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**TEKTRONIX, INC. ANNUAL REPORT • 24th Year Ending May 30, 1970**

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# Tektronix, Inc. 1970 Annual Report

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## *Transfer Agents*

United States National Bank of Oregon  
Portland, Oregon  
Morgan Guaranty Trust Company  
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Portland, Oregon  
First National City Bank  
New York, New York

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## **SHAREOWNERS' MEETING**

The annual meeting of shareowners of Tektronix, Inc. will be held on Saturday, September 19, 1970, at 9 a.m. Pacific Daylight Time, in the Cafeteria Building, S.W. Karl Braun Drive, Tektronix Industrial Park, near Beaverton, Oregon.

# Tektronix 1970 Financial Highlights

The accounting year is the 52 or 53 weeks ending the last Saturday in May. 1969 was 53 weeks long.

1969		1970		Increase (Decrease)
\$148,857,000	100%	\$165,205,000	100%	11%
134,768,000	90½ %	150,951,000	91½ %	12%
51,931,000	35%	55,746,000	33½ %	7%
66,225,000	44%	78,068,000	47%	18%
3,823,000	2½ %	4,823,000	3%	26%
12,789,000	9%	12,314,000	7½ %	(4)%
14,089,000	9½ %	14,254,000	8½ %	1%
\$1.75		\$1.76		
157,634,000		166,783,000		6%

1969	1970	Increase (Decrease)
\$84,313,000	\$ 98,430,000	\$14,117,000
\$26,672,000	\$ 38,573,000	\$11,901,000
\$57,641,000	\$ 59,857,000	\$ 2,216,000
\$36,195,000	\$ 48,185,000	\$11,990,000
\$ 379,000	\$ 332,000	\$ (47,000)
\$97,519,000	\$112,276,000	\$14,757,000
8,752	9,857	1,105

## RECEIVED BY THE COMPANY

For the sale of products, accessories, repair and replacement parts.

## RELATED COSTS AND EXPENSES

### TO OUTSIDE SOURCES

To pay for raw materials, purchased parts, rent, utilities, insurance, advertising, interest and other business expenses.

### FOR EMPLOYEES

To pay the men and women who design, make, sell and service our products—including profit share, social security and other employee benefits.

### FOR USE OF FACILITIES OWNED

To provide for depreciation in value of buildings, machinery and furniture resulting from use, wear and age, mostly computed by sum-of-years-digits method.

### FOR TAXES

To pay U.S., foreign, state and local taxes.

## RESULTING IN EARNINGS

Reinvested in expansion of our business.

## EARNINGS PER COMMON SHARE

Dilution if all outstanding share options had been exercised would not have reduced primary earnings more than one cent.

## ORDERS RECEIVED

Customers' orders measured at catalog price.

## Current Assets

## Current Liabilities

## Working Capital

## Facilities—Net

## Long-Term Indebtedness

## Shareowners' Equity

## Number of Employees at Year End

## To Shareowners and Employees

It's easy to "blame" a receding US economy when business is bad. (It's harder, somehow, to "credit" a booming economy when business is good.)

If companies were merely corks on the economic sea, bobbing about on the crests and in the troughs, then there would be no need for creative management, for individual employee effort—or, for that matter, for annual reports.

So I won't say more about the US economy. (I suspect each of you has seen its effects, firsthand, in your own life anyway.) Instead, let me touch very briefly on the things Tektronix has done, or not done, in the year recently passed.

Net sales increased 11 per cent, and customer orders 6 per cent. Earnings gained just slightly.

Sales were \$165,205,000, up from \$148,857,000. Orders totaled \$166,783,000, up from \$147,634,000. Earnings came to \$14,254,000, up from \$14,089,000. Earnings per share essentially held firm, moving to \$1.76 from \$1.75.

The oscilloscope, as we've often said, is ubiquitous. Its uses span not only man's technologies, but also his national boundaries. International business this year was very healthy.

Our new 7000-series oscilloscopes—and the complex technology they represent—are now in delivery position. It took some doing, and we didn't have them ready in sufficient numbers early enough in the year to gain all the sales we had hoped for. But customers are very happy with them.

Getting demonstrator models into the field has really helped. Customers now can see, firsthand, the versatility and the quality workmanship; they're also pleased to find that, despite the instruments' complexity, they are in fact very easy to operate.

One important thing about this new oscilloscope "family" is that a large part of our investment is over, and the returns are barely begin-

ning. Whether we had come out with just one "new-generation" product, or over a dozen (which we did), or many more than that (which we will), we would need to have solved much the same array of difficult technical problems in any case. The things we learned to do will pay off for years, and make the expansion of this instrument line in most cases a relatively straightforward engineering matter.

Don't misunderstand; there is no shortage of problems; and some may now seem impossible to solve. But solutions to technical difficulties are often like the four-minute mile. For a long while they remain tantalizingly out of reach; then, once achieved, they become almost commonplace. (So usual is the fast mile now that, in our state recently, a runner ran one in less than four minutes—and didn't even place second!)

You'll find in this report ample evidence showing the continuing vigor of your company's instrument-design activity—in the large number of products added to our line this year; in the more than a dozen to be introduced this month at the Western Electronics Show and Conference (WESCON) at Los Angeles; and, particularly, in our ambitious new program to bring out new products at an even faster rate than ever before.

The last-mentioned effort requires an organization geared to that task. So we have rebuilt ours. That organization, explained in some detail in the following pages, will decrease the time it takes for a concept in the mind of the designer to become an instrument in the hands of the customer.

Even though the change has been recent, results are apparent. Already a large number of innovative instruments are moving with increased speed toward introduction.

Production of Tektronix-made components expanded and improved this year. Integrated circuits moved from an engineering to a production area. Thick-film "hybrid" circuitry is a new component technique that is proving its value in a growing number of uses. Cathode-ray-tube production grows increasingly more efficient; this year that operation did very well—eliminating several troublesome tube backlogs even while adding complex new-generation CRTs to their line.

Information Display Products, not yet a substantial contributor to sales, has nevertheless

grown into a unified and purposeful organization, with excellent products, a production facility capable of very rapid growth in output and a veteran manager with broad US and overseas experience.

In fact, our *entire* management team deserves comment. Of Tektronix' many strengths, I am particularly proud of these men, their increasing maturity, their repeatedly proved dedication, and the excellent way in which they work together.

I'm proud also of many other Tektronix people, including some who this year performed unsung but valuable roles. Transferred, in the interest of cost reduction, from nonproduction jobs they had been competently performing into often unrelated production work, these men and women have typically turned in excellent performance; and their attitude, in these sometimes-difficult personal adjustments, has been exemplary.

Thanks to a large investment in buildings over several years, we now have adequate space for present needs, plus some room for growth. An extensive tooling program is over. We've stopped hiring for the time being; formerly untrained people are now productive employees—and the trainers now can turn *their* efforts to product output also. Our balance of nonproduction and production personnel has been much improved. Production employees now constitute the highest percentage of our total that they have anytime in the past 10 years. Productivity will increase.

In short, reduced order growth has given us time to catch our breath. We've caught it now, and are in an excellent position to respond when business momentum increases, as it will. In any case, our goal is continued efficient, profitable operation.



President

August 3, 1970

# THE OSCILLOSCOPE:

## Some Basics

A laboratory oscilloscope is a complex, integrated system, with thousands of electronic and mechanical components.

Yet its principles are easy to learn:

*The oscilloscope draws a graph of some "event" so someone can measure the amount of that event and how long it lasts.*

It has three major segments:

- The *cathode-ray tube* (like a TV picture tube), on whose fluorescent face the graph appears. A focused electron beam from the CRT cathode makes a spot on the screen glow. This spot of light—which can be moved up and down or from side to side—draws the graph on the tube face, much as a pencil does on paper.

- The *time-base generator*, whose electrical signal moves the spot across the screen at a uniform speed, left to right, repeatedly. The screen is ruled off like a sheet of graph paper. You can make the spot "sweep" at almost any rate—one second per ruled division, a hundred/millionth of a second (or less) per division.

At slow speeds you can see the spot move. At very fast speeds its "trace" appears as a solid line.

- The *vertical amplifier*, which, when connected to a changing voltage, moves the spot up and down. You can make each vertical ruled division represent many volts, or a small fraction of one volt. The number of divisions the spot moves tells you the voltage of the signal—and thus the amplitude of whatever that voltage represents: Heat, light, sound, gravity, pressure, acceleration, chemical reaction.

Thus the oscilloscope plots a graph of an electrical event—or of any phenomenon converted to voltage. This graph tells whether the voltage is changing positively or negatively; the amplitude and duration of the event (or any portion of the event) and the shape of the waveform.

Phenomena that happen over and over produce a continuous image on the screen. But the

oscilloscope can also graph events that happen randomly, or only once: An explosion, the radiation of particles as an atom is split... Even if the event happens only once and lasts only a millionth of a second, special cameras can record the graph as it flashes across the screen—and some oscilloscope types can store the graph on the screen, and erase it when it's no longer needed.

*In summary: The oscilloscope graphs the changes in some event with relation to time—depicting the amplitude of the event and how long that event lasts.*

An oscilloscope has four basic characteristics.

*Sensitivity* (expressed in fractions of volts per vertical division) tells you how small a signal it can measure. Some Tektronix instruments can picture signals as small as one millionth of a volt.

*Risetime* tells you how fast a change an instrument can record on its vertical axis. Our highest-frequency oscilloscopes (those with shortest risetime) can picture signals occurring in billionths of a second. An instrument's range of frequencies is called its bandwidth (expressed commonly in megahertz — MHz — or millions of cycles per second).

*Sweep Range* (expressed in time per horizontal division) tells you how fast and how slowly a CRT beam can cross the screen. The wider this range, the greater the variety of waveforms you can look at. On most Tektronix scopes, the fastest sweep will be several hundred million times faster than the slowest.

*Intensity* (expressed in foot-lamberts) refers to the brightness of the display. Displays of one-shot events (which can't be "rewritten" as repetitive signals can) must have high intensity to be seen or recorded. One Tektronix scope lets you photograph such a one-shot phenomenon that occurs in the time it takes light to travel two feet!

Oscilloscopes vary also in other characteristics. Some are lightweight and *portable*; some are designed for stationary *rack-mount* installation. Some can make a wide variety of *general-purpose* measurements; others are *special-purpose*, like our TV waveform monitors. Some models also provide *digital readout*—presentation of signal information in numbers and letters as well as waveforms.

Some general-purpose instruments get their great versatility through the use of interchangeable *plug-in units*, which contain some portion of the scope's circuitry, depending on the needs of the instrument. These *vertical* or *horizontal* plug-ins control either the up-and-down or the crosswise movement of the electron beam.

Scopes vary also in other special features, that allow:

Comparison of simultaneous signals, by drawing two (or more) graphs at a time with a *dual-trace* or *dual-beam* instrument.

*Storage*, or retaining the waveform display after the signal ceases.

*Spectrum analysis*, by converting from a time base to a frequency base. This allows an equally meaningful analysis of complex signals, breaking them down into their component frequencies.

*Sampling* successive bits of a repetitive signal and assembling the samples into a graph of the waveform—thereby measuring events far too fast for conventional oscilloscopes. The fastest "equivalent-time" sampling sweep is 3.5 times the speed of light.

And, oscilloscopes vary also in price. Our Tektronix models range from \$595 to \$5735, the latter for a mainframe and four plug-ins. Tequipment models go from \$245 to \$850.

## RECESSIONAL: Results In Spite of Everything

Alternately squirming and bulling its way through a disordered American economy, Tektronix ended the year with earnings very slightly above the previous year's level. That's nothing to shout about; the sound you hear is partly a loud sigh of relief.

Still, in a year like this one, the fact that our earnings *did* hold firm is a victory of sorts. And it reflects the strengths that have made Tektronix the competitor it is.

What a 12 months they were! You name it; probably we faced it, somewhere along the line.

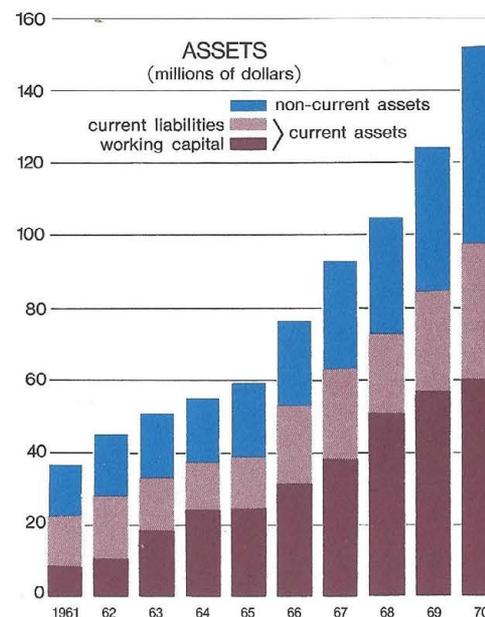
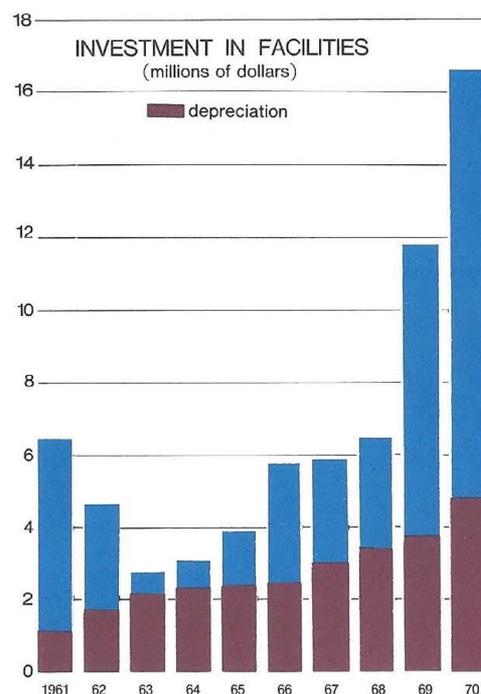
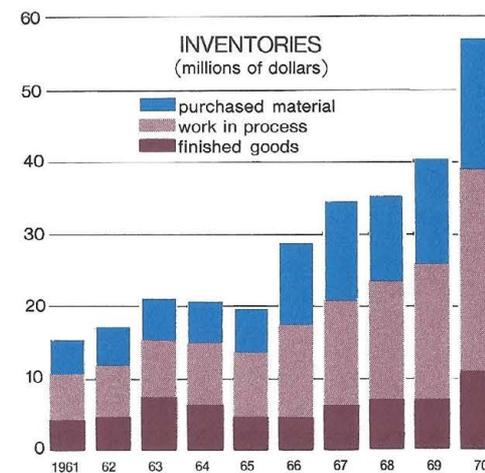
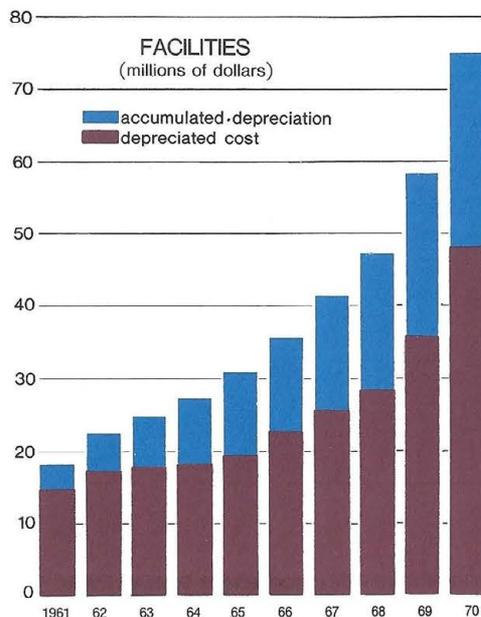
The war in Asia plodded along. The economy receded—more abruptly than the “experts” had forecast. A quavering Wall Street reflected the market uneasiness. Money grew scarce; so did customers willing to part with it. Some very good companies reported very poor financial results.

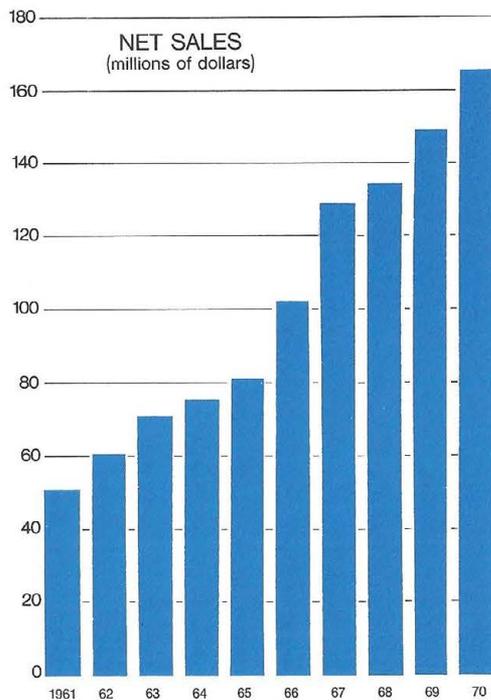
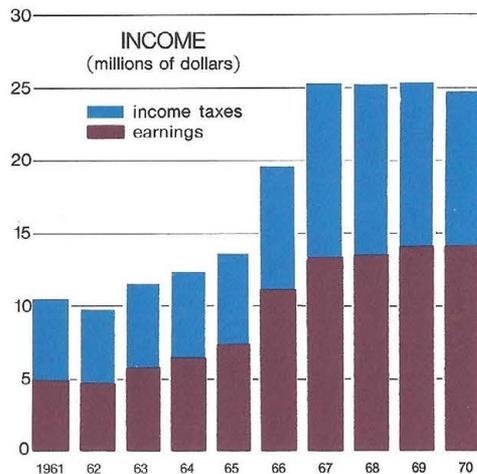
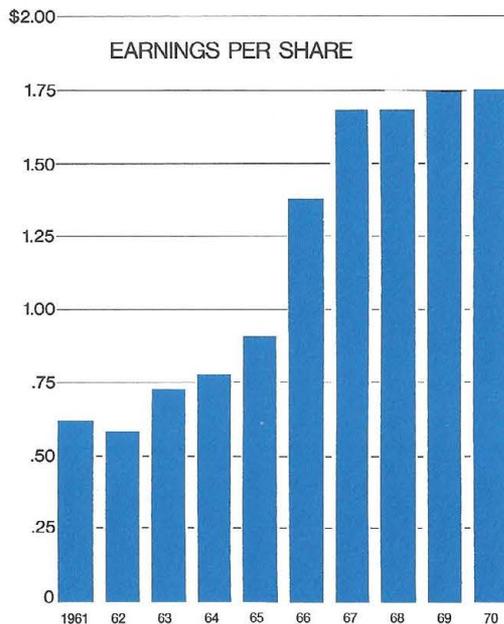
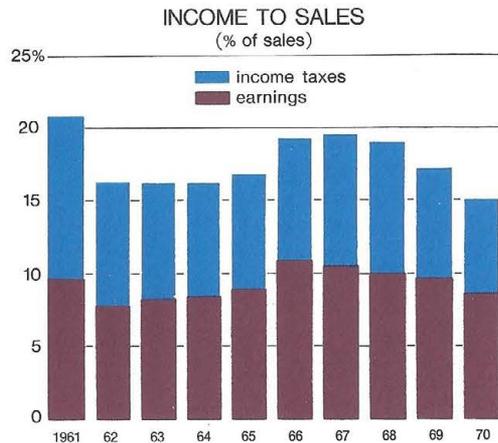
There's little point in reviewing the US economic woes. If you're a reader of annual reports—not to mention newspapers, magazines, comic strips and greeting cards—you've heard the sad story already.

Additionally, for Tektronix, expansion abroad was made costly by the arbitrary requirements of the Office of Foreign Direct Investment, which forced us to borrow overseas at high interest cost rather than use our substantial foreign earnings to finance growth.

There's more. And, for the rest, Tektronix had only its optimism to blame. Key products in two major new lines lagged behind expected delivery dates, as one technical detail after another resisted correction. The delay, in more bullish times, might have meant little more than customer inconvenience. But this year, by the time the instruments were available, the recession had set in for sure; the economy was clearly on a “downer,” and glumness was the mood of the market.

In spite of all this, earnings held steady; and sales and orders increased.





**T**ektronix' 1964 "E" flag, for outstanding achievement in exporting, has now been succeeded by a Presidential "E Star" banner, for keeping up the good work.

The "E Star" award was presented in May by Oregon Senator Mark Hatfield. It was accepted by President Howard Vollum, on behalf of all Tektronix employees.

This year, the citation had a special appropriateness. For it was our strong foreign markets—not across the board, but nearly so—that exerted the most positive influence on our sales and order levels.

*International sales*, which have for a number of years represented about a third of our total, this year accounted for 37 per cent. They increased to \$61,897,000, from \$50,709,000 last year, a gain of 22 per cent.

*Sales in the US* increased 5 per cent, to \$103,309,000 from \$98,148,000.

*Total sales* were \$165,205,000, up 11 per cent from last year's \$148,857,000.

*Customer orders* increased, to \$166,783,000 from \$157,634,000 — all the increase international.

*Earnings* for the year were \$14,254,000, compared to \$14,089,000 the year before. *Earnings per share* this year and last were \$1.76 and \$1.75 respectively.

## PROFESSIONAL: The New Products Continue

The best way to become known for reliability is to do what you say you'll do.

Last year we brought out the first of a superior new line of plug-in oscilloscopes. We said then that we felt it was the most expandable such line ever developed, and we promised to keep broadening it—both through new mainframes and interchangeable plug-in units. Thus the customer's initial investment would "appreciate," as he was able to add new performance capability for only the cost of the plug-in.

The first offerings in the new "generation" were themselves pretty substantial: Two mainframes and 13 plug-in units. Now, a year later, the system has been expanded to *five* mainframes and 17 plug-ins.

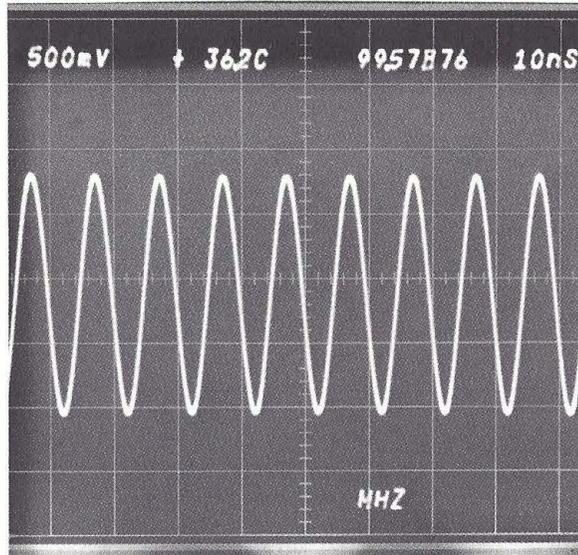
The first mainframes offered unique features that allowed broad expansion. For one thing, they would accept up to four plug-ins. (Most plug-in scopes accept one, a few two.) Thus, ours enabled a far wider variety, and combination, of measurements than any other scope system.

Another feature was scale-factor readout—the ability to print, on the cathode-ray-tube face, letters and numbers relevant to the waveform being measured.

**W**e said at that time that these features would let us move into measurement areas even beyond what had traditionally been considered the oscilloscope's domain.

This month we'll introduce two plug-ins that give you an idea of what we were talking about. They indicate the kind of measurement expansion that's possible when you combine multi-plug-in capability and CRT alphanumeric display.

One is the Type 7D13, a digital multi-meter. This plug-in measures voltage, current, resistance—and temperature. (This last feature—unique in our multi-meter—would be valuable,



*INNOVATIVE PLUG-IN units—the 7D14 and 7D15 (in center two holes of main frame)—let a scope owner, for the first time, also have the advantages of both a counter and a digital multi-meter. Above, CRT screen closeup shows a typical waveform, plus related information displayed in letters and numbers. The nomenclature reads out, from left to right, voltage, temperature, frequency and sweep speed.*



for example, to a design engineer testing a component to determine its running temperature, or temperature rise.)

The other, the Type 7D14, is a 500 MHz counter, a true state-of-the-art contribution and the world's fastest real-time counter. This plug-in counts electronic "events" in some time span. (If that span is a second, the resulting count measures frequency.)

Meters and counters are very common electronic tools. Ours offer capabilities unobtainable elsewhere on the market; but, more important, they are *part of the oscilloscope*. The confidence the user gains by being able to see the waveform (or the portion of it) being measured is complemented by the convenience of reading, at the same time, in up to seven digits, the current, voltage, resistance, frequency and temperature data associated with it.

This combination of capabilities—to the extent that it has been available before—would have to come about by buying a counter, a meter and an oscilloscope and jury-rigging them together.

Also to be introduced this month will be these new-generation products:

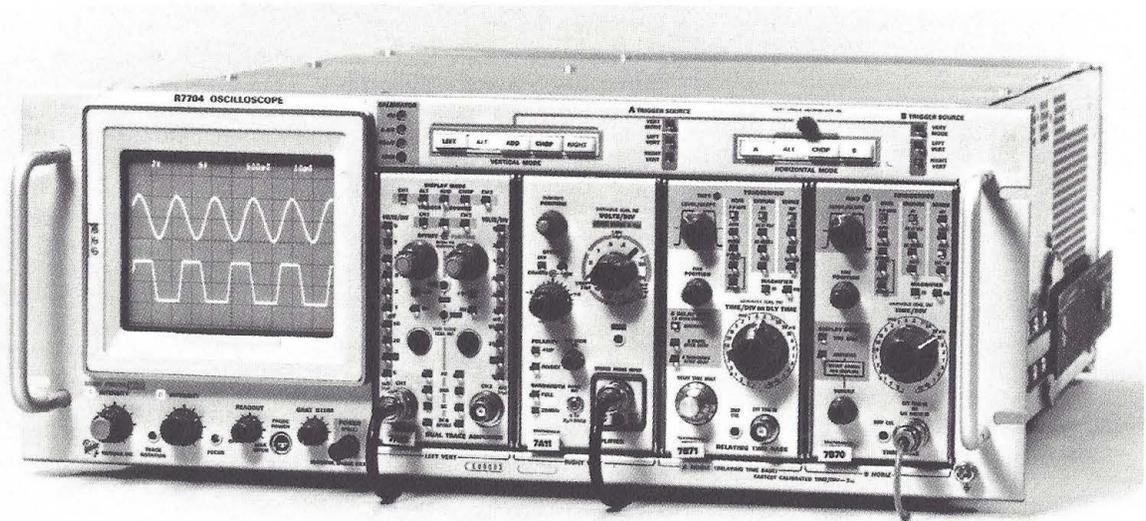
### **"Writethrough" Storage**

- The Type 7514 mainframe accepts up to four plug-ins and offers a new user feature, "writethrough" storage.

Any storage instrument can retain an image on its screen long after the event causing that image has ceased. "Writethrough" is a refinement that lets the user store one trace, then superimpose another, unstored trace on it, or next to it, for comparison. Because a non-stored trace typically is a slightly different color, the two traces remain distinct; by contrast, with two stored traces piled on top of one another, both would be indistinguishable.

"Writethrough" also lets you preview a waveform before you decide whether to store it, or lets you position it for storing.

Also, in existing instruments, the storage capability has severely hampered the scope's conventional writing rate (that is, the maximum speed at which one electron-beam sweep can produce a display you can see or photograph). In the 7514, the user gets high conventional writing rate (450 cm/ $\mu$ sec) *plus* storage.



The 7514 also is one of the first instruments to offer an auto-focus, that does away with one chronic problem of all multi-trace displays. With it, all traces will be in focus, even though they're written at different intensities and different beam currents. Scale-factor alphanumeric, also, will be in even sharper focus.

Altogether, this instrument brings new-generation capability into the area of storage.

### **New-Generation Rackmount**

- The Type R7704 is the first new-generation oscilloscope to be put into a rack-mountable package.

Like the Type 7704, it is a 150 MHz mainframe, accepts up to four plug-ins and offers scale-factor readout. As does the new 7514, it also provides auto-focusing. In addition, it offers a new capability: Single-shot readout.

The scope user who wants to photograph a single transient will like this feature. To record single transients—one-shot events, such as those associated with an explosion, which often occur too fast for the eye to register—the camera lens must be open before and after the event. If the scale-factor information is on the screen all the while the lens is open, the letters and numbers may become so overexposed on the film as to be illegible.

*THE NEW TYPE R7704 oscilloscope brings "new-generation" capability into a rack-mount package, a useful configuration when large numbers of electronic instruments are being used in "banks" or trailers. The instrument has all the characteristics of the bench-model 7704, plus auto-focusing.*

With single-shot readout, the screen remains blank until the event occurs. Then, letters and numbers as well as the waveform flash onto the screen. The result: Correct exposure for both alphanumeric and graph.

This feature will be added to other "new-gen" instruments.

### **Low-Cost Plug-in**

The Type 7A15 fills a need in our new-gen product line for a lower-priced single-trace vertical plug-in. A pair of these will give the user dual-trace capability at low cost.

The five new-generation products to be introduced this month complement those that we've added this year since our introduction of the line:

- The Type 7503, a three-hole version of the Type 7504; that is, it accepts three plug-ins instead of four. It is a smaller, lighter-weight mainframe than the 7504 but, like it, is a 90 MHz instrument with scale-factor readout. It offers plug-in versatility well beyond that of any competing scope, at a lower cost than any other new-generation mainframe.

- The Type 7B52, a dual-sweep plug-in unit. It offers both a delaying sweep and a delayed sweep. Up to now, these features have been obtainable separately in new-generation plug-ins.

The *delaying* sweep is a timing device that delays the waveform until the desired segment of the signal occurs. Then it triggers a second, faster sweep (the *delayed* sweep) that fills the entire CRT display area with that segment.

Now, the owner of a Type 7503—or any new-generation mainframe that accepts a single horizontal plug-in—can have both sweeps.

Outside the 7000 series also, Tektronix continued to furnish the market with new instrument capabilities. These included:

### Low-Frequency Storage

In August 1969 we brought out the advanced low-frequency Type 5030. This non-plug-in oscilloscope was designed to measure extremely small voltages; for instance, electrical signals coming from the human brain. Its large (6½ inch) cathode-ray tube is a dual-beam; that is, it has two electron guns, enabling simultaneous displays.

The 5030 provides high sensitivity—10 microvolts, DC to 1 MHz—and accepts either a voltage or current probe. Direct-current coupling is essential for studying steady or very slow-changing electrical events.

We are pleased with the response to the 5030, and expect a similar reaction to the Type 5031, which we introduced this year. It offers comparable performance—plus the advantage of storage.

We believe storage will be a valuable feature to users who do a lot of testing and need to retain waveform images for study without the expense and nuisance of photography.

### Our Most Complete System

With the introduction of the S3150 in September, Tektronix increased its capability in systems—complex assemblies of coordinated instruments, used to automatically test transistors and integrated circuits.

Tektronix offers its customers a lot of flexibility in meeting their needs. If they wish to assemble their own customized systems, we have provided a growing number of digital instruments to use as “building blocks.” If they prefer instead to buy a ready-made system, we have excellent ones. Our largest and most complete is the new computer-controlled S3150.

This system's programmable test station is a unique competitive feature. In it, without having to be manually moved from its single socket, the IC or other device under test is automatically run through its paces. Tests, under conditions ranging from steady unchanging current to voltage and current changes as fast as a billionth of a second, can simulate the device's actual use. Tests may be sequenced as rapidly as 100 per second.

### Tequipment Instruments

Tequipment products division of Tektronix U.K. also added to its line of oscilloscopes this year. These instruments, less expensive than those made by Tektronix, also offer excellent performance-to-price value, and are finding a growing use in technical schools and community colleges.

New this year are:

The Type D54, a dual-trace 15 MHz oscilloscope. We already have a large backlog of orders for it, but expect its major impact in the year to come;

The Type D67, a dual-beam, 25 MHz scope with signal delay—the least expensive instrument on the market with these characteristics; and

The Type DM53, the world's first 25 MHz dual-beam storage oscilloscope. This instrument has been sold, so far, only in the U.K.

### Better Computer Displays

Visual display of computerized information is a fast-developing area. Last year we entered that market with our desk-top Type T4002 graphic terminal. With its keyboard and 11-inch storage screen, it can very economically pre-

sent computer-stored numbers, letters and pictorial material in a flicker-free, non-fading display. It stands out among competition for its exceptional ability to present fine-line graphics, or very large quantities of alphanumeric.

This year we added to our information-display-product line.

- The T4005 graphic display controller, introduced in May, looks a lot like the T4002, but has different uses and features. The T4002 design was optimized to work at installations remote from the computer (including in time-sharing systems), and to transmit and receive information over telephone lines. The T4005, however, is made for coupling to the computer itself. It has no typewriter keyboard of its own, using instead the computer's ability to rapidly generate information on the screen.

The T4005 has very fast alphanumeric and graphic capability, not being limited by the slow transmission rate of phone lines. (So would the T4002, as a matter of fact, if it were hooked directly to the computer.) It also has great versatility in graphic manipulation. The operator may enlarge a small section of a display and fill the whole screen with it; add to or subtract from the display; change its size or scale, or move bits of it around.

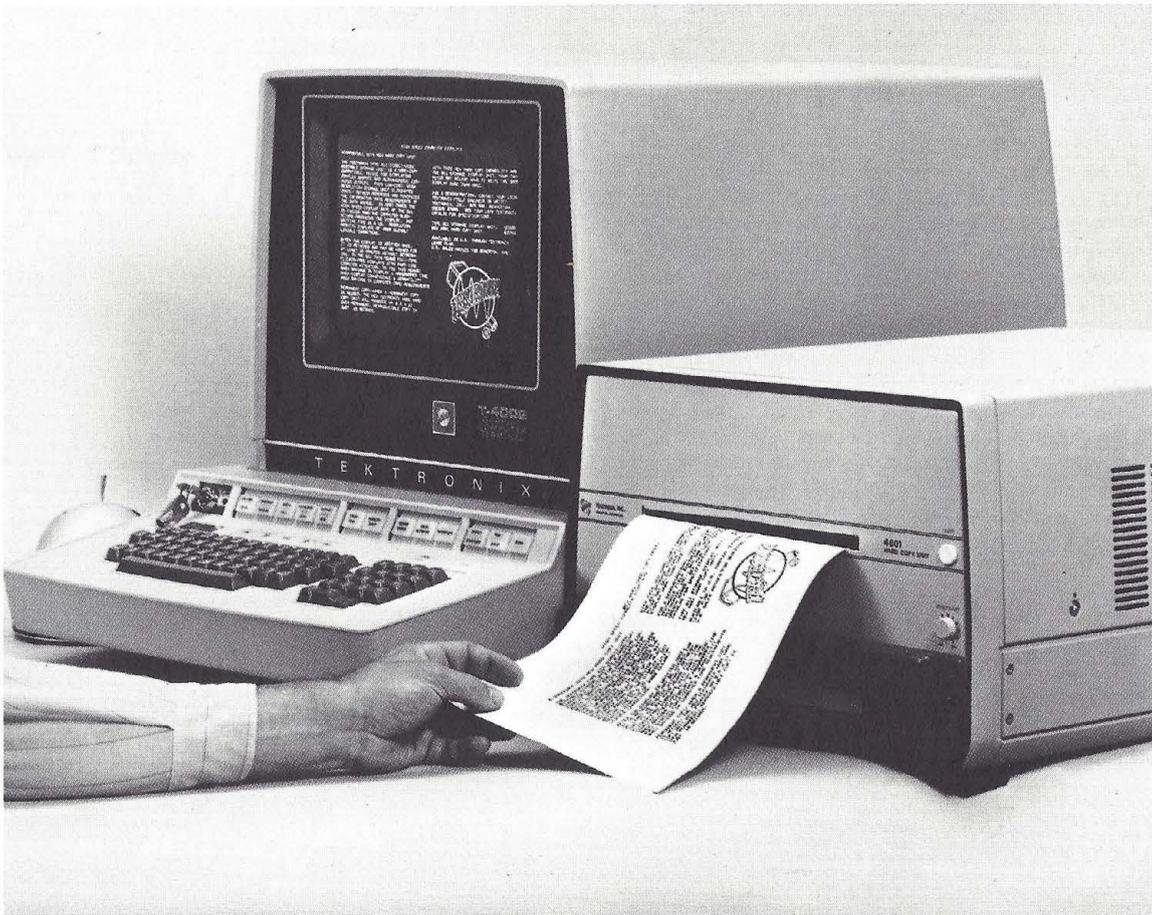
Because of its speed, the T4005 can be an excellent adjunct to a mechanical plotter, a common way of turning computerized data into pictorial output—for example, a drawing of a part. With a plotter, actually a pen moving on paper, it may take 15 to 20 minutes to see the complete drawing and verify the information; the T4005, with its fast-moving electron beam, may give the user the same “picture” in little over half a minute, and manipulate it a wide variety of ways for close analysis.

The T4005 also has the ability to “drive” up to four Tektronix display products, providing visual information at multiple locations away from the computer.

- Maybe our most significant information-display product—and a “sleeper,” in that customer enthusiasm ran beyond what we had expected—was our hard-copy unit, the 4601. It amplifies our product line by letting the user make a dry paper copy off the screen of existing or future Tektronix storage display devices.

Onto the fiber-optic faceplate of a special Tektronix-made CRT is written, a line at a time,

*IT TAKES JUST 18 seconds, using the Type 4601 hard-copy unit, to make a dry paper copy from the image on the storage screen of any one of several Tektronix information-display products.*



information scanned or "read" from the display product's storage screen. A piece of photosensitive paper moving across the front of the fiber faceplate is exposed to the image there. It takes 18 seconds to make a copy.

Competing hard-copy devices have no intermediate storage screen. The data must first be put into a core memory and "read" out, or the display must be exposed onto microfilm and a copy made from it. Both these methods are expensive; ours is just about the only low-cost hard-copy unit on the market that can handle graphics.

The paper doesn't cost much, either—as little as five cents for an 8½x11-inch copy, compared to 25 cents or more for a much smaller photographic print. Also, unlike white-on-black photographic prints, ours may be duplicated on most standard office copiers, and you can count on the duplicates looking just as good as the originals.

Those were this year's instrument additions. This month, at the WESCON electronics show in Los Angeles, we will further expand our product line. Besides the new-generation instruments we've already described, these new products will be in the Tektronix booth:

### **Broadening the 560 Series**

Three plug-ins expand the performance ability of our 560B series of two-plug-in oscilloscopes. A pair of them turns the scope into a time-domain reflectometer; the other converts it into a mechanical-measurement system.

- The Types 3S7 and 3T7, sold as a pair, provide time-domain reflectometry, a useful technique for measuring length of electrical cable and connectors, or for detecting and measuring faults in them.

In a TDR, a pulse sent into an electrical line (for instance, a cable) is reflected back into the oscilloscope. The length of the line and the presence of any faults may be deduced from the characteristics of the reflection as it appears on the CRT screen. It's somewhat like shouting into a cave and studying the echo.

- The Type 3A10 is a transducer amplifier. Along with this plug-in, up to 10 transducers may be purchased, devices that convert mechanical stimuli into electrical signals so an oscilloscope can display and measure them:

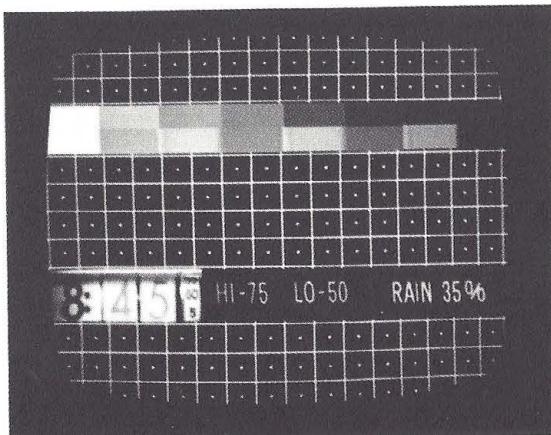
Pressure, vibration, temperature, acceleration, etc. This system would be a very useful tool for, say, a mechanical engineer—not in the past a typical user of oscilloscopes.

### Good News for Cable TV

Two WESCON products will be of special benefit to the fast-growing cable-television industry, although they're not limited to that market. One is a very small spectrum analyzer, the other a color-test-pattern generator.

- The Type 1401 spectrum analyzer was designed for "piggy-back" use with the little SONY/Tektronix Type 323 oscilloscope, but is usable with other models also. Both are battery operated. The whole shebang—323 and 1401 together—weighs only 14 pounds, a very portable package.

- The Type 144 television-signal generator measures cable-TV transmission quality at both the transmitting and receiving ends. In addition to standard TV signals, it offers new color-test patterns, and a special "video insert" feature that lets the station present weather and time information—or any message—on part of the screen while the test patterns are being shown.



Thus a whole channel need not be allocated to patterns alone.

Because cable television is not broadcast but "piped" into users' homes, it has a large number of possible channels. Thus it can afford to devote a channel to test-pattern use. The Type 144 will be a very useful instrument for in-the-home troubleshooting of color receivers.

- Other instruments to be announced this month include the Type 176 pulsed high-current fixture, which lets our Type 576 transistor curve-tracer make high-current measurements; and the Type 4804 interface unit. The latter is an electronic package that couples our T4002 graphic computer terminal to a teletypewriter. This lets the computer user rapidly switch back and forth from the capabilities of the teletype unit—including tape-punch, tape-reader and paper-copy features—to those of our terminal, which include fast, quiet alphanumeric along with graphics.

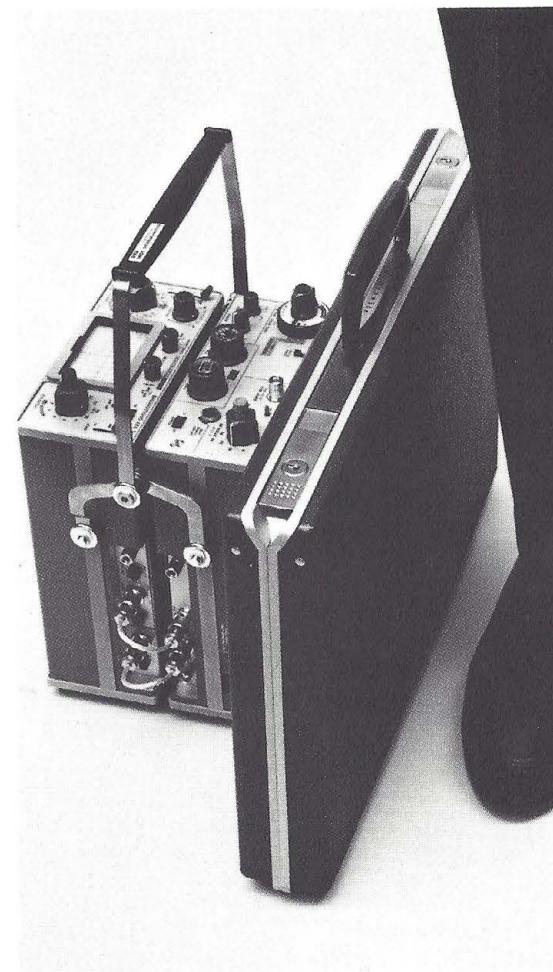
All in all, we believe the WESCON product array will be an impressive one for show-goers.

**O**n top of all this, here's one more indicator of the increasing vitality of Tektronix' new-instrument effort:

This year we've embarked on programs aimed at introducing, in the next one to five years, more new products by far than we've ever before undertaken to develop in a comparable time span. That's a tall order. To meet it, we've changed our organization in some unprecedented ways. Later in this report, you'll be reading about them.

*"VIDEO INSERT" feature (left) on the Type 144 color-test-pattern generator lets a cable television station transmit test patterns at the same time it gives weather and time information.*

*THE NEW Type 1401 spectrum analyzer and the SONY/Tektronix Type 323 oscilloscope make a neat little package for the traveling electronics serviceman. A single carrying handle does the job for both units.*



## THE MARKETS: Up The Down Economy

A typical trigonometry problem has in it a marble, rolling at an angle across the deck of a moving steamship. Given its speed and angle, and the speed and direction of the boat, the problem is to figure out which way the marble is traveling, and how fast.

That's the sort of problem that comes up in assessing the US portion of Tektronix market activity in this year of economic deceleration.

Certainly a lot of what, in less uneasy times, would clearly have been orders were converted by customers this year into such abstractions as "keen interest" and wishful thinking. Still, the response to our new generation of instruments has been heartening, and probably will be the one most influential factor on our success in the years ahead.

Since the fiscal year ended, we have put an increasing number of demonstration instruments into the field. Customers are now able to get their hands on them and see for themselves what these scopes can do. The corresponding rise in new-gen orders is one of the more encouraging signs at this moment, all the more so since these orders are "swimming upstream"—going against the trend of industry buying.

**W**hen you talk about bright spots in the US economy, you give a very short speech.

Government money grew scarcer this year, and what there was of it went mostly to war. Tektronix has never dealt in direct federal development contracts, whose sudden turning-on and shutting-off can cause contractors no end of painful jerks and yanks. Still, diminished government funding does depress a variety of our markets; as one example, federally assisted educational programs were significantly curtailed this year.

On what we may as well call the cheerier side:

Tektronix showed substantial increases in US sales of systems (22 per cent); pulse generators and auxiliary instruments (10 per cent); storage monitors (23 per cent) and, particularly, Telequipment instruments, lower priced and less sophisticated than the Tektronix line; those sales grew by 36 per cent in this country.

**I**nternationally, things were "on the up." The average overseas market was good; many were excellent. These included Japan (up 72 per cent in orders); Switzerland (up 51 per cent); Germany (25 per cent); Italy (19 per cent); Denmark (21 per cent); Norway (60 per cent), and Israel (27 per cent).

Less substantial were Great Britain (up only 1 per cent in orders), where our strong sales for several years now have flown in the face of a rickety national economy; France (down 5 per cent), and Canada (down 5 per cent), which slumped in parallel with the US economy.

The less advanced nations offer small markets. But those markets continue to grow. Tektronix sales in underdeveloped areas of the world increased this year by 49 per cent.

India did three times the business we'd expected; so did Yugoslavia, up 50 per cent in orders from last year. Brazil and Argentina increased by 77 and 132 per cent respectively; Mexico, by 22 per cent.

Sales from our Telequipment products division in London increased. Orders there are up 50 per cent, and the year ended with a large backlog—even a bit larger than we'd like. The gain resulted largely from Tektronix subsidiaries or distributors taking over Telequipment marketing in an increasing number of countries.

Two markets—one old, one new—are worth special comment:

### Television Instruments

'Way back—when Tektronix and television were young—we recognized that the TV industry had its own needs for specialized instruments, to precisely monitor and measure transmitted signal quality. We have kept abreast of, and ahead of, those needs over the years. As a result, the TV picture you watch has grown steadily clearer and better; and Tektronix in-

struments have become the standard for the industry throughout the US and almost all the Free World.

This year our position of leadership was strengthened even further. The television industry held up pretty well in the face of the US recession; our TV instrument sales increased slightly in this country and substantially abroad.

Television instruments are, if anything, more cosmopolitan than oscilloscopes in general. The more underdeveloped the nation, the higher percentage of our sales will be in TV instruments; the second thing a typical new government tends to do is set up a national telecommunications system. (The first is to set up a national police force.)

Brazil this year adopted a new color TV system, a practical compromise between the US and European methods, and one that other South American countries may adopt. Tektronix has derived from its current instruments new color-bar generators and vectorscopes for that system.

International sales of our television instruments have prompted us to start-up their manufacture overseas, in The Netherlands and Japan.

Recently the US government has permitted Eastern European countries to buy television broadcast equipment from US manufacturers. We have already received substantial orders and, being a leader in this field, expect more.

In cable television, mentioned elsewhere in this report, our instruments bid to become industry standards. There are about 2800 US cable systems; some 300 already have local programming capability. Recently the government has required any system with over 3500 participants to do some local programming, rather than merely relay broadcast TV signals into homes. As local program origination grows, so will the use of Tektronix instruments.

### Display Products

Sales of Tektronix information-display products, although still not a major portion of our business, showed a healthy increase, due largely to growing demand for our series 600 display devices and our scan converter, and partly to our improved ability to deliver the new Type T4002 graphic computer terminal.

The market for terminals, however, is a long way from maturation. And this depressed year was a poor time to massage and develop it.

So, we don't have anything spectacular to report there. Most terminal buying so far has been for evaluation; thus we do not yet have the large reservoir of user experience that itself is a strong stimulus to market growth.

We have begun to get a better feel for this new market, so different from the oscilloscope field. Our confidence in the technical excellence of our products has been substantiated; and one important need has become evident, on which we're now focusing a good deal of our attention. The computer user needs strong software support—written programs and routines—plus supplemental devices to help him tailor our product capability to his own unique needs.

How far and fast this market will grow, and what share of it will accrue to Tektronix, is anyone's guess. But the potential is large. If society—as it shows some signs of doing with its growing concerns over ecology, housing, pollution and education—is truly moving toward a more humanistic use of technology, the power of computers may be brought into play in ways beyond anything yet seen.

The computer is potentially an excellent teacher, in that it has infinite patience. Yet, despite its bright promise for a decade now, computer-aided education hasn't moved along very fast. One key problem seems to be to get the student *involved* in the learning process—that is, provide him a means to interact with the machine.

The computer as a communications tool may rank with the spoken word and mass-produced books. Yet it's only now being "trained" to accept varied input information and produce output that is more than the sum of the individual inputs. As it "learns" this skill, then it can respond to a human being and work with him in very complex inter-relationships.

Tektronix' contribution has been to produce high-speed, high-resolution terminals that provide both alphanumeric and graphic interaction between man and computer.

Graphics will grow in importance. A picture may or may not be worth 10 thousand words—or whatever the current exchange rate is supposed to be—but it is true that pictorial informa-



tion can be more meaningful than words and numbers. For instance, a graph of a trend line is easier to understand than the same information buried in a table.

Terminals are a means, if not *the* means, of relating computers to man. We believe their growth curve will be steeper than that of computers themselves, which had to face a long, skeptical and somewhat hostile scrutiny before they gained wide acceptance.

Our job seems clear-cut: To analyze the new market's needs; then, to apply Tektronix' technical expertise to it, and help make this market grow as we have done in the oscilloscope field.

*TEKTRONIX T4002 graphic computer terminal was demonstrated when the US Department of Commerce opened a Trade Center in Sydney, Australia. Shown with the instrument are (from left) Emory Harry of Tektronix in Beaverton; Bob Young, operations manager of Tektronix Australia; and Chester Norris Jr., Center director, operating "joystick" control.*

## THE ORGANIZATION: A Long, Hard Look

In the Corporate Book of Good Things to Be, one trait high on the list is Responsiveness.

In our fast-changing world, the company that can't change or won't change is asking for trouble. If it clings to a rigid organizational structure, it may find, too late, that what it mistook for stability was, in truth, rigor mortis.

Flexibility is something you don't get unless you work hard at it. And Tektronix works hard at it.

Because we look on organizational changes as signs of strength, we have made a special point in our annual reports to talk with you about the more significant ones. They may not always make for lively reading, but they are very important factors in our success.

**T**his year we have made a change of special significance. It began in Engineering and has, in turn, spurred changes in Manufacturing and in Marketing. In short, what it means is that Tektronix is beginning to operate in a new way.

The change is as much one of attitude as of structure. Normally, a statement such as "Morale in Engineering has never been higher" would be risky to make. This year, no.

We can't portray attitude in words, but we can talk about structure. Here's what's taking place, and here are some of the things we intend for those changes to accomplish:

**A** larger organization offers certain advantages. Typically, they include depth and breadth of resources, efficiency—and an orderly, systematic approach to problems.

A smaller organization also has advantages. Typically, these include close communication, high visibility of the job to be done, singleness of purpose—and the ability to scramble.

It would be nice to have the best of both

worlds. Our reorganization takes a long step that way.

The former single Engineering organization is now divided into three product-related groups. Each has full responsibility for a chunk of our instrument line. They are:

General Instruments, managed by Lang Hedrick; Laboratory Oscilloscopes, managed by Wim Velsink; and Low-Frequency and Portable Instruments, managed by John Gates. (A fourth group, which has operated outside the Engineering structure, is Information Display Products, which also includes manufacturing and marketing functions.)

Each group is large enough to be self-sufficient, yet small enough to operate easily. Each has its own complement of basic support people: Draftsmen, mechanical engineers, tool makers, staff . . . Each is under the direction of a veteran Tektronix engineering manager.

These small "companies" still may draw on the deep reservoir of human, financial and technical resources that Tektronix has developed over the years.

In electronics terms, our new-instrument development program now involves fewer *series* operations, each begun when the preceding step is done; and more *parallel* operations, all aimed on a "collision course" toward a target date.

If you were to visit your company now, you'd find an intensified concern with getting instruments into production *fast*; a great emphasis on price competitiveness; and unbounded enthusiasm and determination.

You *won't* find much patience.

**T**o make a change like this, you need two things: A good reason, and the ability to do it. Tektronix has both.

The reason is simple:

We've always believed strongly that each person wants to do a good job. This change will let our people do their jobs *better*; that's almost surely the reason it's so popular.

Looking back on it, it's probably one of those kinds of changes we should have made even sooner. But this year its advisability was underlined: The sagging U.S. economy translated, for us, into the need to get new products onto the market faster.

One gain we can already see: By giving new, broader responsibilities to more people, we are unearthing and developing technical and managerial skills that in the larger organization might have been less visible.

That brings us to the second point: The ability to change.

Tektronix has always had what we like to call "bench strength"—many layers of human competence, in great variety. To break a large organization into smaller ones, you *must* have good people in quantity; otherwise you would come up with one excellent organization plus several mediocre ones.

Also, change has *always* been part of Tektronix. Our people have come to look on it as personal opportunity and company progress. "This change came easy," commented one vice-president. "We've always been rehearsing."

Our Manufacturing organization, in turn, also has assumed a new responsiveness. Each product moving out of Engineering is now assigned a Manufacturing "program manager." His job is to see that it moves through production with few bumps and no stalls. Each of these men is already a departmental manager, who adds this new responsibility to his existing one. In this way we get the benefit of his managerial experience—and managerial authority—rather than have to either create new organizations to do this job, or go the fruitless route of naming inexperienced "coordinators" to shepherd the products.

Our new approach already is working. As an example, development of the Type R7704 oscilloscope, which we introduce this month, began in April.

The new flexibility has let us move also into a somewhat extraordinary effort:

Our concentration, over the last couple years, on the more complex new-gen instruments lessened our attention to some other segments of the product line. Reviewing our competitive situation recently, we concluded that two portions of the market call for a "super-accelerated" product effort. So, we've set up special manufacturing groups, working directly with Engineering, to rapidly bolster our competitive position in those two areas.

Both efforts are going, if anything, even more smoothly than we'd hoped. We'll discuss the resulting products with you in quarterly reports.

Other organizational changes of special note:

- At the annual shareowners meeting in September 1969, Earl Wantland was added to the board of directors, which now numbers seven. Earl, at 39, has had a broad and diverse background in our overseas and domestic activities. He organized the manufacturing operations of our first foreign plant, on the Isle of Guernsey; organized Tektronix Holland N.V. and served as its manager for two years, and was International Manufacturing manager for five years. He has been executive vice-president since January of 1969.

- The board in October accepted the request of Robert G. Fitzgerald that he not be renamed a company officer. He had been executive vice-president since December 1966 and held virtually identical responsibilities as operations vice-president for four years before that. He has since resigned from Tektronix, to pursue a career in public service.

In his nearly 20 years at Tektronix, "Fitz," as we know him, brought creative leadership and great personal energy to the task of corporate management. His has been among the strongest formative influences on the growth of your company. Continuing as a member of the board of directors, he'll still be exercising that influence.

- Our two London subsidiaries, Telequipment Ltd. and Tektronix U.K., have merged. Although the former is the surviving corporation, we have chosen to retain the latter's name. Tektronix U.K. has two parts—Tektronix products division and Telequipment products division.

### Tektronix vs. US

In 1961, our suit against the US government was filed in the Court of Claims, for infringement of eight of our patents by government contractors. As the litigation has dragged along, our optimism for a judgment in our favor has never waned.

A government counterclaim charging that we had, in turn, infringed two government-owned patents was dismissed in 1965. Accordingly, we then expected a favorable judgment by 1966 or 1967. But we were over-optimistic.

This year some good news came. On April 22, the report of the Commissioner to the Court

found that eight of our patents were valid and *had* been infringed, and that we are entitled to recover compensation for their unauthorized use by the government.

But things aren't over yet. Since the report, the government and two of the third-party defendants have filed notice of intention to except; that is, they have some more things they want to say in their behalf. The Court will hear those exceptions before making its decision.

So, we are more optimistic than ever. But there will be months of delay before the Court makes its decision; then follows the "accounting" to determine the damages—which we have never expected will be large.

At least the news this year has been good.

### Tightening the Ship

The military man seeks not to have to fight "the wrong war, in the wrong place, at the wrong time."

Companies, too, ideally would like to choose the time and the arena in which to compete.

If Tektronix had had its "druthers," for example, it would have preferred that the largest new-product development effort in its history had not culminated at a time when the US economy decided to cool down. But that's about the way it happened, this year.

We not only introduced a new family of high-performance oscilloscopes, but also added to our array of computer-related products. Associated investment was very high—in buildings, engineering, equipment, new processes, component development, hiring, training . . .

The year began pretty well. Economic indicators gave us reasonable market expectations. But, as the economy slowed, the US order forecast was revised downward, then revised downward again.

We were certainly not caught alone in the downturn. But having lots of company didn't help. Our levels of manufacturing, engineering, marketing and support activities were based on our original forecast. Thus we faced a serious imbalance in our ratio of nonproduction to production employees, and expense levels far too high for the order rate that now seemed likely.

Compounding the problem was our inability to immediately deliver some of the new products we had introduced in August. By the time

those products *were* on hand, the US recession had begun to have its effect.

In an attempt to avoid the drastic remedies some other companies had to adopt, and weighing human as well as economic factors, Tektronix moved to reduce its indirect expenses. We have offered direct production jobs to over 10 per cent of our non-production employees. In those jobs, their efforts add to product output.

Other economy moves we have taken cover a wide spectrum: Cancellation of outside facilities-support contract work, reduced capital expenditures, lowered travel costs, curtailment of hiring and of overtime work, deferring some moves into new buildings . . .

The fact that we're a profit-sharing concern has had considerable effect in this regard. When every employee has a personal reason to focus particular attention on cost reduction, there's no predicting the kinds of economies that will result.

Whatever our rate of growth may be, Tektronix will be a *leaner* company by next year's report to you.

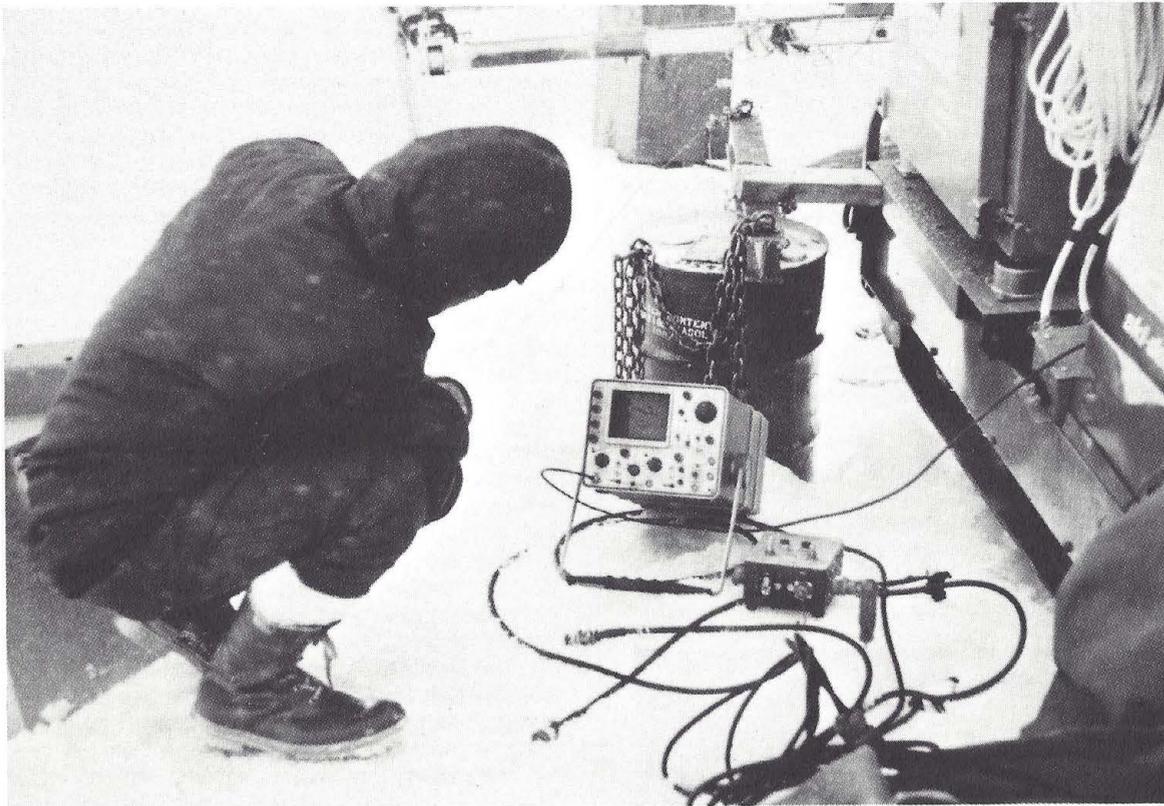
**M**ore important than the cost reduction itself is the change in attitude it represents. Out of a continuing series of frank meetings, begun at the top level and progressing throughout our organization, has come a new communicativeness and a broad, searching scrutiny of what we're doing, what it costs and what it yields.

In formal terms, we're "reallocating our priorities" and "matching resources to requirements." But our executive vice-president said it better: "It's no longer enough just to have everyone busy doing good things . . ."

In the process, some less-effective activities are being stopped; other efforts have greatly increased. It's the kind of thing you do all the time in any well-managed company—but do in dead earnest only when something (like the current economic situation) brings it to your attention. It's when a man walks *uphill* that he becomes aware of his paunch.

In that respect, the receded economy may have done us a favor. It's at least possible.

**T**he pursuit of the market is quickening. Twenty-two US field engineers were added



*YOU NEVER CAN tell where you'll find an oscilloscope. Here a Tektronix battery-operated portable helps detect water-supply potential within a glacier in the Canadian Rockies.*

this year, bringing our total to 125. Twenty-nine more are in training at Beaverton. In addition, our 121 service-center supervisors and product-service technicians (40 more than last year) put us in a stronger position to offer timely after-sales service.

We opened US field offices in Albany, New York; Oklahoma City; and Pensacola, Florida. That makes 57.

Our instrument-leasing program was improved and given stronger emphasis; the idea of this additional option is to make it as easy as possible to do business with Tektronix.

Two field marketing managers were named, one responsible for the South and West, one for the East and North. This move spreads the Marketing administrative load; more importantly, it allows customer-related marketing strategy to be made closer to, and based on the special needs of, users in the respective geographic areas.

- Grouping all our computer-display activity into one organization, Information Display Products, has let us concentrate on the unique requirements of those products and the unique needs of that market.

We now have four IDP applications engineers, recruited from our field-engineering staff and operating out of Tektronix field offices in Palo Alto, Boston, Baltimore and Atlanta. Three more have completed intensive training at Beaverton, and will join them this month.

In IDP we have developed an OEM (original equipment manufacturer) price schedule for terminals and related products, for computer manufacturers who wish to incorporate them into, and sell them as part of, their own total product "packages."

- Overseas customers continued to become more closely coupled to Tektronix, as our direct marketing activities expanded. Tektronix A/S began operations in Copenhagen in Jan-

uary, and Tektronix AB in Stockholm in July of this year. Both assumed responsibilities that have been performed in the past by independent marketing representatives. Our sales subsidiaries now total 10.

In May, Tektronix Datatek N.V. opened in The Netherlands, and is in charge of marketing Tektronix computer-related products throughout Europe. The corresponding responsibility in Japan is handled by SONY/Tektronix.

Our European Operations Center opened this month in London. Its establishment is one more recognition of the growing importance of our overseas market.

The Center will let our European operations do an increasing share of their own management. It, rather than Tektronix in Beaverton, will provide policy decisions and direction in those cases where all the factors are Europe-oriented.

The trade shows and missions in which we've participated in recent years have begun to bear fruit—notably as sales in South America. Two more missions were made this year, one to Eastern Europe and one to Southeast Asia.

We have hired a field engineer, based in Vienna, who will concentrate on the widening Eastern European market. A number of Tektronix instruments are now on the US government's nonclassified list for sales in that area. Teleequipment products have already found a market there. In addition, a roving field engineer will be assigned to the Mexican and Central American markets.

The number of FEs has increased in all Tektronix subsidiaries, and training programs there have been substantially bolstered. Our international field force now totals 72.

## Education and Training

More Tektronix people went to school this year than ever before.

Course registrations in our extensive in-house education program ran ahead of the preceding year's—until spring, when our transfer of many nonproduction people into production jobs caused shift changes, resulting in class cancellations. Even so, the year saw 5985 course registrations, close to the 6144 of the year before.

In addition, 998 people (compared with 932 last year) received tuition refunds for successfully completing courses in local schools and colleges, and our programmed-instruction participation showed a large increase, from 533 to 785.

In this year of lowered business levels, our education program has been given a strong restatement of support. If a climate of innovation has value, that value lies in helping us overcome difficulties. Employee development

is a permanent and very important part of the way we work.

In line with cost reduction, we have reduced some administrative expense; and, in place of the present free classes, we will ask a very modest tuition fee. We don't look for this to diminish participation in the education program; Tektronix people have repeatedly proved their eagerness to grow and develop.

## Swallowing the New Technology

Much of last year's report to you dealt with our new-product effort. It was a broad, ambitious, immensely challenging technological venture, with three parts:

Development of major new lines of instruments; development of advanced components for those instruments, and development of new processes to build those components and products. The effort involved all areas of the company, and represented a whale of a lot of technology to swallow.

As it turned out, it was an even larger mouthful than we knew. But swallow it we did (albeit with a choking sound now and then), and we've come through the year with all Tek-made components in full scheduled production and all new instruments in delivery status. It took brute force to do it; but the job is done. "The mystery is out of it now," one production manager has said.

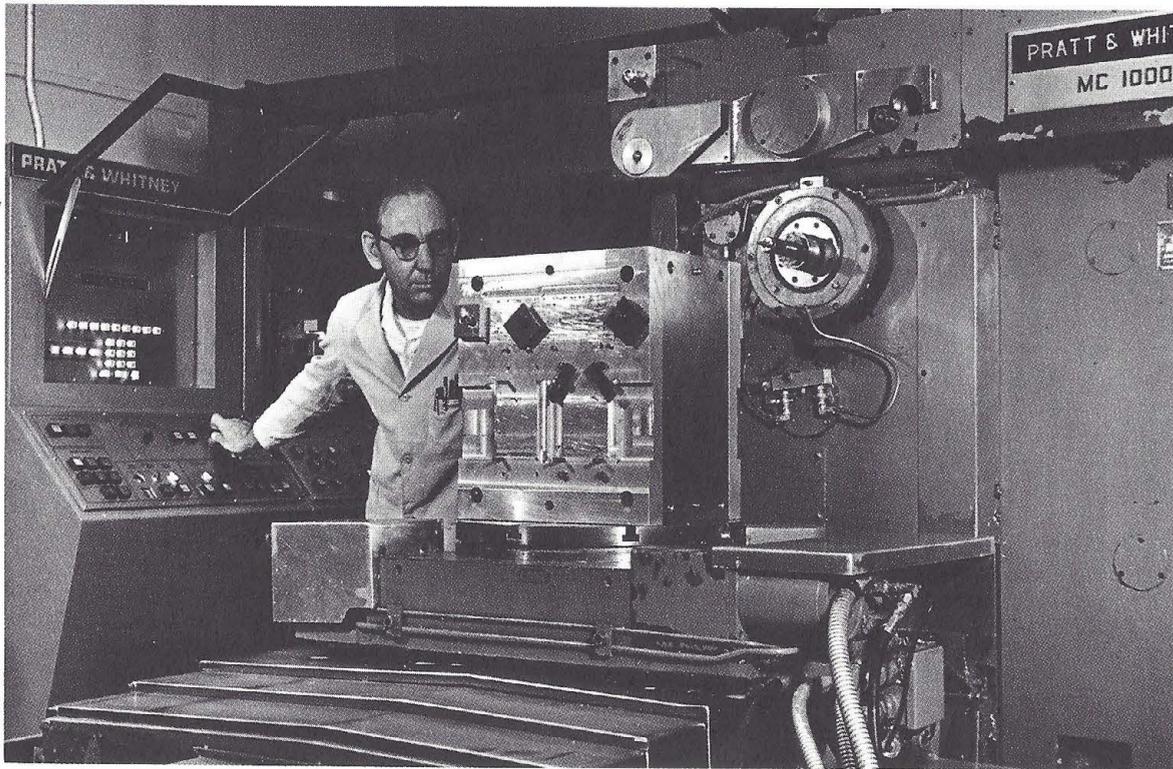
We have arrived at a welcome point. Behind us now are not only the high costs of developing these new products and components, but also the expense and the turmoil of bringing all the new technology into consistent production. Now we are in a position to reap the returns from these expenditures, as the growing order level for the new instruments enables the increased efficiency that results from higher-volume production.

Our goal is to produce the new instruments at least as efficiently as we have our older ones. We didn't reach that point this year; but we will.

These instruments rely on a variety of advanced Tektronix-made components. Most of these components strain at, and many of them exceed, the state of the art in their respective technologies; thus they are understandably difficult to produce and assimilate.

**O**ne key component is integrated circuits, which can combine on tiny specks of silicon the equivalent of hundreds of electron devices, such as transistors and diodes. Development of our own ICs to meet the specific needs of oscilloscopy has let us cram performance capability into a square foot or so of instrument space that would until very recently have required an oscilloscope larger than the person using it—hardly a competitive item.

*AUTOMATED VERSATILITY is provided by our new Pratt & Whitney machine center, which does a very wide variety of production tasks under numerical control, using computer-generated tapes.*



The IC manufacturing operation this year transferred without a hitch from Engineering to Manufacturing, freeing the former area for advanced developmental work. Our ICs have met the quality, reliability and cost goals we set for them; the operation did itself proud this year.

- In a related activity, our Ceramics plant added the ability to produce a new component: Thick-film hybrid microcircuitry. Onto a non-conductive ceramic base, or substrate, the electronic components are printed as a metal-ceramic film. Somewhat larger than our ICs, hybrids share the same general purpose: Packing more performance into less space.

- We learned a great deal this year about producing switches.

New-gen instruments couldn't have been built if we'd had to use commercially available switches. They were too bulky, and were too hard to push and turn. So we have designed and built our own, and thus advanced the state of the art in switches—but not without headaches.

We had a lot to wrestle with: There were the problems of many short, unique production runs (each scope has its own set of needs for a complex switching system). There were the very tight tolerances needed to meet automated assembly requirements; there was the effort of building all our own assembly equipment—and there was the occasional obstinacy of the plastic material itself.

Improvements go on: We're about to add to new-gen instruments a new light-manifold system, to make the lighting on our push-button switches more uniform.

**A**s the years have passed, Tektronix has assumed an ever-increasing share of its own

*DILIGENT ATTENTION to production efficiencies has enabled Tektronix to double its reclaim rate of CRT ceramic funnels, contributing to profitability. Here, an employee visually inspects a completed funnel after firing.*

component production. Sometimes it's done to get better, lower-cost or more reliable parts. Sometimes it lets us stress some characteristic we need at the expense of one we don't.

This ability to build critical parts not otherwise available has been a mainstay of our product development. And it has let us tailor components as well as circuitry to the particular instrument's intended use.

In addition to those already mentioned, Tektronix-made components include transformers, super-speed diodes, plastic and ceramic parts, precision resistors and capacitors, potentiometers, panels, delay lines, coaxial cable, sheet-metal and screw-machine parts, and die castings.

One of the earliest and still most important is the cathode-ray tube. This year we improved our CRT production in several respects.

Conversion of tube funnels continued, from purchased glass to Tektronix-made ceramic. All funnels for our new instruments are now ceramic, which offers strength, economy, light

weight and safety; enables flexibility and speed of tube design, and frees us from dependence on glass-funnel suppliers.

This year we improved our ability to rework funnels rejected during the manufacturing process. Our recovery rate has nearly doubled.

Another gain has been improved delivery of CRTs to our scope-assembly areas. We are now in an inventory-building position on almost all regular production tubes; this means the occasional bottlenecks caused by tubes not being ready should be a thing of the past.

**"U**ntouched by human hands" is a phrase that fits more assembly and testing processes each year.

Viewed over just a handful of years, the change from manual to automated and mechanized manufacture has been truly revolutionary. In any given year the changes may appear less dramatic.

The big factors are increased use of com-



puters, plus a combination of etched-circuit boards and numerically controlled machinery. This NC gear, fed by computer-produced tapes, automatically punches, drills, mills, inserts components and performs complex testing of parts, subassemblies and entire instruments. Our use of such innovative equipment—much of it Tektronix-made—grew this year, as it must in any year.

### Buildings

To last year's total of 1,800,000 square feet of buildings owned or occupied, Tektronix this year added another one-sixth, bringing that figure to 2,081,000.

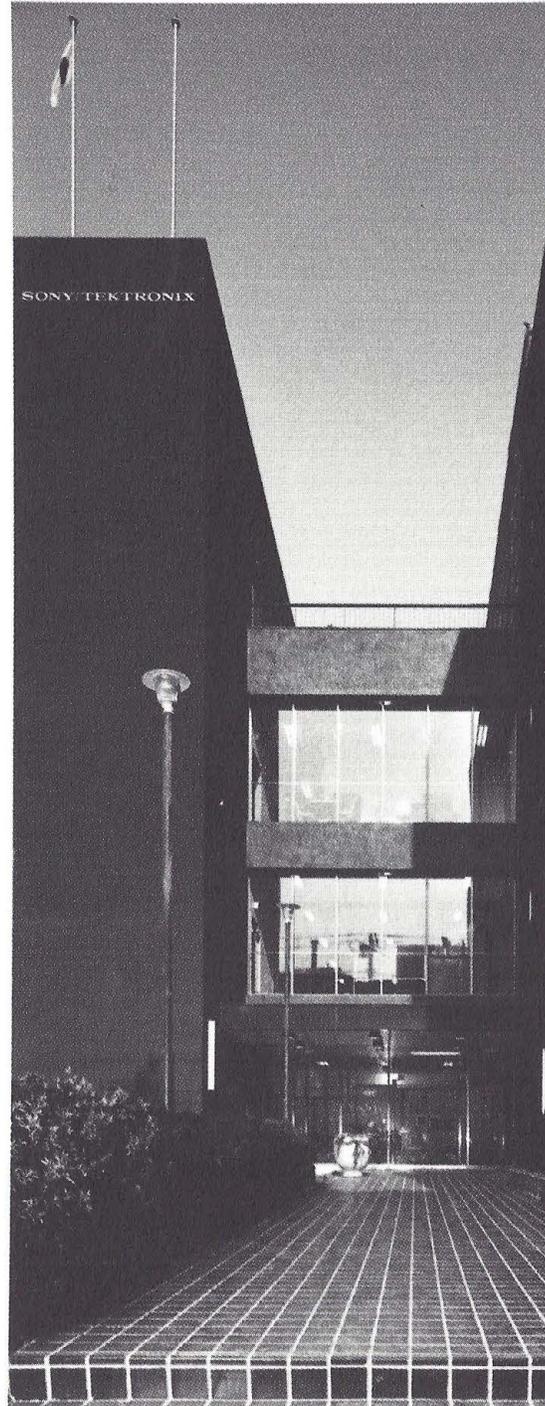
This real estate—comprising 38 buildings owned and 96 leased (all or in part)—represents a very large investment. This year's substantial additions were made partly to provide specialized facilities required for our new products, and partly to house what looked, as the year began, to be a substantial increase in employee numbers.

The major structure occupied was our 131,500-square-foot Electron Devices building, in January. Also made during the year were substantial additions to our Electrochemistry, Ceramics, Sunset West and Utilities buildings.

With our employee growth rate falling below last year's forecast, we're in excellent shape as far as space at Beaverton is concerned. No major construction is planned in the year ahead. We have postponed completion of our 200,000-square-foot Mechanical Products building.

Internationally, SONY/Tektronix moved into a 40,000-square-foot building of its own in Tokyo; Tektronix Canada occupied a new office in Montreal; and Tektronix Holland moved into its 30,000-square-foot addition. This year Tektronix U.K. expanded into larger premises at Harpenden, near London.

*SONY/TEKTRONIX' first home of its own is this 40,000-square-foot building in Tokyo, occupied in Fall of 1969.*



### Employment

At year's end, 9,857 people worked for Tektronix, compared with 8,752 at its beginning. International employment grew from 1,710 to 1,861, and that in the United States grew from 7,042 to 7,996.

Although scaled down in our general cost reduction, programs continued aimed at problems of the disadvantaged. Minority employment remains at about last year's level—5 per cent—roughly proportional to the Portland area population.

Our cooperative program with local high schools goes on, whereby youngsters attend class half-days and work here half-days. This program has not only helped some students complete their secondary education but also given them a closer acquaintance with the workday world, enhancing their chances for permanent employment.

We aren't hiring anybody right now. So, our minority programs at present are aiming at upgrading employee skills and helping improve chances for job advancement within the company.

In a related area, Tektronix in May was selected from 50 US businesses to receive Modern Manufacturing magazine's Award of Honor for our programs providing job opportunities and facilities for the handicapped.

It's important to remember that the above kinds of programs are not extraordinary ones, but have always been part of the general course of business at Tektronix. We learned long ago that it is self-defeating to ignore any potential source of ability.

## TODAY: Where We Stand

In the several dozen interviews with Tektronix managers on which this report is based, two things stood out.

One is that the past year was, as someone said, sort of like a graham cracker. That is, despite the good in it, you can't really get too enthusiastic about it.

The other is that, by contrast, we're moving into the coming year with determination and confidence—and a new enthusiasm.

That enthusiasm doesn't depend on a rose-colored crystal ball, either. Certainly the year ahead will be tough. National and international affairs—which profoundly affect far more than the fortunes of any one business—seem as complex, trouble-ridden and unpredictable as ever.

Looking at the US economic situation today, we aren't counting on any dramatic upsurge. If it should occur, so much the better. What we *do* intend in the year to come is to be able to operate, if need be, within a less-than-dynamic economy—and to do so vigorously and profitably.

In a report that has tried to deal candidly with the problems we've faced, it seems appropriate to conclude with a summary of the assets we can count on:

*The oscilloscope is not a luxury item.* It is a necessity, and a necessity in a very wide variety of endeavors. If technological (read that: *human*) progress is to continue, the tools that make it possible must be obtained and put to use. We look on the sales that weren't made this year as business deferred, not lost.

*We have a strong new organization.* It will bring significant new products to the market, in greater numbers, and faster.

*Response to our new products has been strong.* This has been true even among small customers, showing their confidence that our

instruments continue to represent an excellent long-term value.

*Some very big expenses are behind us.* The start-up costs of new-generation development—including engineering, facilities, equipment, training and transition into production—have already been incurred. As the sales curve grows steeper, we will increasingly realize the returns from these large investments. Also, the accumulated new-gen technology is something we don't have to pay for again; it will let us greatly expand that product line, without undue additional developmental cost.

*We're growing leaner.* Cost-reduction moves already made have saved millions of dollars. These and others will continue to be reflected in our profit-and-loss statements.

*Manufacturing will become more efficient.* Higher-volume production increases familiarity with the processes, and thus means lowered costs.

*We're in good shape as to facilities.* For the

first time in many years, we don't need to build any buildings.

*We have no liquidity problems,* such as have plagued so many businesses this year. Our line of credit is adequate for our needs.

*Most important of all: We have an excellent crew.* The men and women of Tektronix represent the world's most impressive assemblage of oscilloscope expertise. They have pride in their skills, and the proven ability to grow and change. Through profit-sharing, they're kept continuously aware when there is need to do better. Through informal open communications, and in an organization that places maximum responsibility on the individual, their personal ability to influence the company is great.

This year has been one of problems; next year will undoubtedly bring others. But we have nearly 10,000 skilled and dedicated people working on solutions. Therein lies the real strength of your company, and the basis for the confidence we've expressed in this report.



## A NOTE: On Some Expense Reclassifications

During the past three years, our investment in "new-generation" instruments has been substantial.

These instruments not only utilized advanced concepts in design but also called for new, innovative manufacturing and testing processes. Development of these activities resulted in many shifts in reporting responsibilities.

In our company, so gradual is the transition from design into production, and so complex are the technical interrelationships, that it's *never* been easy to say whether certain activities are "engineering" or "production" or what. So, during the recent reporting shifts, costs of some borderline functions became identified with engineering and administration rather than manufacturing.

As a result, our manufacturing cost of sales looked suspiciously good, considering the start-up costs and the addition of so many inexperienced employees. On the other hand, administration and engineering seemed to be showing unreasonable growth.

During the year, management examined and evaluated these shifts and reclassified them, to better evaluate the performance of the various operating areas. The magnitude of those changes in the restated figures for fiscal 1968 and 1969 is shown in Note 8 to the financial statements. Restated figures for each quarter of fiscal 1970 are depicted on this page.

Bear in mind that these changes have no effect on company earnings, or taxation—or *any* external figures, as reported in our financial statement. They are merely internal adjustments, made to help us more effectively evaluate how well we're doing. Also, the amounts shown for engineering, selling, etc. are low because they do not include employee profit sharing. That is stated separately.

(THOUSANDS) Unaudited					
12 Weeks Ended Aug. 23, 1969	12 Weeks Ended Nov. 15, 1969	16 Weeks Ended March 7, 1970	12 Weeks Ended May 30, 1970		
35,011	40,802	49,294	40,098		<b>NET SALES</b>
18,564	21,202	26,411	17,650		<b>MANUFACTURING COST OF SALES</b>
16,447	19,600	22,883	22,448		<b>GROSS PROFIT</b>
11,625	13,116	16,735	15,158		<b>EXPENSES</b>
2,993	3,238	4,463	3,861		Selling
3,129	3,417	4,902	3,936		Engineering
2,730	3,061	4,109	3,310		Administration
55	103	241	281		Interest Expense
157	(170)	(207)	(119)		Non-Operating (Income) Expense
2,561	3,467	3,227	3,889		Employee Profit Share
4,822	6,484	6,148	7,290		<b>INCOME BEFORE INCOME TAXES</b>
2,136	2,884	2,254	3,216		<b>PROVISION FOR INCOME TAXES</b>
2,686	3,600	3,894	4,074		<b>EARNINGS</b>
33.2¢	44.4¢	48.1¢	50.2¢		<b>EARNINGS PER SHARE</b>

# Tektronix Consolidated Resources Provided and Applied

The accounting year is the 52 or 53 weeks ending the last Saturday in May. 1969 was 53 weeks long.

(THOUSANDS)

1968	1969	1970
<b>\$18,422</b>	<b>\$20,419</b>	<b>\$20,402</b>
13,429	14,089	14,254
3,436	3,823	4,823
470	447	418
620	1,634	187
—	199	515
127	179	205
123	48	—
217	—	—
<b>7,329</b>	<b>13,565</b>	<b>18,186</b>
6,464	11,861	16,770
565	464	47
25	327	75
275	155	1,095
—	758	—
—	—	199
<b>11,093</b>	<b>6,854</b>	<b>2,216</b>
39,694	50,787	57,641
<b>50,787</b>	<b>57,641</b>	<b>59,857</b>

This statement summarizes the origins of additions to resources—the assets used in the business to which a monetary amount can be applied—and tells how the company used them.

## THESE (additional) RESOURCES BECAME AVAILABLE FROM:

**EARNINGS** Net income after income taxes as shown on EARNINGS STATEMENT.

**DEPRECIATION OF FACILITIES** The amounts deducted from net sales representing the decrease in value of buildings, machinery and furniture resulting from use, wear and age. These did not involve payments to outsiders, and most were computed by the sum-of-years-digits method.

**AMORTIZATION OF INTANGIBLE ASSETS** The amounts deducted from net sales representing the write-off of costs of intangible assets, which also did not involve payments to outsiders.

**DISPOSITION OF TREASURY SHARES** Net proceeds from sale of Tektronix, Inc. treasury shares to employees exercising stock options or as part of our employee share purchase plan and value of shares used in 1968 to complete acquisition of Pentrix Corporation.

**ISSUANCE OF COMMON SHARES** Net proceeds from sale of Tektronix, Inc. unissued shares to employees exercising stock options after the supply of treasury shares was depleted.

**RECOVERY OF COST ON SALES OF FACILITIES** That part of the proceeds from sales of machinery and equipment no longer needed by the company, equivalent to the depreciated cost.

**OWNERS OF MINORITY INTEREST IN SHAREOWNERS' EQUITY OF SUBSIDIARY** Portion of shareowners' equity in subsidiary plus corresponding earnings of that subsidiary not purchased by Tektronix, Inc. until 1969.

**LONG-TERM INDEBTEDNESS INCURRED** Amount borrowed from a Swiss bank.

## THESE RESOURCES WERE USED FOR:

**ADDITIONS TO FACILITIES** Cost of land, buildings, machinery and furniture purchased or constructed.

**REDUCTION OF LONG-TERM INDEBTEDNESS** Amounts becoming current liabilities due within one year.

**INTANGIBLE ASSETS** Amounts paid in excess of values ascribed to the net tangible assets of the companies acquired (goodwill).

**INVESTMENTS** Long-term receivables, advances to 50% owned SONY/Tektronix Corporation and one half its earnings.

**PURCHASE OF MINORITY INTEREST** The book value of that portion of shareowners' equity in a subsidiary purchased by Tektronix, Inc. in 1969.

**PURCHASE OF TREASURY SHARES** Cost of Tektronix, Inc. common shares acquired by company.

**RESULTING INCREASE IN WORKING CAPITAL** Added to

**WORKING CAPITAL AT BEGINNING OF PERIOD** Results in

**WORKING CAPITAL AT END OF PERIOD** As shown on FINANCIAL CONDITION STATEMENT.

## EXPLANATION OF FINANCIAL STATEMENTS

Corporate performance and strength are usually measured by financial figures, although they only tell part of the story. It is hoped the explanation included as part of the financial statements will assist shareowners unfamiliar with financial analyses to a better understanding of Tektronix.

*Performance* is usually presented on the earnings statement, which shows how much of the revenue, mostly from sales, can be kept by the company after paying the costs of goods sold and the expenses of running the business.

*Strength* is pictured by the financial condition statement, which shows the cost of the assets or resources used in the business and tells what part of them is owned by the shareowners and what part owed to creditors.

Another statement called Resources Provided and Applied shows the

connection between the other two statements. Note that the first item on the resources statement is the earnings shown on the earnings statement. The last item is the working capital shown on the financial condition statement.

To best adapt to conditions outside the United States, Tektronix operates in Japan through a non-consolidated 50% owned company, and elsewhere through wholly-owned subsidiary corporations. However, a meaningful financial picture of Tektronix is gained only by consolidated figures.

The figures on the financial statements are rounded to the nearest thousand dollars.

We hope these explanations will contribute to better understanding, and lead to further clarification.

# Tektronix Consolidated Earnings and Reinvested Earnings

The accounting year is the 52 or 53 weeks ending the last Saturday in May. 1969 was 53 weeks long.

(THOUSANDS)

1968	1969	1970
\$133,656	\$148,857	\$165,205
63,052	74,470	83,827
70,604	74,387	81,378
45,432	49,407	56,293
10,713	12,267	14,555
11,827	13,032	15,384
9,350	10,748	13,210
13,542	13,360	13,144
25,172	24,980	25,085
70	(347)	341
(174)	(169)	(163)
29	194	680
215	(372)	(176)
25,102	25,327	24,744
11,550	11,190	10,490
8,802	8,155	7,451
800	850	825
1,948	2,185	2,214
13,552	14,137	14,254
123	48	—
13,429	14,089	14,254
64,174	77,603	91,346
	(346)	(19)
	91,346	105,581
7,998	8,094	8,108
\$1.68	\$1.75	\$1.76

**NET SALES** Amounts receivable for products sold. Tektronix sold directly to customers at retail in the U. S., Canada, U.K., Australia, Switzerland, France and Denmark, and to distributors (including 50% owned SONY/Tektronix Corporation in Japan) at a discount, for resale in most of the rest of the world. From NET SALES are deducted

**MANUFACTURING COST OF SALES** (Note 8) The cost of materials used in the products sold. Also, the payroll costs of the employees who fabricated and assembled them, their supervisors, those who assisted them, those who devise improved manufacturing methods and those who design and make tools and equipment. Also, the expense of running the manufacturing operations, leaving

**GROSS PROFIT** From which must be deducted

**OPERATING EXPENSE AND PROFIT SHARING**

**SELLING** Comprising payroll of field engineers and employees who assist them, commissions to some marketing representatives, advertising, travel, rent of offices, and the other expenses of marketing.

**ENGINEERING** (Note 8) Payroll of engineers, creators and those who help them design and develop new products and the components to be assembled into them; improve existing products; and assure that new product designs provide "buildability" by the improved methods. The expenditure includes cost of materials, supplies, space and related expenses.

**ADMINISTRATIVE** (Note 8) Including payroll of executives and personnel working on accounting, employment, data processing, facilities and communications functions, and the many expenses related to them.

**PROFIT SHARING** (Note 3) Which acts as an incentive for employees' performance by rewarding them with 35% of the profits they are responsible for generating, leaving

**OPERATING INCOME** Which is (increased) or decreased by non-operating items

**NON-OPERATING EXPENSE (INCOME)**

**GAIN ON DISPOSITION OF FACILITIES** Amount in excess of depreciated cost recovered from sale of machinery and equipment no longer needed.

**INTEREST EXPENSE** Cost of borrowed money.

**OTHER** Including interest income, royalties, amortization of intangibles, and one half the earnings of 50% owned SONY/Tektronix Corporation, leaving

**INCOME BEFORE INCOME TAXES** From which is deducted

**PROVISION FOR INCOME TAXES** Estimated income taxes of Tektronix, Inc. to be paid to the United States and some twenty state governments, plus estimated income taxes to be paid other countries, related to the taxable income of each subsidiary. The provision for U. S. income taxes is sufficient to cover any U. S. income taxes on dividends that we may be required to repatriate from subsidiaries by the Direct Foreign Investment Regulations (Note 1). Deduction of income taxes resulted in

**INCOME BEFORE MINORITY INTEREST** From which is deducted

**MINORITY INTEREST** Share of earnings of one marketing subsidiary corresponding to portion of its equity not purchased by Tektronix, Inc. until 1969, leaving

**EARNINGS** The measure of company performance—the amount reinvested in expansion of business.

**REINVESTED EARNINGS AT BEGINNING OF YEAR** From which is deducted

**COST OF TREASURY SHARES IN EXCESS OF PROCEEDS FROM SALE**

**REINVESTED EARNINGS AT END OF YEAR**

**COMMON SHARES OUTSTANDING AT END OF YEAR**

**EARNINGS PER COMMON SHARE** Earnings for the year divided by the average number of common shares outstanding during the year. Dilution if all outstanding share options were exercised would not have reduced primary earnings more than one cent.

The accompanying notes are an integral part of these financial statements.

# Tektronix Consolidated Financial Condition

(THOUSANDS)

May 25, 1968	May 31, 1969	May 30, 1970
<b>\$72,626</b>	<b>\$84,313</b>	<b>\$98,430</b>
1,635	988	3,661
11,879	11,232	4,318
22,742	27,223	28,668
(130)	(150)	(149)
1,518	3,989	3,673
901	1,004	1,208
34,081	40,027	57,051
6,849	7,613	11,270
16,375	19,227	27,583
10,857	13,187	18,198
<b>21,839</b>	<b>26,672</b>	<b>38,573</b>
—	2,951	13,500
171	26	26
5,010	6,248	6,296
5,902	5,771	6,299
6,356	6,378	6,415
2,746	3,266	3,643
1,405	1,620	1,926
249	412	468
<b>50,787</b>	<b>57,641</b>	<b>59,857</b>
<b>28,332</b>	<b>36,195</b>	<b>48,185</b>
29,447	31,310	42,962
14,944	18,816	24,644
186	178	186
(18,836)	(22,183)	(26,565)
1,407	1,569	1,870
1,184	6,505	5,088
<b>2,888</b>	<b>2,768</b>	<b>2,426</b>
<b>1,116</b>	<b>1,268</b>	<b>2,114</b>
<b>817</b>	<b>353</b>	<b>306</b>
<b>709</b>	<b>—</b>	<b>—</b>
<b>81,597</b>	<b>97,519</b>	<b>112,276</b>
5,997	6,196	6,711
(2,003)	(23)	(16)
77,603	91,346	105,581

**CURRENT ASSETS** Those assets likely to be converted to cash or used in the ordinary operation of the business, made up of:

**CASH** Mostly in checking accounts or deposits in transit.

**CASH EARNING INTEREST** Invested in savings accounts, certificates of deposit, U. S. treasury bills, prime commercial paper or short term tax exempt securities.

**ACCOUNTS RECEIVABLE** Amounts due from customers for sales on credit.

**ALLOWANCE FOR DOUBTFUL ACCOUNTS** Estimate of erosion in value of accounts receivable because a few customers may not pay us.

**PREPAID EXPENSES AND DEPOSITS** Amounts paid for things that will not be used and deducted until the following year, and deposits that will be refunded.

**SUPPLIES** Items that will be consumed in operating offices, maintaining facilities and running manufacturing plants.

**INVENTORIES, AT LOWER OF COST (FIRST-IN, FIRST-OUT) OR MARKET** The cost of products finished consisting of: but not yet sold; purchased materials and parts to be fabricated and assembled into products; and the materials, payroll costs and other costs accumulated in the process of manufacturing products not yet completed.

**CURRENT LIABILITIES** Obligations due to be paid within one year, including:

**NOTES PAYABLE** Amounts borrowed for less than one year.

**CURRENT PORTION OF LONG-TERM INDEBTEDNESS (Note 2)** Installment payments due within one year.

**ACCOUNTS PAYABLE** Amounts due suppliers for materials and services bought on credit.

**U.S., STATE AND FOREIGN INCOME TAXES** Taxes not yet paid.

**EMPLOYEE PROFIT SHARING (Note 3)** Due employees and their retirement funds.

**PAYROLL AND PAYROLL TAXES** Amounts due employees next payday, and taxes due on or withheld from pay.

**VACATIONS** Amounts earned by employees for their vacations, but not yet used or paid.

**INTEREST AND MISCELLANEOUS TAXES** Sales taxes collected and interest not yet paid.

**WORKING CAPITAL** Current Assets minus Current Liabilities.

**FACILITIES AT DEPRECIATED COST (Notes 2 and 6)** The cost of buildings and equipment used in the business, reduced by depreciation.

**BUILDINGS AND GROUNDS** Cost of buildings, including parking lots and landscaping.

**MACHINERY AND FURNITURE** Cost of furnishings.

**LEASEHOLD IMPROVEMENTS** Cost of remodeling rented space.

**ACCUMULATED DEPRECIATION (Note 7)** Reduction of value for use, wear and age which has been claimed as an expense of doing business, mostly computed by accelerated depreciation methods.

**LAND** Cost of land used in business.

**CONSTRUCTION IN PROGRESS** Costs on invoices received before completion of buildings.

**INTANGIBLE ASSETS** Amounts not yet deducted (amortized) as a cost of doing business for the excess paid over the values ascribed to the net tangible assets of the companies acquired. These amounts are frequently called goodwill.

**INVESTMENTS AND LONG-TERM RECEIVABLES** The investment in and advances to 50% owned SONY/Tektronix Corporation and one half its reinvested earnings. Also included are installments of sale and lease contracts receivable due after one year.

**LONG-TERM INDEBTEDNESS LESS CURRENT PORTION (Note 2)** The unpaid portion minus payments due within one year of amounts borrowed for more than one year.

**MINORITY INTEREST IN SHAREOWNERS' EQUITY OF SUBSIDIARY** Portion of shareowners' equity of one subsidiary not purchased by Tektronix, Inc. until 1969.

**SHAREOWNERS' EQUITY (Notes 4 and 5)** The net assets or book value owned by shareowners. This is equal to the total assets (above) minus the total liabilities (current liabilities and long-term indebtedness) and minority interest. Shareowners' equity is made up of:

**COMMON SHARES** The amount the company received for issuance of common shares.

**TREASURY SHARES** The cost of Tektronix, Inc. common shares repurchased by the company and held in the company treasury.

**REINVESTED EARNINGS** The accumulation of earnings that has been reinvested in the business.

# Notes to Financial Statements, May 30, 1970: Tektronix, Inc. and Subsidiaries

## NOTE 1. PRINCIPLES OF CONSOLIDATION AND INVESTMENT IN SUBSIDIARIES:

The consolidated financial statements include all of the Company's subsidiaries (all wholly-owned) operating in Canada, United Kingdom, Channel Island of Guernsey, The Netherlands, Switzerland, Australia, France, and Denmark. The accounts of Tektronix A/S (Denmark) and Tektronix Datatek N.V. (The Netherlands), organized during the year ended May 30, 1970, are included in the consolidated financial statements since dates of organization.

All significant intercompany transactions have been eliminated in the consolidated financial statements.

Translation of foreign currencies to United States dollars has been made at the rates of exchange in effect at May 30, 1970, except that real property and depreciable personal property in France and the British pound sterling area have been translated at the rates in effect at the dates of acquisition. Such translation resulted in no material unrealized gains or losses.

The equity of the Company in the net assets of consolidated subsidiaries (after eliminating \$904,858 of intangibles carried on the balance sheet of Relations Techniques Intercontinentales) exceeded the cost of the Company's investment by \$22,442,212 at May 30, 1970. This amount is included in the statement of consolidated financial condition as follows:

Consolidated reinvested earnings .....	\$23,036,228
Intercompany profit eliminated in consolidation .....	1,731,965
Excess of cost of investment in subsidiaries over equity in net assets at dates of acquisition (being amortized over periods ranging from approximately 7 to 10 years) .....	(2,325,981)
Total .....	<u>\$22,442,212</u>

The assets and liabilities of the subsidiaries (translated at appropriate rates of exchange) included in the statement of consolidated financial condition at May 30, 1970 are: current assets, \$30,040,661; property-net, \$7,801,869; intangible assets, \$1,889,066; investments, \$107,401; current liabilities, \$5,646,287; and long-term indebtedness, \$306,040. The Company's equity in the net income of the subsidiaries for the year ended May 30, 1970 was \$6,061,554.

The Company and SONY Corporation each own fifty percent of SONY/Tektronix Corporation. This investment is stated at cost plus equity in undistributed earnings since date of organization. The Company's share of the net assets at May 30, 1970 was \$843,969 which includes \$139,334 capital, \$394,326 earnings for year ended May 30, 1970 and \$310,309 prior years' earnings.

It is anticipated that the reinvested earnings of foreign subsidiaries, except to the extent that repatriation is required under Direct Foreign Investment

Regulations promulgated by the United States Department of Commerce, will be employed in their operations. The provision for income taxes for the year ended May 30, 1970 is sufficient to cover any U. S. income taxes expected to accrue by reason of required repatriation of foreign earnings to May 30, 1970 under such Regulations. Pursuant to Subpart F of the Internal Revenue Code, provision has been made for U. S. income taxes on approximately \$1,000,000 of undistributed foreign income, of which approximately \$400,000 applies to the year ended May 30, 1970.

## NOTE 2. LONG-TERM INDEBTEDNESS:

Long-term indebtedness at May 30, 1970 consists of a 4½ % note (original amount \$528,200) payable to the City of Heerenveen, The Netherlands, which is payable in annual installments of \$26,410. Facilities which cost \$1,300,000 are pledged as collateral.

## NOTE 3. EMPLOYEE PROFIT-SHARING:

Under the terms of the Company's profit-sharing plan, 35% of income before income taxes, profit-sharing, and charitable contributions is provided for employee profit-sharing.

## NOTE 4. SHAREOWNERS' EQUITY:

Authorized capital consists of 20,000,000 common shares without par value. At May 30, 1970, 8,108,285 shares were issued, 320 shares were held in the treasury, and 8,107,965 shares were outstanding.

## NOTE 5. EMPLOYEE STOCK OPTION AND SHARE PURCHASE PLANS:

Under stock option plans for employees, in which the options are "qualified stock options" as defined by the Internal Revenue Code, 430,117 common shares of the Company are reserved. The plans provide that the option price shall be not less than 100% of the fair market value of the shares on the date of grant and that the options are exercisable in four (or fewer, where the option period is less than five years) cumulative annual installments beginning one year after the date of grant.

At May 30, 1970, options to purchase 332,152 shares were outstanding for which the option price, ranging from \$27.45 to \$58.20 per share, amounted to \$14,372,313, and options to purchase 64,452 shares were exercisable for which the option price amounted to \$2,750,221. During the year then ended, options which became exercisable and options exercised were as follows:

	<i>Options</i>	
	<i>Which Became Exercisable</i>	<i>Which Were Exercised</i>
Number of Shares .....	<u>42,230</u>	<u>13,720</u>
Option price:		
Range per share .....	\$27.45 to \$58.20	\$31.10 to \$58.20
Total .....	\$1,870,796	\$514,847
Market value at date exercisable or exercised:		
Range per share .....	\$45.10 to \$73.20	\$47.45 to \$73.20
Total .....	<u>\$2,561,238</u>	<u>\$870,382</u>

Under an "Employee Share Purchase Plan" 185,404 common shares of the Company are reserved. The share purchase discount provided in the plan (which may not exceed 15% of market value on the date of purchase), amounting to \$6,261 for the year ended May 30, 1970 has been charged against income.

**NOTE 6. COMMITMENTS AND CONTINGENT LIABILITIES:**

The companies are committed to pay aggregate rentals of approximately \$1,985,000 on building leases expiring from June 1970 to June 1985. Rentals under these leases for the year ending May 29, 1971 will be approximately \$490,000.

In connection with the expansion of facilities, the companies were committed under contracts and purchase orders in the amount of approximately \$1,340,000.

**NOTE 7. PROPERTY AND EQUIPMENT:**

Depreciation has been provided on buildings and grounds and machinery and equipment generally on the sum-of-the-years-digits method based on estimated useful lives of the properties. Estimated useful lives of buildings and grounds vary from 10 to 40 years and estimated useful lives of machinery and equipment vary from 5 to 15 years.

Leasehold improvements have been amortized on the straight-line basis over the periods of the leases.

**NOTE 8. CLASSIFICATION OF COSTS AND EXPENSES:**

Manufacturing cost of sales, engineering, and administrative expenses for 1969 and 1968 have been restated to conform to changes in classification adopted in 1970, as explained on page 20. The restatement reduced engineering expense by \$3,263,377 and \$538,517, reduced administrative expense by \$2,595,369 and \$2,183,755, and increased manufacturing cost of sales by \$5,858,746 and \$2,722,271 for the years 1969 and 1968, respectively. This restatement had no effect on earnings for these years.

**ACCOUNTANTS' OPINION**

TEKTRONIX, INC.:

We have examined the statement of consolidated financial condition of Tektronix, Inc. and subsidiaries as of May 30, 1970 and the related statement of consolidated earnings and reinvested earnings and of consolidated resources provided and applied for the year then ended. Our examination was made in accordance with generally accepted auditing standards, and accordingly included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances.

In our opinion, the accompanying statements present fairly the financial position of the companies as of May 30, 1970 and the results of their operations and the resources provided and applied for the year then ended, in conformity with generally accepted accounting principles applied on a basis consistent with that of the preceding year.



Portland, Oregon  
July 16, 1970

# Tektronix Consolidated Financial Statistics

(DOLLARS, SHARES AND SQUARE FEET IN THOUSANDS)

1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	Fiscal Year ending in May
<b>50,278</b>	<b>60,136</b>	<b>70,451</b>	<b>75,503</b>	<b>81,099</b>	<b>101,759</b>	<b>129,031</b>	<b>133,656</b>	<b>148,857</b>	<b>165,205</b>	<b>NET SALES</b>
<b>4,909</b>	<b>4,607</b>	<b>5,771</b>	<b>6,308</b>	<b>7,319</b>	<b>11,052</b>	<b>13,389</b>	<b>13,429</b>	<b>14,089</b>	<b>14,254</b>	<b>EARNINGS</b>
62¢	58¢	72¢	78¢	91¢	\$1.38	\$1.68	\$1.68	\$1.75	\$1.76	Per Share
9.8%	7.7%	8.2%	8.4%	9.0%	10.9%	10.4%	10.0%	9.5%	8.6%	% of Sales
31.7%	22.7%	23.3%	20.7%	19.1%	25.0%	24.4%	19.9%	17.3%	14.6%	% of Beginning of Year Shareowners' Equity
<b>6,098</b>	<b>6,390</b>	<b>7,981</b>	<b>8,636</b>	<b>9,718</b>	<b>13,589</b>	<b>16,577</b>	<b>17,335</b>	<b>18,359</b>	<b>19,495</b>	<b>CASH FLOW</b>
<b>10,448</b>	<b>9,787</b>	<b>11,433</b>	<b>12,200</b>	<b>13,566</b>	<b>19,602</b>	<b>25,179</b>	<b>25,102</b>	<b>25,327</b>	<b>24,744</b>	<b>INCOME BEFORE INCOME TAXES</b>
20.8%	16.3%	16.2%	16.2%	16.7%	19.3%	19.5%	18.8%	17.0%	15.0%	% of Sales
53.0%	52.9%	49.5%	48.3%	46.0%	43.6%	46.6%	46.0%	44.2%	42.4%	Income Tax Rate
<b>16,520</b>	<b>21,978</b>	<b>26,143</b>	<b>26,146</b>	<b>26,018</b>	<b>32,489</b>	<b>38,192</b>	<b>41,356</b>	<b>48,686</b>	<b>59,515</b>	<b>PAYROLL BEFORE PROFIT SHARE</b>
<b>5,889</b>	<b>5,179</b>	<b>6,488</b>	<b>6,509</b>	<b>7,553</b>	<b>10,810</b>	<b>13,744</b>	<b>13,542</b>	<b>13,360</b>	<b>13,144</b>	<b>EMPLOYEE PROFIT SHARE</b>
<b>355</b>	<b>507</b>	<b>496</b>	<b>485</b>	<b>289</b>	<b>61</b>	<b>192</b>	<b>29</b>	<b>194</b>	<b>680</b>	<b>INTEREST EXPENSE</b>
867	1,092	1,144	1,185	1,198	1,436	1,588	1,698	1,800	2,081	Facilities in Use at Year End in Square Feet
<b>17,970</b>	<b>22,139</b>	<b>24,623</b>	<b>27,123</b>	<b>30,712</b>	<b>35,781</b>	<b>41,157</b>	<b>47,168</b>	<b>58,378</b>	<b>74,750</b>	<b>COST OF FACILITIES</b>
<b>6,486</b>	<b>4,600</b>	<b>2,749</b>	<b>3,043</b>	<b>3,910</b>	<b>5,705</b>	<b>5,803</b>	<b>6,464</b>	<b>11,861</b>	<b>16,770</b>	<b>INVESTED IN FACILITIES</b>
<b>1,189</b>	<b>1,783</b>	<b>2,194</b>	<b>2,301</b>	<b>2,342</b>	<b>2,456</b>	<b>2,991</b>	<b>3,436</b>	<b>3,823</b>	<b>4,823</b>	<b>FACILITIES DEPRECIATION</b> (mostly accelerated)
<b>3,426</b>	<b>4,913</b>	<b>7,009</b>	<b>9,031</b>	<b>11,196</b>	<b>13,061</b>	<b>15,724</b>	<b>18,836</b>	<b>22,183</b>	<b>26,565</b>	<b>ACCUMULATED DEPRECIATION</b>
<b>37,384</b>	<b>45,627</b>	<b>51,329</b>	<b>55,322</b>	<b>59,147</b>	<b>76,116</b>	<b>92,720</b>	<b>104,962</b>	<b>124,544</b>	<b>151,155</b>	<b>TOTAL ASSETS</b>
<b>6,436</b>	<b>8,401</b>	<b>8,958</b>	<b>10,801</b>	<b>12,679</b>	<b>17,053</b>	<b>21,557</b>	<b>22,612</b>	<b>27,073</b>	<b>28,519</b>	<b>ACCOUNTS RECEIVABLE NET</b>
<b>15,228</b>	<b>17,208</b>	<b>21,033</b>	<b>20,430</b>	<b>19,678</b>	<b>28,473</b>	<b>34,150</b>	<b>34,982</b>	<b>41,031</b>	<b>58,259</b>	<b>INVENTORY</b> (Including supplies)
<b>22,404</b>	<b>27,995</b>	<b>33,318</b>	<b>36,857</b>	<b>39,064</b>	<b>52,781</b>	<b>62,952</b>	<b>72,626</b>	<b>84,313</b>	<b>98,430</b>	<b>CURRENT ASSETS</b>
<b>13,075</b>	<b>16,683</b>	<b>14,138</b>	<b>12,762</b>	<b>14,397</b>	<b>20,864</b>	<b>23,258</b>	<b>21,839</b>	<b>26,672</b>	<b>38,573</b>	<b>CURRENT LIABILITIES</b>
<b>9,329</b>	<b>11,312</b>	<b>19,180</b>	<b>24,095</b>	<b>24,667</b>	<b>31,917</b>	<b>39,694</b>	<b>50,787</b>	<b>57,641</b>	<b>59,857</b>	<b>WORKING CAPITAL</b>
<b>4,000</b>	<b>4,528</b>	<b>7,128</b>	<b>4,728</b>	<b>501</b>	<b>458</b>	<b>2,077</b>	<b>988</b>	<b>379</b>	<b>332</b>	<b>LONG-TERM INDEBTEDNESS</b> (Including current portion)
7,980	7,980	7,980	8,073	8,008	7,984	7,970	7,998	8,094	8,108	Common Shares Outstanding
<b>20,309</b>	<b>24,815</b>	<b>30,463</b>	<b>38,258</b>	<b>44,275</b>	<b>54,819</b>	<b>67,548</b>	<b>81,597</b>	<b>97,519</b>	<b>112,276</b>	<b>SHAREOWNERS' EQUITY</b>
<b>3,990</b>	<b>3,990</b>	<b>3,990</b>	<b>5,844</b>	<b>5,997</b>	<b>5,997</b>	<b>5,997</b>	<b>5,997</b>	<b>6,196</b>	<b>6,711</b>	<b>COMMON SHARE CAPITAL</b>
<b>16,319</b>	<b>20,825</b>	<b>26,473</b>	<b>32,414</b>	<b>39,733</b>	<b>50,785</b>	<b>64,174</b>	<b>77,603</b>	<b>91,346</b>	<b>105,581</b>	<b>REINVESTED EARNINGS</b>
4,330	5,285	5,430	4,910	4,982	6,482	7,270	7,852	8,752	9,857	Number of Employees at Year End

Statistics for years prior to fiscal 1961 were included in the 1964 annual report.

# Directors, Officers and Management

## BOARD OF DIRECTORS

M. J. MURDOCK, *Chairman of the Board*  
JAMES B. CASTLES, *Secretary & General Counsel*  
WALTER P. DYKE, *President, Field Emission Corporation*  
ROBERT G. FITZGERALD, *Former Executive Vice President*  
HOWARD VOLLUM, *President*  
EARL WANTLAND, *Executive Vice President*  
FRANK M. WARREN, *President, Portland General Electric Company*

## OFFICERS

HOWARD VOLLUM, *President*  
EARL WANTLAND, *Executive Vice President*  
DONALD ALVEY, *Vice President*  
CHARLES L. BOUFFIOU, *Vice President*  
FRANK CONSALVO, *Vice President*  
MICHAEL J. PARK, *Vice President*  
WILLIAM J. POLITTS, *Vice President*  
WILLIAM D. WALKER, *Vice President*  
WILLIAM B. WEBBER, *Vice President*  
JAMES B. CASTLES, *Secretary and General Counsel*  
DON A. ELLIS, *Treasurer*  
ELWELL E. SWANSON, *Controller*  
F. H. NEISSER, *Assistant Secretary*

## FINANCE AND ADMINISTRATION

DON A. ELLIS, *Treasurer*  
ELWELL E. SWANSON, *Controller*  
WILLIAM B. WEBBER, *Vice President, Community Relations*  
FRANK CONSALVO, *Vice President*  
HUGO PANKOW, *Facilities*  
DWAIN QUANDT, *Data Services*  
GUYOT FRAZIER, *Personnel*

## ENGINEERING

WILLIAM D. WALKER, *Vice President*  
LANGDON HEDRICK, *General Instrument Design*  
WILLEM B. VELSINK, *Laboratory Oscilloscope Design*  
JOHN GATES, *Portable and Low Frequency Oscilloscope Design*  
J. LARRY BOWMAN, *Integrated Circuits Design*  
MIKE BRAND, *Operations Planning*  
WALLACE L. BLACKBURN, *Industrial Support*  
WARREN COLLIER, *Modifications and Manuals*  
JESSE GARD, *Reliability and Standards*  
RICHARD NUTE, *Components Evaluation*

## CATHODE-RAY TUBE ENGINEERING AND MANUFACTURING

WILLIAM J. POLITTS, *Vice President*  
ROBERT Z. GUTHRIE, *Cathode-Ray Tube Manufacturing*  
KENNETH F. SPOONER, *Cathode-Ray Tube Preproduction*  
ROBERT A. POULIN, *Integrated Circuit Manufacturing*  
ROBERT S. DUFRESNE, *Ceramics Manufacturing*

## INFORMATION DISPLAY PRODUCTS

LAWRENCE L. MAYHEW, *Manager*  
JOHN BOWNE, *Engineering*  
HOWARD W. MIKESELL, *Manufacturing*

## MANUFACTURING

MICHAEL J. PARK, *Vice President*  
BURTON A. AVERY, *Electrical Components*  
FERDINAND P. BARICEVIC, *Manufacturing Engineering and Support Services*  
SCOTT E. FOSTER, JR., *Purchasing*  
ROSS PORTER, *Instrument Manufacturing*  
THOMAS E. SLY, *Assembly/Metals/Plastics*  
OTTO B. ZACH, *Manufacturing Planning Production Control*

# Tektronix United States Facilities

## U. S. MARKETING

CHARLES L. BOUFFIOU, *Vice President*  
FRANK ELARDO, *Assistant, U. S. Marketing*  
THEODORE BRANDT, *Marketing Manager, Northern and Eastern Regions*  
EDWARD M. VAUGHAN, *Marketing Manager, Western and Southern Regions*

### Region Sales Managers:

GORDON R. ALLISON, *Dallas*  
HAROLD D. BUTTS, *Boston*  
WILLIAM R. CARTER, *Syracuse*  
RALPH F. EBERT, *Chicago*  
DAN V. GUY, *Los Angeles*  
RICHARD K. HERDMAN, *Annapolis*  
WILLIAM F. KLADKE, Jr., *Atlanta*  
ROBERT A. LeBRUN, *Long Island*  
WILLIAM WARD, *San Francisco*

## INTERNATIONAL

DONALD ALVEY, *Vice President*  
LESLIE F. STEVENS, *International Finance*  
FRANK DOYLE, *European Operations*  
LEWIS C. KASCH, *European Marketing*  
RICHARD MONTAG, *European Manufacturing*  
GALE KINGSBURY, *European Finance*

### Managers of Subsidiaries:

ALBERT E. GRAHAM, *Tektronix Limited and Tektronix Guernsey Limited*  
TONY H. BRYAN, *Tektronix Holland N.V.*  
HARRY SELLERS, *Tektronix U.K. Ltd.*  
CHARLES BILLET, *Relations Techniques Intercontinentales, France*  
RAOUL STEFFEN, *Tektronix International A.G., Switzerland*  
EBERHARD von CLEMM, *Tektronix Canada Ltd.*  
ROBERT JAMES YOUNG, *Tektronix Australia Pty. Limited*  
E. D. E. GROOM, *Telequipment, London, England*  
PETER HEJLSBERG, *Tektronix A/S, Denmark*  
STEN ARKSTEDT, *Tektronix AB., Sweden*  
RAMSEY CHAFFEY, *Tektronix Datatek N.V., Holland*

### SONY/Tektronix Corporation, Tokyo, Japan:

MASANOBU TADA, *President*  
TAKASHI KUMAKURA, *Senior Managing Director*

## UNITED STATES

Tektronix, Inc., Beaverton, Oregon—Headquarters and Main Plant

## FIELD OFFICES

Albany, N. Y.	Greensboro, N. C.	Philadelphia, Pa.
Albuquerque, N. M.	Hampton, Va.	Phoenix, Ariz.
Alexandria, Va.	Hartford, Conn.	Pittsburgh, Pa.
Alhambra, Cal.	Hinsdale, Ill.	Portland, Ore.
Atlanta, Ga.	Houston, Texas	Poughkeepsie, N. Y.
Baltimore, Md.	Huntsville, Ala.	Providence, R. I.
Boston, Mass.	Indianapolis, Ind.	Rockville, Md.
Buffalo, N. Y.	Kansas City, Kan.	St. Louis, Mo.
Cherry Hill, N. J.	Lansing, Mich.	St. Paul, Minn.
Chicago, Ill.	Las Vegas, Nev.	Salt Lake City, Utah
Cleveland, Ohio	Long Island, N. Y.	San Antonio, Texas
Columbus, Ohio	Methuen, Mass.	San Diego, Cal.
Concord, Cal.	Milwaukee, Wis.	San Jose, Cal.
Dallas, Texas	Minneapolis, Minn.	Santa Barbara, Cal.
Dayton, Ohio	Oklahoma City, Okla.	Seattle, Wash.
Denver, Colo.	Orange, Cal.	Springfield, N. J.
Detroit, Mich.	Orlando, Fla.	Stamford, Conn.
Endicott, N. Y.	Palo Alto, Cal.	Syracuse, N. Y.
Fort Lauderdale, Fla.	Pensacola, Fla.	Van Nuys, Cal.

## SERVICE CENTERS

Albany, N. Y.	Denver, Colo.	Orlando, Fla.
Albuquerque, N. M.	Detroit, Mich.	Palo Alto, Cal.
Alhambra, Cal.	Endicott, N. Y.	Philadelphia, Pa.
Atlanta, Ga.	Greensboro, N. C.	Rockville, Md.
Baltimore, Md.	Hartford, Conn.	St. Paul, Minn.
Beaverton, Ore.	Houston, Texas	Salt Lake City, Utah
Boston, Mass.	Huntsville, Ala.	San Diego, Cal.
Chicago, Ill.	Indianapolis, Ind.	Springfield, N. J.
Concord, Cal.	Long Island, N. Y.	Syracuse, N. Y.
Dallas, Texas	Orange, Cal.	Van Nuys, Cal.

# Tektronix International Facilities

## MARKETING SUBSIDIARIES

**Australia**—Tektronix Australia Pty. Limited, Sydney, Melbourne and Adelaide;  
**Canada**—Tektronix Canada Ltd., Montreal, Toronto, Ottawa, Calgary and Vancouver;  
**Denmark**—Tektronix A/S, Copenhagen, Denmark;  
**England**—Tektronix U.K. Ltd., Harpenden and London;  
**France**—Relations Techniques Intercontinentales, Paris, Toulouse, Nice, Lyons and Rennes;  
**Japan**—SONY/Tektronix Corporation, Tokyo and Osaka;  
**Sweden**—Tektronix AB., Bromma;  
**Switzerland**—Tektronix International A.G., Zug.

## MARKETING REPRESENTATIVES

**Serviced by Tektronix Limited, Guernsey, Channel Islands**

**Angola**, Equipamentos Tecnicos, Lda., Luanda;  
**Austria**, Inglomark Markowitsch & Co., Vienna;  
**Belgium**, Regulation Mesure, SPRL, Brussels;  
**Finland**, Into O/Y, Helsinki;  
**Greece**, Marios Dalleggio Representations, Athens;  
**Israel**, Eastronics Limited, Tel Aviv;  
**Italy**, Silverstar Ltd., Milan, Rome, Turin;  
**Kenya**, Engineering & Sales Co., Nairobi;  
**Lebanon**, Projects, Beirut;  
**Morocco**, F. Pignal, Casablanca;  
**Mozambique**, Equipamentos Tecnicos, Lda., Mozambique;  
**Norway**, Morgenstjerne & Company A/S, Oslo;  
**Portugal**, Equipamentos de Laboratorio Lda., Lisbon;  
**Republic of South Africa**, Protea Physical & Nuclear Instrumentation (Pty) Ltd., Johannesburg;  
**Spain**, C. R. Marés, S.A., Barcelona, Madrid;  
**The Netherlands**, C. N. Rood, N.V., Rijswijk;  
**Tunisia**, Selection Internationale, Tunis;  
**Turkey**, M. Suheyl Erkman, Istanbul;  
**West Germany**, Rohde & Schwarz Vertriebs-GmbH, Cologne, Hamburg, Munich, Berlin, Karlsruhe.

## MANUFACTURING SUBSIDIARIES

**Tektronix Guernsey Limited, Guernsey**—Principally serving European Free Trade Association  
**Tektronix Holland N.V., Heerenveen, The Netherlands**—Principally serving European Common Market  
**Tektronix U.K. Ltd., London**—Telequipment Instruments  
**SONY/Tektronix Corporation, Tokyo, Japan**—Serving Japan

## MARKETING REPRESENTATIVES

**Serviced by Tektronix, Inc., Beaverton**

**Argentina**, Coasin S.A., Buenos Aires, Cordoba, Rosario;  
**Brazil**, Importacao Industria E Comercio Ambriex, S.A., Rio de Janeiro, Sao Paulo, Porto Alegre;  
**Ceylon**, Maurice Roche Limited, Colombo;  
**Chile**, Pentz y Cia., Ltda., Santiago;  
**Colombia**, Manuel Trujillo Venegas e Hijo, Ltda., Bogota;  
**Hong Kong**, Gilman & Co. Ltd.;  
**India**, Hinditron Services Private Limited, Bombay;  
**Iran**, Berkeh Co. Ltd., Tehran;  
**Korea**, M-C International, Seoul;  
**Malaysia**, Mecomb Malaysia Sendirian, Berhad, Selangor;  
**Mexico**, Electronica Fredin, S.A., Mexico;  
**New Zealand**, W & K McLean, Ltd., Auckland, Wellington;  
**Pakistan**, Pak-Land Corporation, Karachi;  
**Peru**, Importaciones y Representaciones Electronicas, S.A., Lima;  
**Philippines**, Philippine Electronics Industries, Rizal;  
**Singapore**, Mechanical & Combustion Engineering Co., Ltd., Singapore;  
**Taiwan**, Heighten Trading Co., Ltd., Taipei;  
**Thailand**, G. Simon Radio Company Ltd., Bangkok;  
**Uruguay**, Coasin Uruguay S.A., Montevideo;  
**Venezuela**, Coasin C.A., Caracas.

