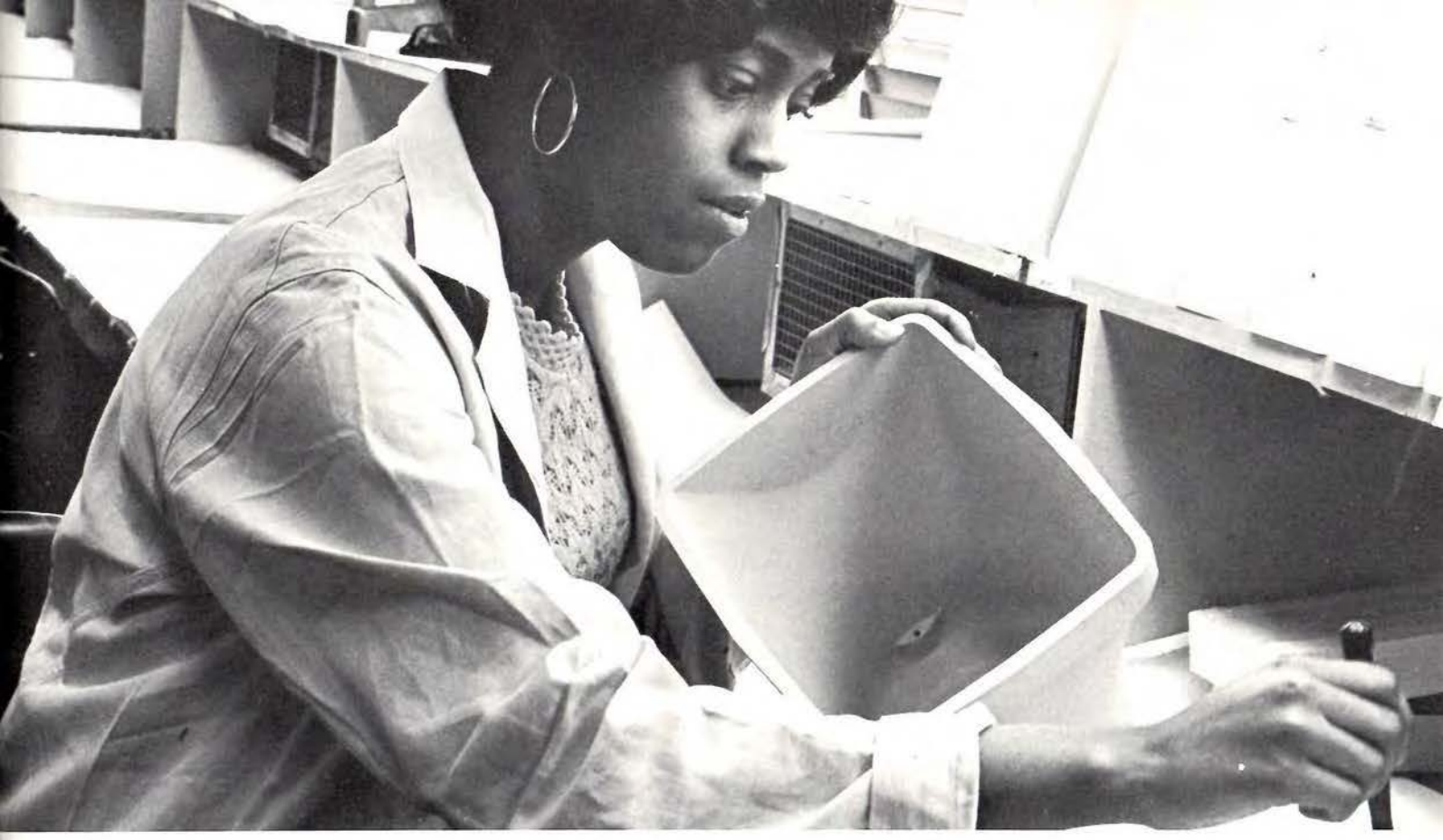
One benefit of the two-piece ceramic tube is that the envelope and faceplate may be made separately. Although we haven't used this advantage in our conventional tubes yet, we plan to; and



PRECISION NOZZLES (bottom photo) are fabricated for sand-blasting lines in metal-coated funnels. A "clean room" (top photo) is required for fabricating storage-type targets.

Ceramic offers more ability for close tolerances


OIL



PRODUCTION OF CERAMIC FUNNELS involves a tracer lathe (opposite page top photo) to insure duplication of size and tolerance on funnel pressing mandrils and a diamond grinder (opposite page bottom photo) for parallelism and perpendicularity to center line of funnel's neck and bell end. Green (unfired) funnels are processed (this page bottom left); some are hand-painted with gold resonate (top photo) and others are glazed. All are visually inspected after firing (bottom right).

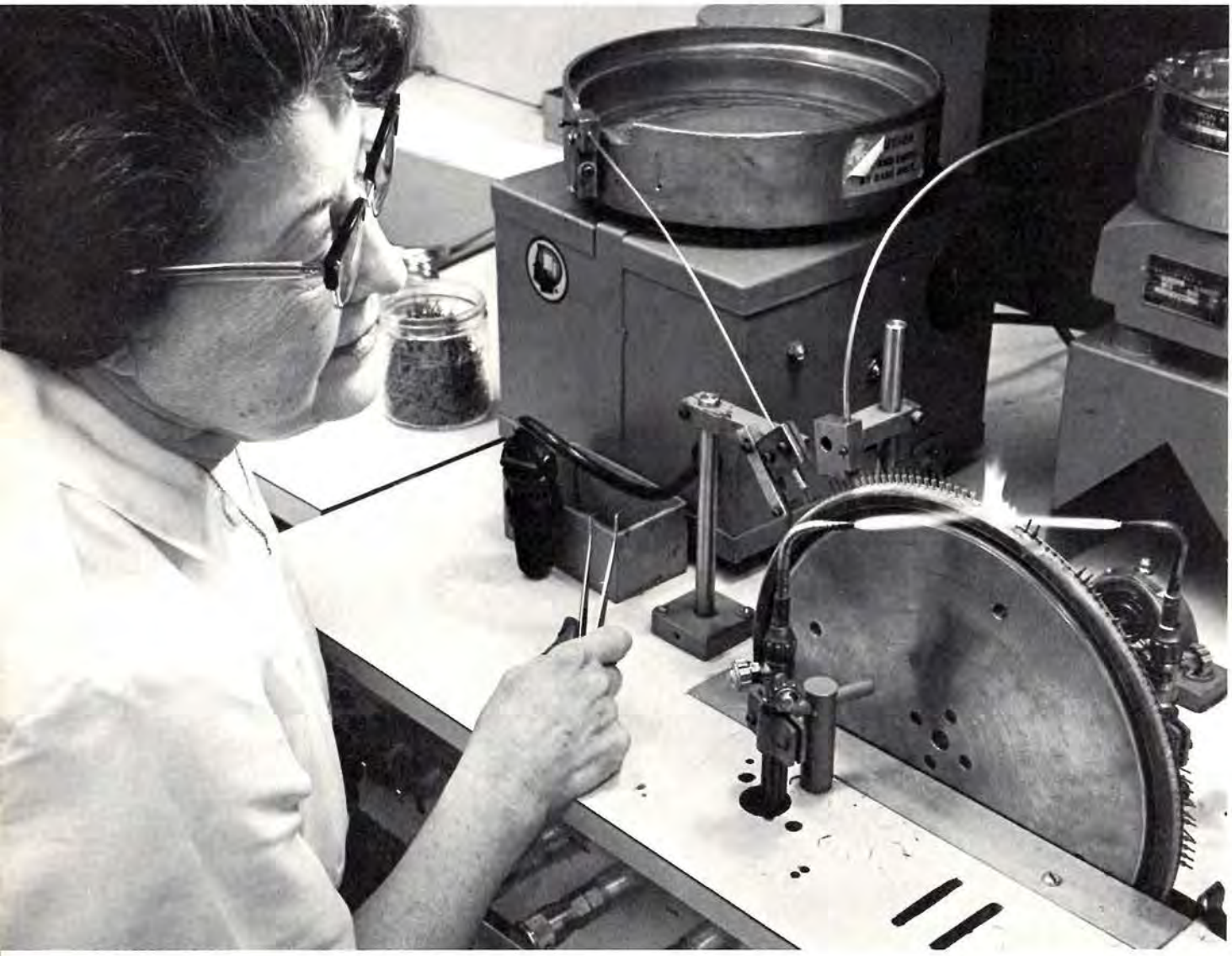
These processes lend themselves well to automation for less costly tubes . . .

our storage CRTs, both for scopes and for our computer terminals, would have been impossible to build had we not been able to make the faceplate separately. A storage tube requires an extremely uniform phosphor target, which would have been impossible to obtain if we'd had to deposit the phosphor inside a glass "bottle."

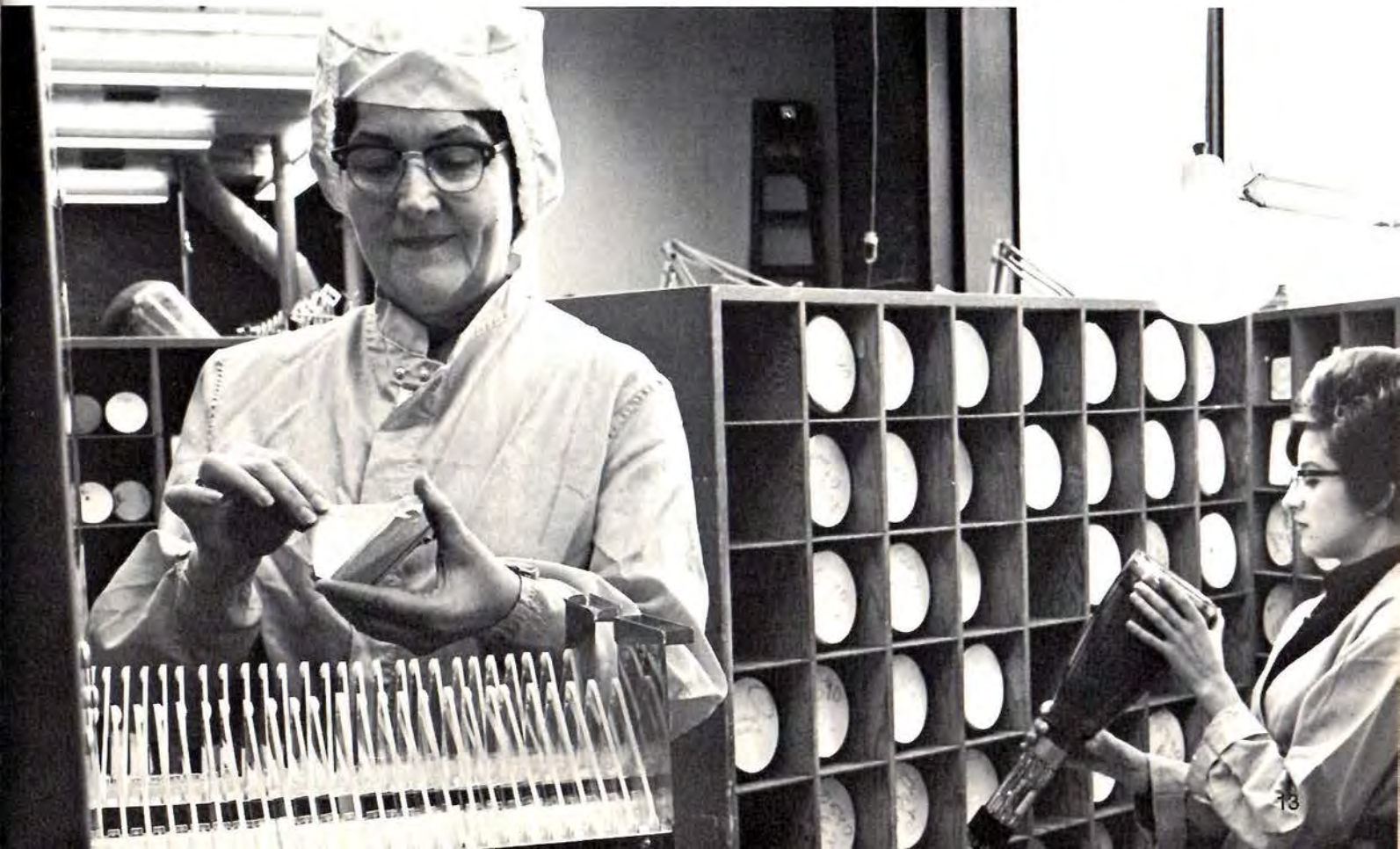
In addition to designing most new tubes of ceramic, we're also in the process of converting several of our older glass tubes. This process doesn't let us capitalize on all the advantages of ceramic, in that we can't change the design itself. But it **does** let us take advantage of the material's strength and light weight; put the raw-material supply under our own control, and get improved internal-graticule lighting.

Are there any disadvantages or problems in ceramic CRT manufacture? Some—partly because we're less advanced in ceramic tube making than we were in glass tubes.

Here's the sort of problem that comes up: In a glass tube, you can **watch** the helix (the conductive spiral) as it's applied inside the bottle; in a ceramic envelope, you can't see through the walls. So we had to develop a machine to electronically monitor the helix winding. The upshot is that the new method



MELTING OF GLASS pre-form (opposite page) around funnel's metal pin is shown in this neck-pin beading operation. Funnels are held in jig (top left) during faceplate-seal firing, and weldings on gun assembly are inspected after stem attachments (top right). CRT targets (bottom) are inspected and covered by plastic faceplates prior to "potting."



NUMEROUS ELECTRICAL measurements are made during final testing of ceramic CRTs.

is considerably more reliable than "eyeballing" ever was.

Another disadvantage was that reclaiming ceramic tubes required processes we didn't have. Ninety-five per cent of our glass bulbs are eventually used, compared with about 70 per cent in ceramic. But we're getting better, and our ceramic reclaim figure is improving.

The most important things to say about ceramic tube making are:

1. We don't use **every** ceramic advantage in **every** tube. Rather, we optimize those characteristics needed in the particular design.

2. Most of the advantages of ceramic are still to come, as we increasingly tailor our processes to the new material. These processes lend themselves well to automation, which means less and less expensive tubes.

The result will be stronger, lighter-weight, more reliable tubes, ones that can be inexpensively built and rapidly put into production.

And these tubes will be needed, as the pressures of economics demand continuously increasing efficiency and as the requirements of technology insist on oscilloscopes that deliver higher and higher performance. □

Scope Talk:
Grappling with Glaciers

Tek instruments help determine water potential

ONE OF THE pressing problems facing mankind today is that of irrigating and cultivating more of the earth's arid portions.

The Canadian government is currently investigating possibilities of tapping potential water supplies within glaciers for this irrigation, and a battery-powered Tektronix Type 422 portable oscilloscope has figured importantly in some of the experiments.

While vacationing in the Canadian Rockies last summer, Tek Canada field representative Dennis Bayne encountered a team of researchers, headed by Dr. Ronald Goodman of the Department of Energy, Mines and Resources. The party was surveying the depth of a glacier to calculate the potential water it contained.

Using a small computer system and a radar unit mounted on a motorized sled, the team ranged a wide area of the Peyto glacier in Alberta. Radar signals were beamed into the glacier and depth soundings made with the help of the 422 and other Tek equipment. Then the depth was plotted on a chart by latitude and longitude positions, yielding a rough picture of the topography of the land beneath tons of ice.

By calculating the depth and volume of the ice, researchers can determine the glacier's water potential and gain insight into diverting it for irrigating the Canadian prairies.

The government team had to deal with the problem of snowstorms, even in summertime. Once the 422 was buried under six feet of snow, requiring a helicopter with a magnetic locating device to find it.

In all, the research team used four Tektronix instruments — the 422, a 491 specrum analyzer, a 115 pulse generator and a 564B split-screen storage scope.

Continuing work like that being done by Canadian researchers may someday result in agriculture and productivity where the land now lies wasted, when the miracle of water can be brought to help grow food for the world's millions. □

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.

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 Teks were Steve Blazo and Doug Jones, CRT Materials and Processes Development; 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

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 theory 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.

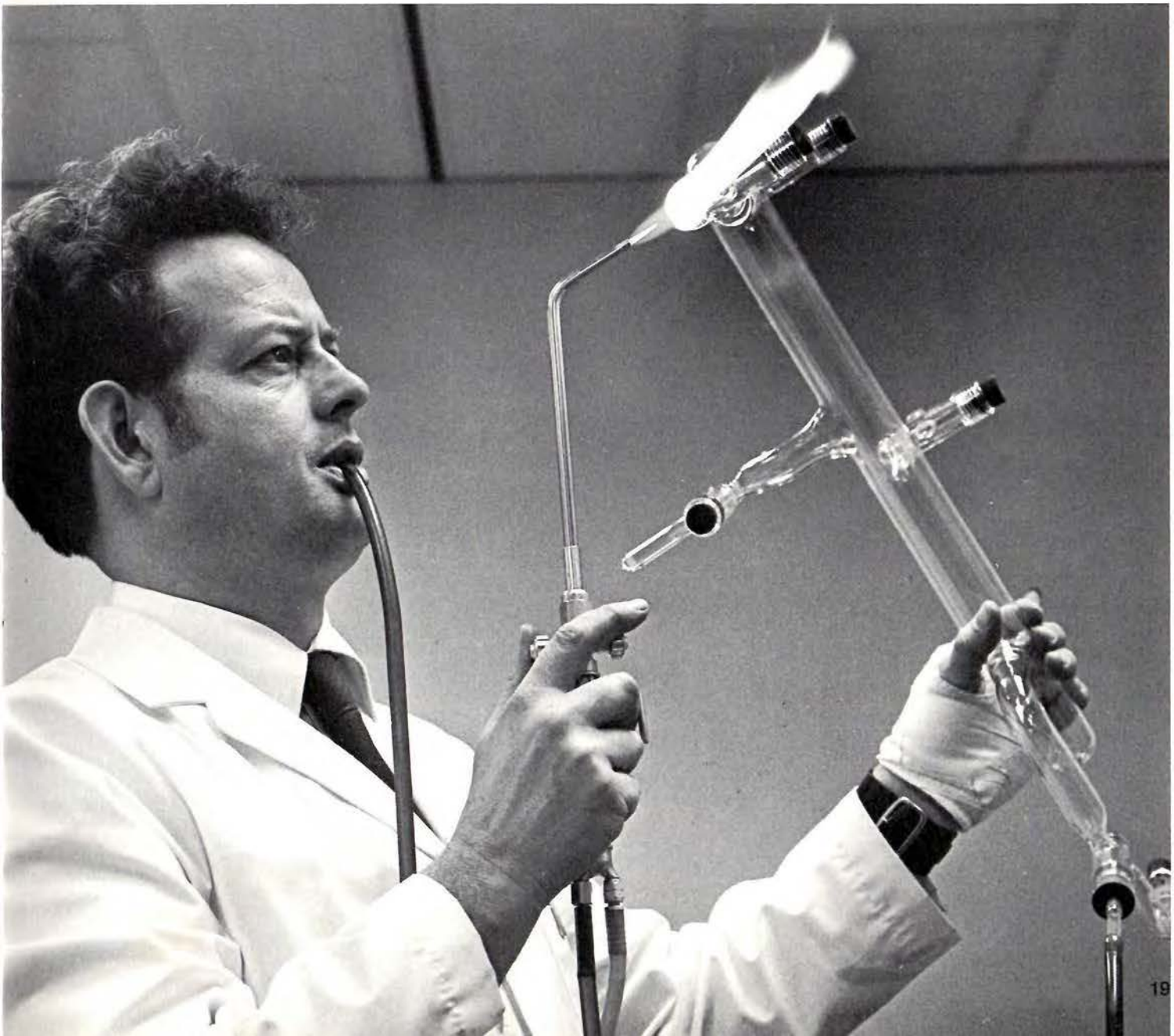
A $750,000 materials research laboratory building, containing 15,000 square feet, was completed early last fall at the Center's new 75-acre campus on S.W. Walker road, adjacent to the Oregon Regional Primate Center. Another wing will be constructed this spring.

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." □

New agency gives hope for disabled or disadvantaged people in Portland area

by Ingrid Louiselle

JOB SKILLS, work experience and a paying job.

To an unemployed person, these are three matters of utmost importance.

Without skills, he has nothing to sell in society's marketplace. Without work experience to reinforce his learned skills, he will be slow, inefficient, unsure of himself. And without a paying job, all the skills and experience in the world are worthless.

In the past, this complex thicket of human needs has been approached in a somewhat disordered fashion. Some government and community agencies have taught skills, but couldn't guarantee a job for the trained worker; other sources had jobs, but "only trained people need apply."

Now a new agency in the Portland area shows promise of being able to tackle all three problems.

Known as the Council for Career Opportunity, the agency owes its existence, in part, to some determined Tektronix employees who had worked with difficult employment situations and knew the handicaps—psychological, social or circumstantial—that must be overcome to place people in jobs.

At the outset, Tek's Tom Sloan, Employee Relations manager, and Norm Silver, Professional Placement, informally discussed the possible creation of a training center—one that could provide not only training, but also guidance and counseling, actual work experience during interim employment, and eventual job placement for successful disabled/disadvantaged trainees. Other Tek people also saw value in such an idea. It was proposed that Tek set up a project here to provide realistic training and evaluation for entry assembly jobs.

EXECUTIVE DIRECTOR David Nero discusses long-range goals of CCO with Tek Talk associate editor Ingrid Louiselle.

The Management Committee supported the concept, but felt the center would have a better chance of succeeding if it involved as many local industries as possible.

As a result, Tom discussed with personnel people from major Portland-area industries the potentials of the planned center and what contributions and involvement each could offer.

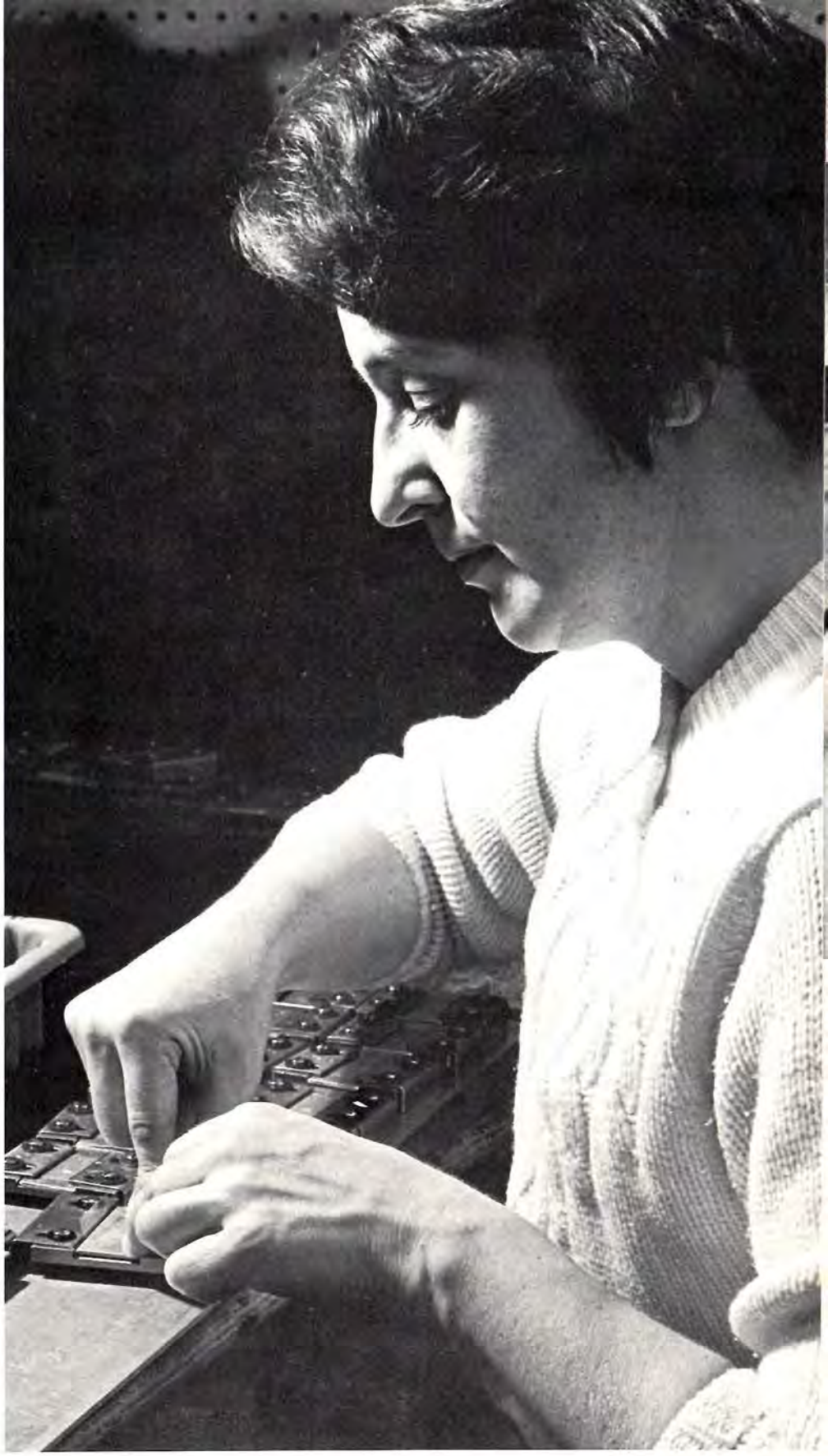
Some could lend instructors to train people in welding, automotive mechanics, electronics assembly and similar skills. Others would help pay for the center's job-evaluations services, while still others could offer jobs for trained people.

The proposed center would also coordinate closely with the Oregon State Welfare, Employment and Vocational Rehabilitation departments, drawing on these agencies' experience with medical, educational and social services, and their work with the physically handicapped.

Gradually, the idea of a training facility became a reality, as more people from industry and social agencies got involved. Those from industry included many Teks, among them Ferd Baricevic, Manufacturing Engineering & Support manager; Mike Park, vice-president/Manufacturing manager; Ken Hoggatt, Precision Mechanical Production; Guy Frazier, Director of Personnel; and Ken Mathis, Manufacturing Quality Assurance & Administration manager.

Tom and Ferd are on the Board of Directors—Ferd is Board president—and four others serve as advisor/consultants: Ken Hoggatt on manufacturing and production management; Ken Mathis on marketing and personnel administration; Guy on personnel management; and Norm Silver on corporate management and community relations.

Ken Mathis and Tom applied for



Instead of punishment for failure, CCO trainees are rewarded for achievement

start-up funds from the Tektronix Foundation, and Don Wilner, an attorney and Oregon state senator, wrote an incorporation agreement for the non-profit organization.

The Foundation donated $10,000 to finance basic planning and budget preparations, and the US Department of Health, Education and Welfare granted $50,000 to help pay starting salaries for instructors, counselors and trainees.

Three important appointments were also made to the new center's staff: David Nero, Blake Elliott and Marion Blackburn, all formerly with the Albina Corporation, a black-owned-and-operated company set up to encourage private enterprise among Portland's Negroes.

CCO's efforts are not aimed solely at the black community, but at *all* people who are disadvantaged—physically, emotionally or socially. Doug Strain, president of Electro-Scientific Industries and a CCO director, points out that the center is currently training both blacks and whites, the handicapped, youngsters and older adults.

The center and its staff were installed in a leased building in southeast Portland in the summer of 1969 and began operations with work contracts from several local businesses.

Since then, other board members have done "leg work"—calling on businessmen who employ the disadvantaged, in an effort to draw additional support for CCO in the form of more jobs, funds and contract work.

For example, Dave Judd divides his time between the Portland Chamber of Commerce and the National Alliance of Businessmen's employment campaign, serving as youth coordinator. He has found that the degree of "commitment" toward helping the disadvantaged varies dramatically among businesses, but today virtually every corporation is aware of the need for action.

Tektronix is one of five firms now contracting work to CCO and offering trainees a variety of job skills. Others are Omark Industries; Electro-Scientific Industries; B. P. John Furniture Company; and Modern Firescreen Company.

The most substantial contract has come from Modern Firescreen, which contributed $8000 in production and office equipment, lift trucks, etc., as well as long-term job contracts, training personnel and some $6000 in lease-deferment arrangements on the building CCO occupies.

David Nero, the center's executive director, praised the company's whole-hearted involvement, noting that their "entire staff, from the top echelon to the first-line supervisors, have all participated in one way or another."

Thirteen other firms have given valuable aid in different forms: US National Bank has provided free computer time for CCO's payroll and accounting computations, and several firms donated necessary office machines, desks, chairs, files and custodial supplies.

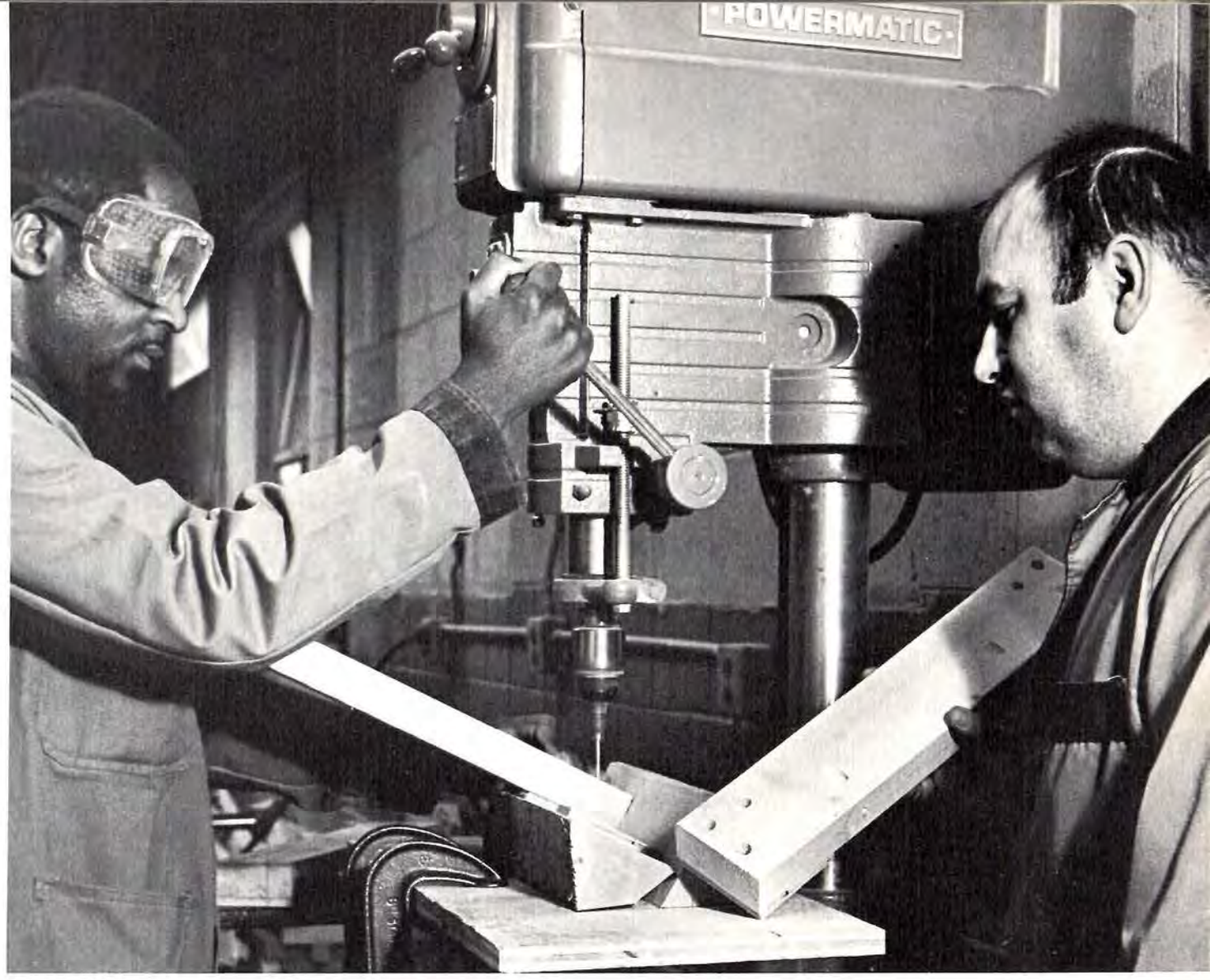
The R. M. Wade Company offered assistance in sales and marketing techniques, and the John Grimes Business and Tax Service has offered to prepare the center's payroll records and to do their tax accounting without fee.

To better accommodate its people and equipment, the center has recently moved to a much larger building. Located across from the former quarters, the new space offers four times as much room, and will allow for the center's later expansion.

In the new two-story facility, CCO will share its quarters with some 60 state employees from the departments of Vocational Rehabilitation, Employment and Welfare, as well as a full-time medical staff, which will allow even closer cooperation between CCO and its coordinating state agencies.

CCO is trying to change attitudes about hiring the so-called "hard-core unemployed," because participating firms in the National Alliance of Businessmen (and other companies as well) have had problems with such persons. Complaints of "laziness," "continual lateness," "inability to learn" and "poor retention rate" have cropped up.

Realizing that these problems are frustrating and discouraging to employers, the CCO staff tries to



BOTH BLACKS and whites, the handicapped, youngsters and older adults are currently trained at the Center in its southeast Portland quarters. CCO aims at all people who are disadvantaged.

get at the basic reasons for failure, and to remedy them.

Sometimes this amounts to providing a wake-up service for a person who has trouble getting up in the morning. Or a transportation service for someone who has missed her bus. Or a counseling agency for a person whose off-the-job worries keep him from concentrating on the job.

Another of the staple ingredients in CCO's potential effectiveness is an understanding that the people they are trying to help sometimes need more consideration and patience than other workers. Many of them don't have the hard-learned attitudes and habits acquired in working at a steady job.

Training for entry-level jobs must be reinforced by practice—sometimes weeks or months of practice—in a realistic work setting, to form habits of being on time and paying attention, and to develop a positive attitude toward working.

But the experience at CCO can build a solid foundation in changing a person's whole self-image. Instead of being punished for failure, the trainee is rewarded for achievement, and the training process is tailored to his individual learning speed.

His training is given in concrete terms rather than abstractions; he is paid for all the work he does; and his work performance at the center is evaluated by perceptive supervisor/instructors.

The emphasis is on a positive-thinking approach to each task, and on an adjustment to the whole

attitude toward authority, time-consciousness, pride in doing a job well, etc.

CCO is a study in cooperation between state agencies and private industry, with benefits extending to our whole society.

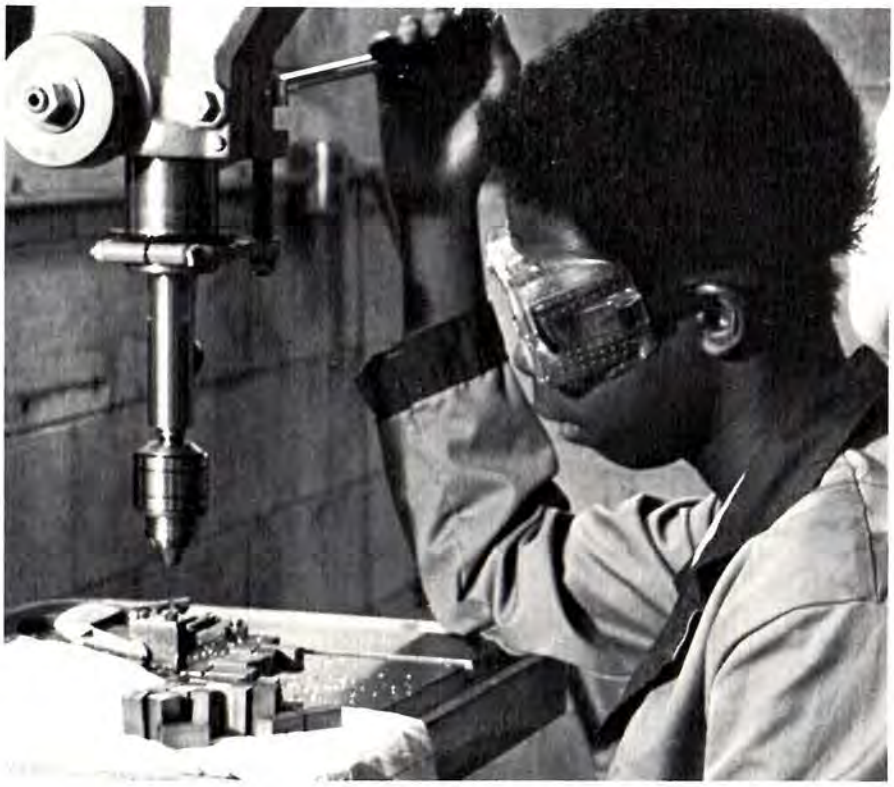
By contracting jobs to the center, industry gets its work done by carefully-supervised trainees, and has access to a pool of skilled, experienced workers once they've graduated from the center. Supervisors loaned to CCO get valuable experience in working closely with the disadvantaged. State agencies receive "clearing house" assistance in placement of the unemployed, and society benefits by having capable people become independent and self-supporting members of the work force, no longer a burden on Welfare rolls.

There is a professional "friend" for both worker and employer at CCO. Any sort of problem—job-related or not—is tackled by the staff, and the trainees hired by industry are placed with a unique "money-back guarantee": If the worker doesn't prove satisfactory on the job, CCO will take him back, try to find the reason and provide a solution.

Whether the problem lies in a misunderstanding by the employee of what's expected of him, or in a need for more training or experience before the actual job begins —any of a dozen or more reasons —staff members use all their resourcefulness to help, mindful that people are basically willing to learn and anxious to be independent, and only need some encouragement and an even chance to succeed.

But this community service does not come free, and, as Tom Sloan says, the effort is "only beginning."

What is needed now is a realistic solid commitment from many more



More facilities and concerned people may help unravel employment tangle

CCO

industries, with donations of contract work, skilled instructors and evaluators, funds, and most important, jobs—real jobs with futures, responsibility of holding a job—that will encourage the trainees to work toward improvement and growth, toward careers that will be personally and monetarily rewarding, as well as contributing to their employers.

How well the plan will work, time will tell, but the involvement of a growing number of Portland-area businesses such as ESI, Omark and Tektronix is vital to its success.

The staff of CCO are thinking positively, and are working from all angles of the problem. With the aid of more facilities and concerned people such as these, it is possible that Portland may become one of the leading cities to unravel the nation's complex employment tangle. □

CCO RECENTLY moved to a much larger building across from the former quarters to better accommodate its people and equipment. Five Portland area firms are now contracting work to the Center, offering trainees a variety of job skills.

Travel Talk

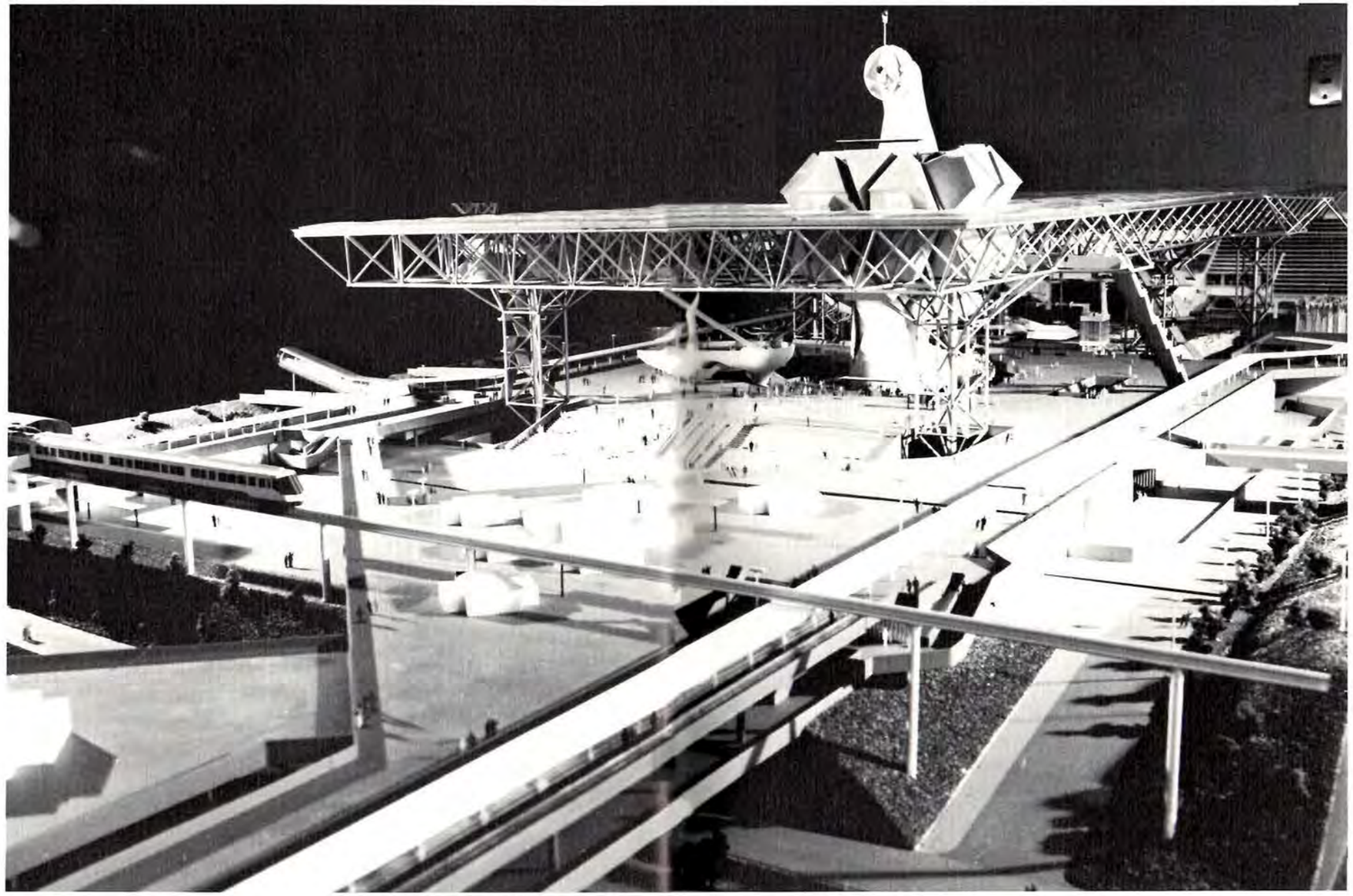
Exploring Expo '70

THE NEXT BEST thing to being at Japan's Expo '70, since it doesn't open officially until 9:30 a.m. on March 15, is watching it go up.

Just ask some of our SONY/Tektronix employees who spent a recent week in Osaka, visiting the site and photographing some of the beautiful scenes appearing on these pages.

With opening day just a few weeks away at the 815-acre fair site, thousands of sightseers, like our SONY/Tek friends, have dropped by for a breathtaking view of the fast-rising pavilions and structures.

As these latest photos indicate, much work has been completed on the fairgrounds. Major portions of the USSR, British and Canadian pavilions are done, and most of the Japanese industrial exhibits are also well along.



But much remains to be done, as these photos also show, before the opening ceremonies. In the meantime, work crews continue at a feverish pace while Expo officials plan a series of previews during February.

Architecturally, Expo '70's varied structures provide a contrasting if not extraordinary image. The Symbol area, focal point of the fair, has a 4700-ton "Grand Roof", 100 feet from ground level. Under this 24-foot-thick transparent roof is the theme hall, devoted to Expo's theme of "Progress and Harmony for Mankind".

Man's past is portrayed on the underground level, and man's present, on the ground level. For man's future, a spiral escalator leads to the top or "mid-air" level. Connecting the three levels are the twin towers of motherhood and youth plus a 200-foot tower of the sun.

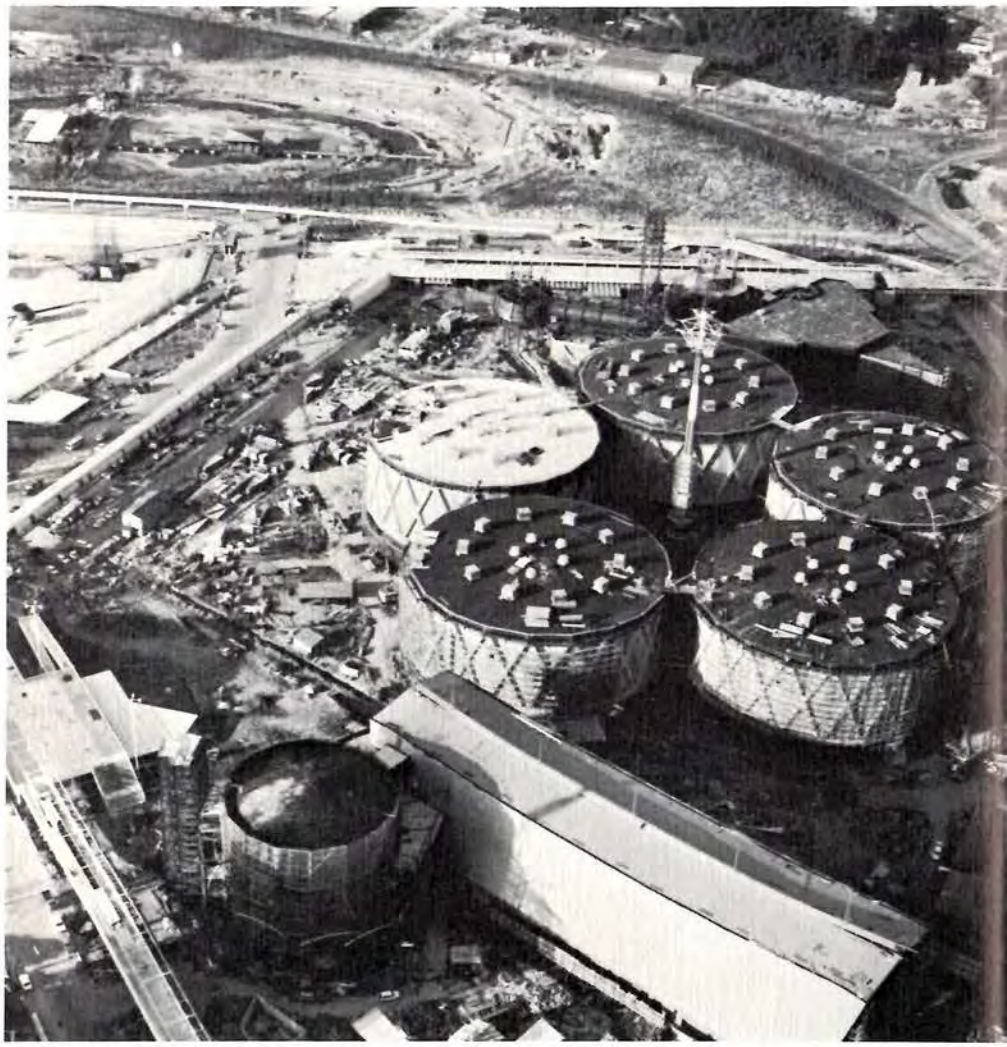
Adjacent to the Symbol area are a mammoth theater with remote-control moving stages, a shopping arcade, a street of delicacies and a museum of fine arts.

Expo's stunning structures extend to the exposition area where the Canadian pavilion is covered by thousands of small, sparkling mirrors and the Soviet's 300-foot sickle is topped by a red star. The US exhibit is also unique, with its huge elliptical air-supported roof sometimes described as a "huge plastic bubble."

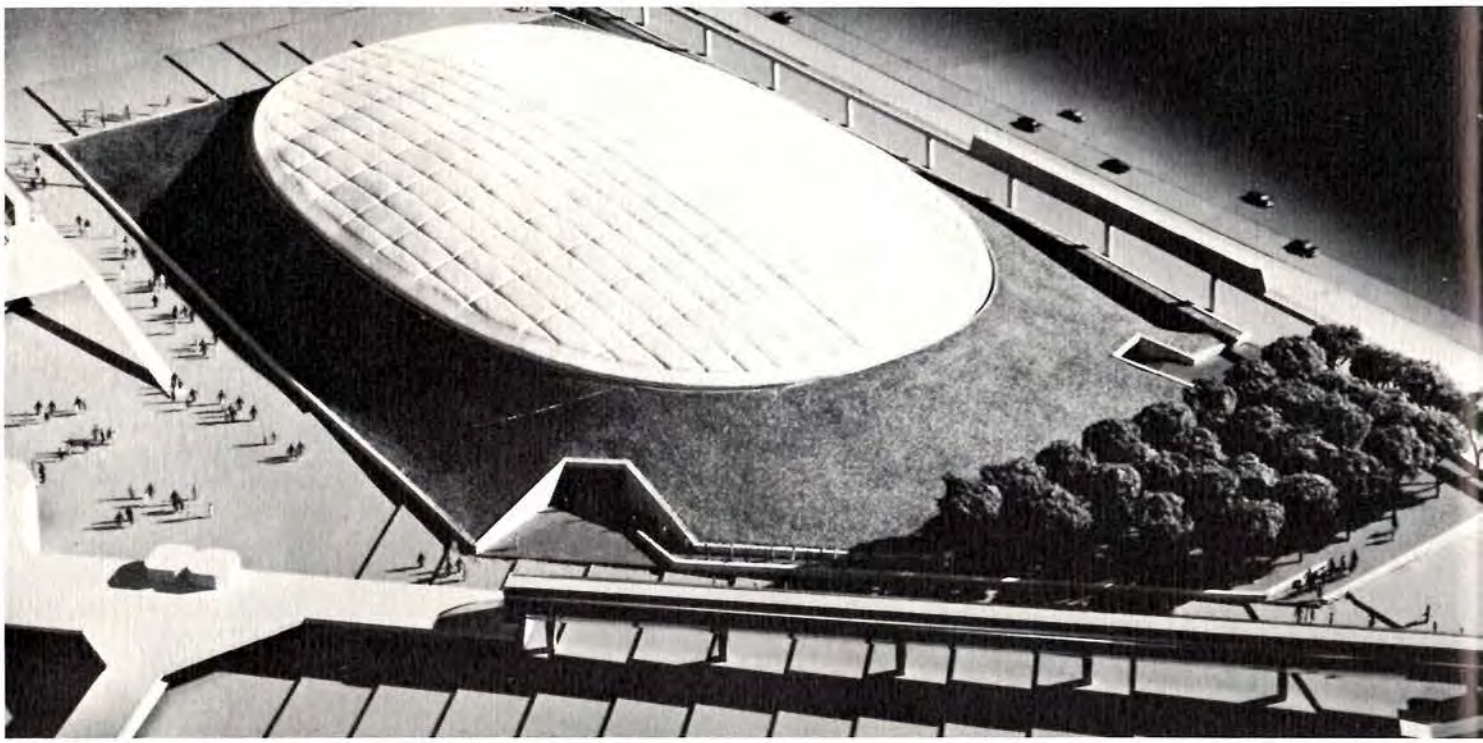
As for exhibits within the buildings, the US will show lunar material from Apollo 11, and commercial displays, such as those of IBM, Hitachi, Mitsui and other firms, will

PAVILIONS AT EXPO '70 (top left photo) come in all shapes and sizes. Examples (l to r) are Furakawa Group (pagoda), USSR (sloped roof), Germany (left dome), Sanyo Electric (dwelling house), Quebec (prisms), Canada (pyramid) and France (right dome). Ethiopia's pavilion (top right photo) has intricate design. Scale model of symbol area (bottom photo) shows Tower of Sun rising through world's largest transparent roof. (Photos courtesy Expo '70 Society and SONY/Tek employees.)

Expo '70



JAPANESE PAVILION (top photo) consists of five round structures patterned after Expo '70's symbol. USA pavilion (bottom left) features an elliptical air-supported roof made of translucent fiberglass fabric. Aerial view of Expo '70 (bottom right) shows site covering 815 acres just 20 minutes from Osaka, Japan. Expo grounds include areas for exhibits, gardens, entertainment and parking.



be devoted to such topics as computer technology, electronic simulation, lasers and communication systems.

SONY/Tektronix will provide electronic measurement support for many of the exhibits with such instruments as our seven-pound 323 portable oscilloscope. Bill Pyle, SONY/Tek corporate representative, noted that Australia plans to use our 323 in its monstrous cantilever pavilion.

For visitors bent on entertainment and the arts, numerous festivals, art shows, theatrical fare and amusements—including the world's largest jet roller coaster, which whizzes along at 50 mph—will be available.

Expo's host city, Osaka, a 45-minute jet ride from Tokyo, has gone all out for this first world exposition ever to be held in Asia. Its brand-new international airport, up-to-date freeways and fast-moving subways and trains will make transportation a breeze for fair visitors.

In addition, there will be monorail cars, an air-conditioned moving sidewalk and parking facilities for more than 20,000 cars and 1500 buses. Foodwise, Expo '70 will have 200 restaurants to suit all tastes, whether western or oriental, gourmet meals or quick snacks.

About the only problem for the anticipated 50-million fair-goers is hotel accommodations. Ninety per cent of the western-style hotels and motels in the Osaka-Kobe-Kyoto area had been reserved by travel agencies and tour groups by last November.

However, a number of Japanese-style hotels (ryokans) and some private homes are still available. Further details are available from the Expo Lodging Information center in Osaka. Or your travel agent may be able to obtain accommodations for you. Whatever you do, make your reservations **early.**

And, while you're in Japan, be sure to see SONY/Tek's sparkling new quarters in Tokyo's Shinagawa district. Occupied last November, SONY/Tek's first building of its own contains in excess of 40,000 square feet for offices, assembly plant, cafeteria and even a roof playground for employees. SONY/Tek has about 150 employees.

As the Expo '70 official said, "The whole of Japan is waiting to say, Welcome!" □