TEKTRONIX, INC.

1969 Annual Report

23rd Year Ending May 31, 1969

Tektronix, Inc. 1969 Annual Report

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Transfer Agents

United States National Bank of Oregon
Portland, Oregon

Morgan Guaranty Trust Company
New York, New York

Registrars

First National Bank of Oregon
Portland, Oregon

First National City Bank
New York, New York

Mailing Address

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P. O. Box 500
Beaverton, Oregon 97005

Telephone

503/644-0161

SHAREOWNERS' MEETING

The annual meeting of shareowners of Tektronix, Inc. will be held on Saturday, September 20, 1969, at 9 a.m. Pacific Daylight Time, in the Cafeteria Building, S. W. Karl Braun Drive, Tektronix Industrial Park, near Beaverton, Oregon.

Tektronix Financial Highlights

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

1968		1969		Increase	
$133,656,000	100%	$148,857,000	100%	11%	**RECEIVED BY THE COMPANY** For the sale of oscilloscopes and related instruments, accessories, repair and replacement parts.
120,227,000	90%	134,768,000	90½%	12%	**RELATED COSTS AND EXPENSES**
45,607,000	34%	51,931,000	35%	14%	TO OUTSIDE SOURCES To pay for raw materials, purchased parts, rent, utilities, insurance, advertising, interest and other business expenses.
58,429,000	44%	66,225,000	44%	13%	FOR EMPLOYEES To pay the men and women who design, make, sell and service our instruments—including profit share, social security and other employee benefits.
3,436,000	2%	3,823,000	2½%	11%	FOR USE OF FACILITIES OWNED To provide for depreciation in value of buildings, machinery and equipment resulting from use, wear and age, mostly computed by sum-of-years-digits method.
12,755,000	10%	12,789,000	9%	0%	FOR TAXES To pay U. S., foreign, state and local taxes and licenses.
13,429,000	10%	14,089,000	9½%	5%	**RESULTING IN EARNINGS** Reinvested in expansion of our business.
$1.68		$1.75		4%	**EARNINGS PER COMMON SHARE** Dilution if all outstanding share options had been exercised would not have reduced primary earnings more than one cent.
137,474,000		157,634,000		15%	**ORDERS RECEIVED** Customers' orders measured at catalog price.

1968	1969	Increase (Decrease)	
$72,626,000	$84,313,000	$11,687,000	**Current Assets**
$21,839,000	$26,672,000	$ 4,833,000	**Current Liabilities**
$50,787,000	$57,641,000	$ 6,854,000	**Working Capital**
$28,332,000	$36,195,000	$ 7,863,000	**Facilities—Net**
$ 988,000	$ 379,000	($ 609,000)	**Long-Term Indebtedness**
$81,597,000	$97,519,000	$15,922,000	**Shareowners' Equity**
7,852	8,752	900	**Number of Employees at Year End**

To Shareowners and Employees

In past reports I have referred to the oscilloscope as "ubiquitous" because it is so widely used in science and industry. It is also ubiquitous geographically. This year Tektronix' overseas sales, which have been approaching one-third of our total, exceeded that figure.

These sales—of the same models we sell in the U.S.—were made in over 100 countries, showing the instrument's universal nature. Even the "developing" nations, as they enter the technological age, find the oscilloscope an essential.

Nor do sales by our overseas subsidiaries "rob Peter to pay Paul." Along with their growth, exports from Beaverton also have continued to rise. This annual report details for you information on international and U.S. sales, and on orders and earnings. All of them increased.

The year was profitable but strenuous. Tektronix "ran two shops at once." One produced and sold our existing product lines; the other tooled up and began to build new instruments (and many components for them), which we did *not* sell. These instruments, being introduced this month, represent one of the most extensive product efforts in Tektronix history.

This dual operation has been a strain on manpower and other resources, and affected our financial picture: All the dollars associated with these new instruments are in the expense column. But, in the years ahead, their sales will offset these costs.

The new 7000 series deserves special note. This high-performing "family" of general-purpose oscilloscopes has been designed to be obsolescence-resistant.

In today's changing world, all you can really count on is change itself. Thus the customer needs to make sure the oscilloscope he buys will have a long useful life, and not become rapidly outdated. The plug-in concept, a Tektronix innovation, is a recognition of his concern.

As an example: An engineer who bought a Tektronix Type 535 back in 1953 has been able, by adding new plug-ins, to extend and expand its useful life, at minimum cost.

Similarly, the new 7000 series offers high-performing long life—conceivably even longer than our earlier plug-in line. The first two mainframes and 13 plug-ins are a substantial beginning.

Because this is a "family" and not just a single instrument, careful and time-consuming attention has been given to very small details that will insure expandability as technology advances. Extensive use has been made of Tektronix-made integrated circuits and other specialized components.

The ability of the mainframes to accept up to four plug-ins (twice as many as any other oscilloscope), and to present on the CRT words and numbers as well as waveforms, will let us devise innovative future additions to the family, that are unfettered by past technical conceptions. (For instance, coupling computer "brainpower" and oscilloscope display is not an unreasonable possibility with this system.)

A very large part of our energies this past two years has gone into these and other advanced instruments. To the people who designed and built them, to the many others who "kept the shop running" profitably in the meantime —to *all* those whom I have not had a chance to thank personally—I would like to do so now.

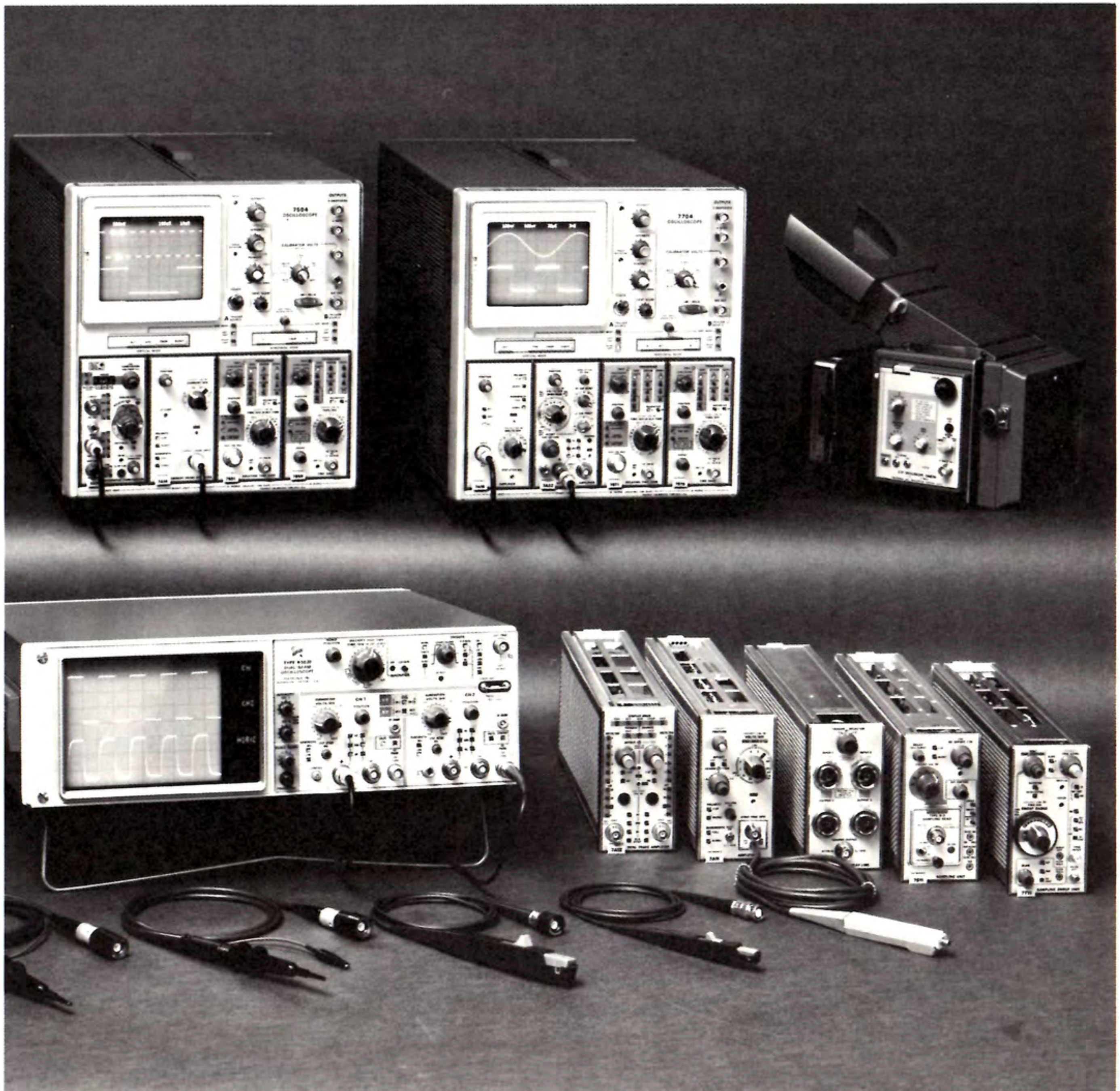
With our new instruments, we look confidently to the years ahead, years bound to see great technological advances. Technology need not be idolized to be appreciated. Couple it to personal courage, and man can walk the surface of the moon.

In that great adventure, as this report will describe, Tektronix instruments played a significant role.

Howard Vollum

President

August 4, 1969



A Concept Revisited

Before 1953, to make a wide range of oscilloscope measurements, you had to buy several oscilloscopes.

Even "general-purpose" instruments had serious limitations. Scopes with wide bandwidth tended to have little sensitivity; those with high sensitivity, narrow bandwidth. That is, the user could measure either small voltages or fast signals—but not both. The same kind of trade-off was true of other characteristics.

Then Tektronix, with its Type 535, introduced a concept new to the industry: A scope mainframe with a compartment that would take any one of four plug-in units, each of which enabled different kinds of measurements. For the price of just the plug-in, the user obtained essentially a different oscilloscope.

The 535 was developed only after careful consideration as to both its technical feasibility and its market value. A major concern was to help the user get *maximum value* from his original oscilloscope purchase.

The results: One, the plug-in general-purpose oscilloscope became, and has remained, the "bread-and-butter" center of our product line. (This year, plug-in scopes accounted for over half our total sales.) Two, the plug-in idea has been widely copied.

This month, Tektronix introduces three oscilloscopes, first of what we have informally called a "new generation" of instruments. Two of the three accept plug-in units; and we've brought out an array of 13 plug-ins as a starter.

We feel this new product line moves the oscilloscope art a notch upward—in versatility, ease of use, performance per square inch, and customer value. The endeavor has required years of painstaking groundwork, heavy investment and technical achievement. The instruments open new doors.

How the Oscilloscope Works

A laboratory oscilloscope is a complex and integrated system, with thousands of electronic and mechanical components. Its circuitry is more varied and its components far more precise than in a digital computer.

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 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 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 even 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 the event lasts.

How the Plug-in Helps

A plug-in unit contains some portion of an oscilloscope's circuitry. The portion varies widely, depending on the needs of the instrument.

Some plug-ins control *vertical* deflection, converting the signal into up-and-down movement of the CRT beam. Most of these are *amplifiers* (or pre-amplifiers) of one sort or another:

Some of them are *high-gain*, amplifying very small signals so the CRT may graph them; some are *wide-band*, allowing display of very fast (high-frequency) signals.

Some enable the CRT to draw more than one graph at a time, by accepting two (or four) signals, which will share the beam's writing time. These are called *dual-* or *four-trace* plug-ins.

Differential plug-ins compare two points in a circuit and present the voltage difference to the CRT; others (*differential comparators*) algebraically cancel out a large segment of voltage you don't want to look at, and magnify the small portion you do.

Time, as well as amplitude, can be magnified with plug-ins. In one method, a timing device (called a *delaying sweep*) delays the waveform until the desired segment of the signal occurs; then it triggers a second, faster sweep that fills the display area with that segment.

All such *time-base* plug-ins control *horizontal* deflection, allowing you to vary the range of speeds with which the beam can cross the screen.

Plug-ins also can provide:

Sampling, a means of re-creating a graph of a very fast waveform by assembling successive bits of a rapid repetitive signal—in a sense, "stringing beads of light." (The fastest "equivalent-time" sampling sweep is 3.5 times the speed of light!)

Sampling plug-ins control both vertical and horizontal deflection.

Spectrum analysis. Here the oscilloscope display is changed from a *time* to a *frequency* base. This allows the instrument to analyze complex signals in a different, equally meaningful way, by breaking them down into their component frequencies.

The Customer's Investment

Throughout its history of product development, Tektronix has sought certain goals:

One relates to technology: To use optimum circuitry, processes and components, tailored to the instrument's intended use.

The other relates to the user: To offer maximum ease of use and maintenance; reliability, and reasonable cost.

In short, we've placed a major emphasis on safeguarding the customer's investment—to be sure that he receives every bit of the performance that was designed into the instrument (and, in some cases, even more).

The Type 535 was the first oscilloscope that used interchangeable vertical plug-in units. To insure continued maximum value to the customer, compatibility of design has been stressed. The result is that, from the 535's first four plug-ins, we have expanded to 34, each of which will function in any of 17 mainframes. (For example, the most recent, most advanced plug-in will work in the first 535.)

Together with increased number of instruments and plug-ins went widely expanded performance, as technology advanced and our engineering skill grew.

In plug-in scopes, to use a rough analogy, the original instrument concept is like a springboard; from it, measurement capability may leap progressively higher, as component technology and engineering skill improve. Yet, eventually, the springboard itself will prove to be the limitation to higher achievements. So it is with oscilloscopes.

The technical truths of one day (for instance, scope circuitry in 1953 relied on vacuum tubes) someday become technical limitations. To meet future measurement needs, Tektronix felt, an instrument line needed to be designed to optimize the best of today's technology, and a bit of

tomorrow's: Transistors, integrated and hybrid circuitry, storage CRTs, and other advanced components—plus the increased sophistication in oscilloscope design peculiar to our company.

Tektronix 7000-series instruments, the first of which are being introduced this month, offer initial performance in excess of other general-purpose plug-in oscilloscopes—plus the capability of expanding into new uses. Our array of 13 new plug-ins is a substantial beginning in this direction.

For over 20 years, Tektronix has concentrated on improving oscilloscopes; and we have brought all our accumulated skill and knowledge to bear on these new products. We have looked well into the future at known and expected technological developments; anticipated user needs; and built into these instruments extreme flexibility, through a variety of design innovations.

Nor is our development effort limited to plug-in instruments. As in the past, we will continue to design non-plug-in scopes to meet the needs of users whose requirements are more specific. An example is our new Type 5030, a superior dual-beam low-frequency oscilloscope.

We believe the new instruments mark a significant upward step in oscilloscopy. In the next section we will tell you some reasons why.

TYPE 7T11 plug-in unit for Tektronix' new line of general-purpose oscilloscopes provides the time base for sampling, a means of displaying extremely fast waveforms.

A Glossary (for laymen)

Oscilloscopes have four basic characteristics. Somewhat simplified, they are:

Sensitivity (expressed in fractions of volts per vertical division) tells you how small a signal the oscilloscope 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—like those associated with nuclear phenomena. 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 ratio of slow to fast sweeps is several hundred million to one.

Intensity (expressed in foot-lamberts) refers to the brightness of the display. It depends on the density of electrons in the CRT beam, and on the tube's voltage. Displays of one-shot events (which can't be "rewritten" as repetitive signals can) must have high intensity to be seen or recorded. On our new Type 7704, it is possible to photograph such a one-shot phenomenon that occurs in the flicker of time it takes light to travel two feet!

A New Line Begun

TYPE 7704 is Tektronix' new 150 MHz oscilloscope. Here, through the use of four plug-in units, it simultaneously displays waveforms of three signals on two separate time bases.

The highway that's obsolete by the time it's built has become a symbol of the pace of our modern age.

The curve that graphs the acceleration of technological change is now standing on its tail. Technical and scientific developments, some of them revolutionary, dislodge others at a disconcerting rate.

In this pell-mell environment, heady but frustrating, today's measuring instrument must be designed with great foresight, so it will be ready for tomorrow—and the days beyond.

We believe Tektronix' new general-purpose instuments to be the most expandable line of plug-in scopes ever developed. They are based on today's most advanced technology, and designed to be compatible with what we can foresee of future technical developments.

This is our third major line of plug-in oscilloscopes in 16 years, and experience has taught us important things about how to defy obsolescence.

A "typical" engineer solving a "typical" measurement problem (assuming you can find either of these) might well be seen at his bench, with instrument stacked upon instrument to make the necessary measurement comparisons. Our new 7000-series conserves bench area by offering the user a combination of *many* scopes in one—more measurement capability in less space.

The instruments offer broad new capabilities:

They accept up to four plug-in units at once; they print on the CRT screen—in letters, symbols and numbers—the exact information relevant to the displayed waveform; and, despite their increased sophistication, they will be easier to use than other plug-in oscilloscopes.

They are a complex, extremely versatile laboratory instrument line—and one that was designed to spawn many offspring, both plug-ins and main-frames.

If we have erred, it has been on the side of versatility, to provide the customer with as many features in one scope system as he could usefully employ. (The trade-off may have been that we sacrificed an early share of the market, by not bringing out a lesser instrument sooner.)

The new instruments are replete with significant electrical and mechanical innovations, truly too numerous to fully discuss here. (If you are interested in more technical detail, please write us for a copy of our catalog supplement.)

To talk with you a bit further about some of them:

1. Multiple plug-in capability.

Most plug-in scopes accept just one plug-in unit, in the *vertical* channel; that is, governing the up-and-down movement of the CRT beam. A smaller number also have a *horizontal* plug-in, which controls the beam movement across the screen.

Our new 7000-series instruments accept up to four plug-ins, and display their output in a very wide variety of ways.

The interface (connection) between plug-in and mainframe has been standardized so all present and future plug-ins and mainframes will be compatible.

Switching has been moved from the plug-ins into the mainframe itself. This allows switching from one of the two vertical channels to the other; or from one of the two horizontal channels to the other; or displaying the output of all four channels at once.

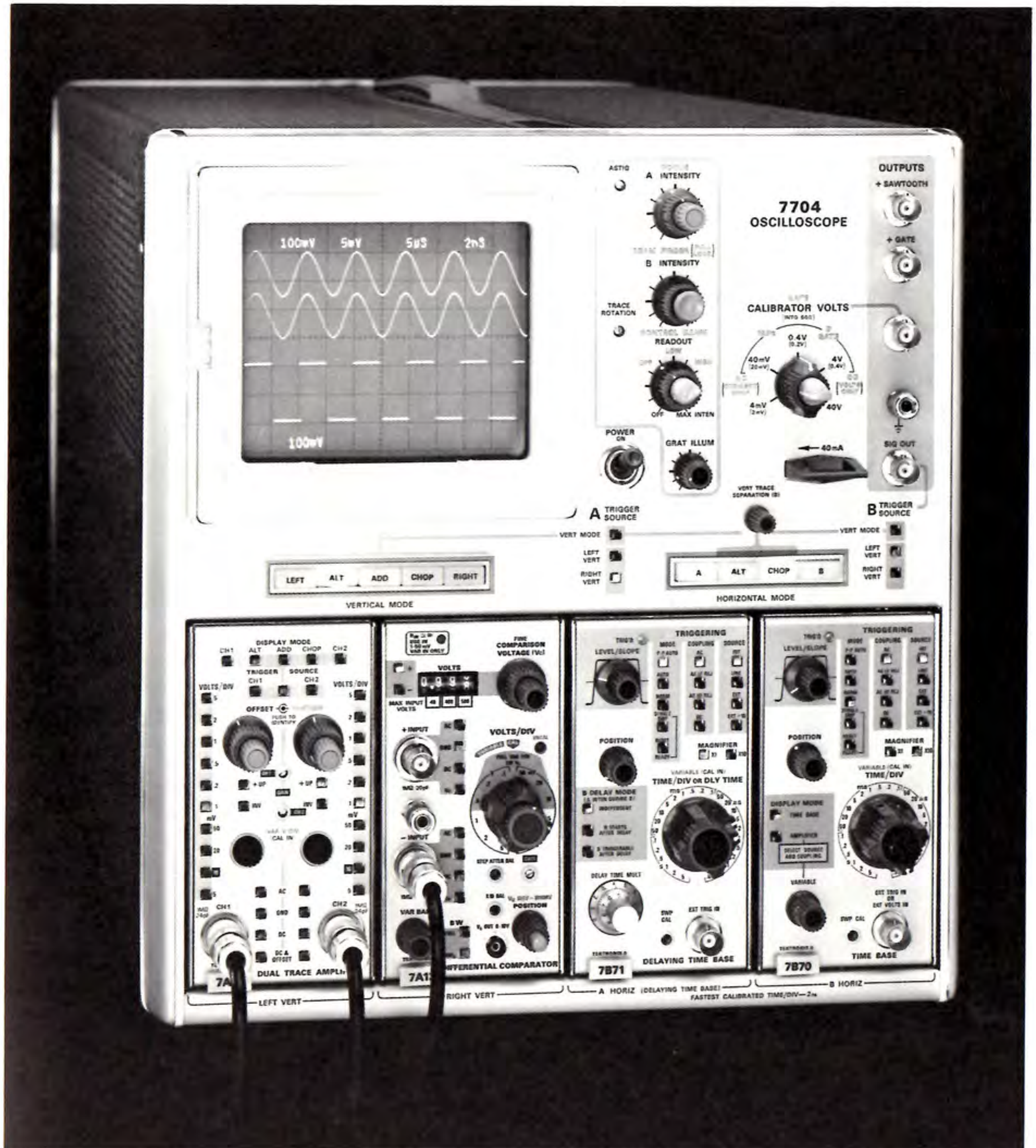
Simultaneous display of multiple waveforms at different time bases is achieved by time-sharing the single CRT beam—alternating rapidly between two vertical channels and between two horizontal channels.

The most obvious advantage is the great increase in possible combinations of measurements—often, combinations impossible in any other single instrument:

• *Sampling* may be combined, for the first time on a single-beam scope, with "real-time" measurements, allowing display of very slow signals together with signals hundreds of times too fast for real-time scopes.

• Also possible are dual *XY displays*. In an XY graph, the horizontal axis does not represent time, but voltage (or some phenomenon converted to voltage: Pressure; heat; temperature; acceleration; frequency . . .).

• Through use of two dual-trace plug-ins, up to *four traces* may be obtained—and this four-trace operation like-



wise may be combined with other measurement techniques. By also using two time bases, as many as *eight* traces may be obtained.

Our first 13 plug-ins include six amplifiers, with provision for current and voltage probes (one probe is built in); two real-time time bases for each mainframe; and three sampling units, thus bringing Tektronix' leadership in sampling another step forward.

2. Very bright cathode-ray tubes.

These enable a high CRT writing rate. Writing rate is the maximum speed at which one sweep of the electron beam can produce a visible (or a photographable) display. Writing speed is essential for viewing very fast one-shot events, such as nuclear-related electrical phenomena.

We may have in the 7704 the fastest-writing general-purpose CRT in the world. It also has very wide bandwidth, up to 150 MHz.

3. "Scale-factor readout."

The scope user now may read from the CRT screen—in numbers, letters and symbols—exact information relevant to the waveform being graphed. This calibrated display, in effect, labels the graph's X and Y axes. No longer may a CRT display be termed "a picture with a lot of data and no dimensions."

Readout is produced by a unique electronic character generator, which time-shares the CRT beam, randomly interrupting its graphic display so it may write the alphanumeric information. Because this "interruption" takes only a few per cent of the total beam time, the scope user seldom notices the difference.

Plug-in knob settings are described on the screen, as are the effects of any probe being used. A probe, a device that physically contacts the signal being measured, often may *attenuate* it (reduce its amplitude) by 10 times or 100 times. This attenuation is automatically computed in the scope, and the correct voltage information is presented on the CRT. (Heretofore, the scope user has needed to do this mental arithmetic himself, multiplying knob settings and probe attenuations.)

Having the graph dimensions in front of you does away with the need to keep checking knob settings, and thus reduces error. And, if the CRT display is photographed, the alphanumeric data is included. The engineer who has tried to scrawl display annotations on gooey photographic prints (or failed to, then forgotten what the display represented) will appreciate this convenience.

Scale-factor readout also has a warning feature, to guard against common user error. Should any knob setting become uncalibrated, that fact is indicated on the CRT screen, and a red warning shows on the knob. (What is calibration? Here's an example: Your TV set's channel selector is calibrated; its volume-control dial is not.)

The technical reader may infer, correctly, that the use to which we've put CRT readout in these instruments has by no means fully exercised its potential. For example: It can indicate measurement units other than those commonly associated with oscilloscopes. And there is almost no limit (short of the bandwidth of the mainframe) to the kinds of signals these instruments will accept.

Readout will be essential to the design of future plug-ins, which need not be limited by past conceptions of what a plug-in should be. We feel it adds an important new feature to oscilloscopy.

4. User convenience.

The instrument is easy to use, despite a variety of new settings and controls. We have sought maximum "human engineering," sometimes at the cost of more difficult circuitry-arrangement problems. Controls are functionally grouped, and color-coded. Extensive use is made of push-buttons and other improved Tektronix switches.

The two mainframes look alike. Both are smaller than other Tektronix general-purpose plug-in oscilloscopes, and lighter. By using a high-efficiency power supply, the 7704 sheds an additional 12 pounds. The scopes are all-solid-state (excepting for their CRTs) and use a great number of Tek-made components.

Our accessories have kept pace, including new Scope-mobile carts and advanced probes. The high-speed probe built into the 7A11 plug-in has the attenuator right in its nose. This unique feature makes it easier to extract the signal from the circuit without altering the signal characteristics or disturbing the circuit in which it occurs.

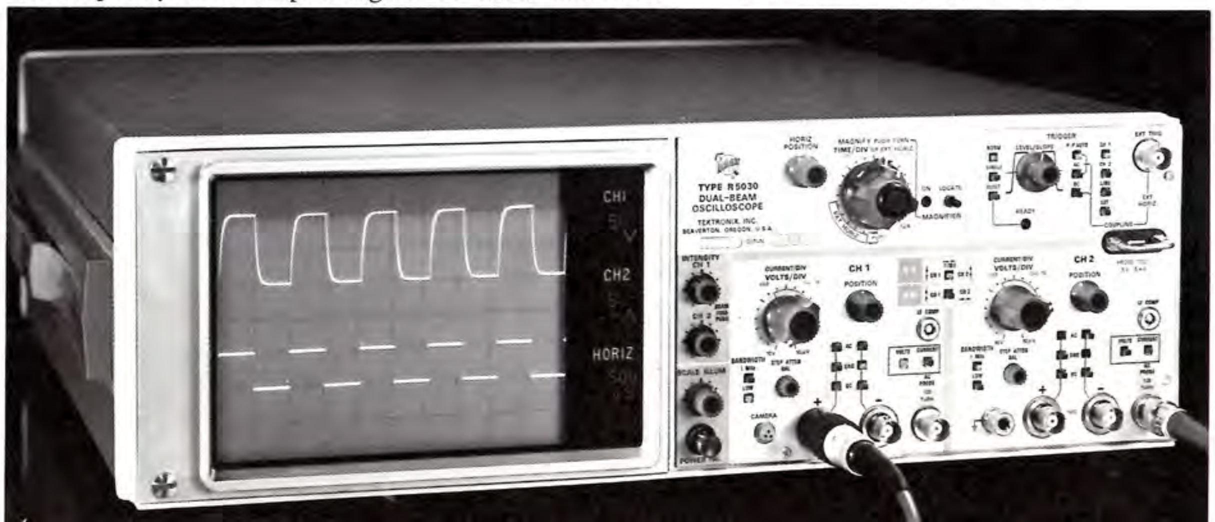
The Types C50 and C51, the finest oscilloscope cameras in existence, provide new aids to focusing and exposure. The latter is achieved by projecting a disc of light onto the screen and matching its brightness to that of the displayed trace. "Guesstimating" camera exposure settings is typically wasteful. We can look forward to savings of film.

Obviously we have high hopes for this complex yet easy-to-use scope system. However, it is not the panacea for *all* applications. Some customers still will need special features (for instance, portability) or limited use (for example, to monitor television waveforms). Tektronix will build its new high level of scope standards into those special-purpose instruments also.

An Advance in Low-Frequency

Sometimes extremely small voltages need to be measured. For instance, electrical signals generated within the human body, which may be on the order of microvolts (millionths of a volt). The Type 5030 is an advanced low-frequency oscilloscope designed for needs like these.

VERY SMALL electrical signals may be measured on Tektronix Type R5030 dual-beam oscilloscope, introduced this month. At right, two-way communication with a computer is made easier by the Type T4002 terminal, shown here in its graphics mode.



It provides an unusual combination—exotic performance capabilities plus great ease of use.

The 5030 offers very high sensitivity—10 microvolts, DC to 1 MHz; and it accepts either a voltage or a current probe without the need for auxiliary equipment. No comparable oscilloscope can match its performance.

Direct-current (DC) coupling is essential if you wish to observe steady or very slowly changing electrical events—such as accompany chemical phenomena, for example.

Because about half the expected users of this instrument will be outside the electronics field, we have made it as easy to operate as possible (eliminating knobs, for instance, as by coupling the focus and brightness controls).

The 5030—like our low-frequency Type 502 before it—is a dual-beam instrument, one whose CRT has two electron guns instead of one, enabling simultaneous display. Next to its very large (6½ inch) tube face is a readout area, where alphanumeric information describing the parameters of the displayed graph may be read.

The 5030 is small for its performance. We are optimistic about its reception.

Talking with a Computer: the T4002

Introduced in December, the Type T4002 graphic terminal provides two-way communication with a computer.

It deserves special mention in this report. For one thing, its engineering has contributed to the year's expenses; for another, computer display is a new field for Tektronix.

The terminal is not an oscilloscope. Its display tube, however, is a descendant of the first Tektronix storage CRT, developed for the Type 564 oscilloscope. A storage tube is one that can retain an image after the signal that caused the image has ceased.

Our self-contained desk-top terminal, with keyboard and 11-inch screen, can display computer-stored numbers, letters and pictorial material (such as charts and diagrams) without flicker. And, through a special "scratchpad" feature on the margin of the tube, the user may type, edit and verify lines of information for the computer to store.

We expect our T4002 to make a place in this fast-growing field. There are a lot of terminals already on the market; but where the need is for fine-line presentation of graphics or for very large quantities of alphanumerics, we feel there is little direct competition. (What there is, comes from other manufacturers who use Tektronix' Type 611 display unit as the key component, just as we do.)

Most terminals are one of two kinds:

1. Electromechanical systems, such as teletypewriters.
2. Systems using TV-like (so-called "refreshed") CRTs for the display.

Compared to a teletypewriter—the most common terminal—the T4002 receives information about 150 times faster and far more quietly. Speed is important; since a teletypewriter user can think faster than the information is printed out, it's easy for him to lose his train of thought; with our terminal, the screen is filled before he can read the first paragraph. Graphic information, in particular, is presented slowly and clumsily on electromechanical devices; fast and simply on Tektronix' terminal.

The T4002 makes drawings either by plotting a series of points or by connecting points with straight lines—a method that conserves costly computer time. It has a very small spot size, allowing fine-line detail, of great value in complex graphics. It can display up to 3000 alphanumerics at ¾ typewriter scale, about twice as many as competitively priced equipment.

Some "refreshed" systems, using non-storage CRTs, have high resolution and graphics capability; others do not. All such systems must "refresh," or rewrite, the information, about 30 times a second or more, while it is being read, in order to avoid annoying flicker.

Because computer-stored information is presented serially—that is, one small bit at a time—some sort of memory device is needed to store the information so it may be read. If the need is for high-density alphanumerics or graphics, this memory unit can become very costly. No such unit is necessary in the T4002. The storage tube itself *is* the memory, and holds the image once it's received.

Early computers solved one problem at a time; but, as they grew more and more powerful, it became obvious that this usage was inefficient. The next step was time-sharing, allowing many users to employ a computer's services at once.

Time-sharing may be done either right near the computer, or at "remote" locations. When you use remote terminals, you run into high communications costs, and must pay for all the transmission time you use—as well as the computer time.

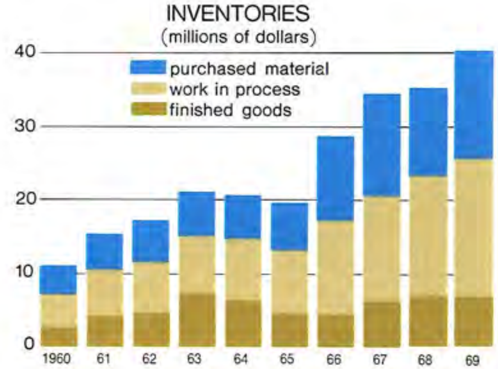
Nor can you "refresh" a CRT over telephone lines. This means that, for high-resolution refreshed systems, a very expensive local memory unit is necessary at the terminal.

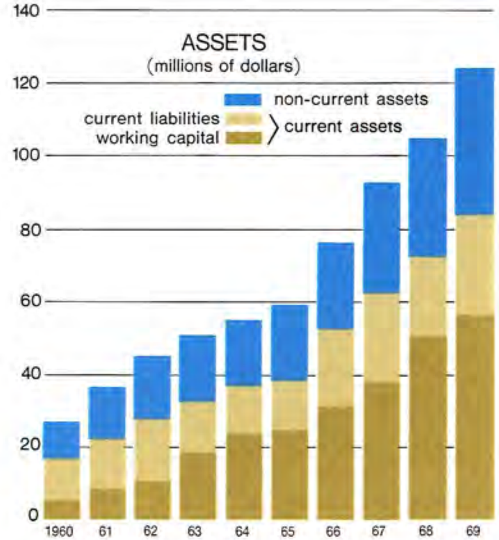
One reason for the relatively slow growth in use of scientific computers has been that, at first, they had no graphics capability, so useful to the scientist. By contrast, business users, more accustomed to dealing with words and numbers, have made very wide use of computers. (But our guess is, once a user becomes used to graphics, he won't ever want to do without.)

Also, scientific problems take considerable human reasoning time and little computer output—in contrast to such business uses as inventory and payroll, which take little human contemplation and a *great* amount of computer print-out.

Thus, it is for technical and scientific applications, particularly those at remote locations, where we feel the economics of our terminal will most clearly be proved.

It is competitively priced; has patent protection; offers a unique combination of features, and should serve a portion of the market whose needs, we feel, are not presently being met.





The New Components

CLEANING OF dual in-lines is a critical step in the production of Tektronix special-purpose integrated circuits.

There's a ripple effect in instrument design. To advance the state of the measurement art often means, in turn, pushing the limits of components technology. Increasingly, the main obstacle to making oscilloscopes do new and better things proves to be some inherent limitation in a particular part or piece.

Tektronix, as you might expect, thus may appear to a component supplier to be a pretty ornery customer, for often our needs seem to border on the impossible.

We're particularly hard on one supplier, our largest one. That is Tektronix itself.

Tektronix instruments have thousands of components. An ever-increasing share of them is built in-house. Sometimes these are better or more reliable than available parts. Other times they merely let us stress some characteristic we need, at the expense of one we don't.

Sometimes suppliers can make the improvements and meet our tight specifications; sometimes it's *not* practical for them to mass-produce these small runs of specialized parts; sometimes they have said outright, "It can't be built"; and sometimes they have been wrong.

In many cases, our answer has been to make the items ourselves, tailoring them to our needs. For 22 years, Tektronix has given high priority to the ability to build critical parts not otherwise available.

We are more highly integrated than most electronic instrument manufacturers. And we have more resources dedicated to improvement of the oscilloscope—in *all* its aspects—than any other company.

Tektronix has always had a lot of people who could do a lot of things very well. There is no single more important fact in our history. And it has surely been true in component development.

They laughed when we sat down to build our first cathode-ray tube—back in 1953, when we decided to manufacture our own. Commercially available CRTs failed to meet our needs for increased sensitivity and writing speed, and for displays free of geometric distortion.

The ability to design our own CRTs has proved to be one of the richest Tektronix assets. We are able to tailor the tubes, the circuitry and all other aspects of the particular scope system to the performance requirements of that instrument.

The Type T4002 computer terminal relies on our ability to build large-screen storage CRTs—an ability that has resulted from gruelling attention to the most minute details of production. Defect-free tubes are especially important when the need is for extremely high resolution, as is required for the presentation of small, fine-line letters and numbers.

The CRT effort extends also into materials development, an area in which Tektronix is increasing its emphasis.

The tube envelopes are made of ceramic (rather than glass, as used by other manufacturers), making use of our extensive facilities and experience in this technology. We thus gain control of a very critical material; this year's glass supply was sporadic, because of strikes in the industry.

Ceramic has several advantages:

It is stronger than glass; it weighs less; it lets us build special shapes that glass wouldn't allow; it allows us to maintain tighter tolerances;

It lets us test and implement new designs faster;

And it has better implosion characteristics in case of accident, crumbling rather than breaking into sharp fragments.

This year Tektronix developed the ability to synthesize its own phosphors. (Phosphor is the light-emitting material on the CRT screen that, under electron bombardment, forms the visible image.)

Our Ceramics area now produces the phosphor for our computer-terminal CRTs. This phosphor must be able to store, or retain, the electronically imprinted image. Its production requires assiduous attention to control of impurity levels, and of the size and even (important in CRT phosphors) the shape of the microscopic particles.

Our phosphor, compared to commercial ones, is

GREEN (unfired) funnels are processed at this step in the manufacture of a ceramic cathode-ray tube.

brighter, has a longer life and produces a more uniform image.

A Tektronix integrated circuit may contain, on a single speck of silicon, the equivalent of several hundred active electron devices (such as transistors and diodes). Yet the entire IC may be smaller than this letter "o."

Microscopic size has its problems in manufacturing, one of them being that you can't see what you're doing. Yet, Tektronix this year learned to make ICs in production quantities. And they have enabled instrument performance that otherwise would have been impossible.

For instance, the character generator in the Types 7504 and 7704 has 14 ICs, containing the equivalent of some 6000 active devices! Had vacuum tubes been used instead (which were the mainstay of circuitry only a few years ago), an equivalent character generator would have been as big as a desk, or as big as a house, depending on which engineer you ask for a rough estimate; at any rate, nothing you could put into an oscilloscope. Yet, in our new instruments, the character generator is built on a single 4½ by 5-inch etched-circuit board.

Integrated circuits give far more performance per square inch—and per dollar, too. In general, it costs no more to produce very complex ones than simple ones.

These ICs are called "monolithic," referring to their fabrication process. In essence, the components and wiring are "grown" on the silicon crystal itself.

• In this expanding area of microelectronics, a related device is the "hybrid," a word you'll be hearing more of. It refers to the combination of technologies used in production.

Tektronix-made hybrid circuits combine electronic components (including Tek ICs) on a non-conductive base, or substrate, of ceramic. In size, hybrids fall between monolithic ICs and etched-circuit boards, and they share the same general purpose: To pack more electronic performance into less space.

• On etched-circuit boards also, as in ICs and hybrids, the "wiring" is integral with the base material. Circuit boards, although not a new component, are used in innovative ways in the new instruments.

Virtually all their circuitry is on ECBs, produced in our large Electrochemistry plant. We further increased component density by using "sandwich boards," laminating several ECB layers together; and by attaching smaller boards onto larger "mother boards" with connecting pins.

• Tektronix designed and built virtually all its own switches and relays for the new instruments. Nothing commercially available would solve our problem: Maximum switching in minimum space, with minimum energy; ease of operation, and low manufacturing cost. We've clearly moved the state of the art forward in the design of switches.

These include *"circuit-board" switches*, in which protruding lobes on a revolving cam open and close contacts mounted on the boards—much like the operation of the rotating cylinder in a music box; *illuminated push-button switches;* and a family of very sensitive high-frequency *relays*.

The new switches are very small, low-cost, highly reliable, far easier to push and turn than commercial large-knob wafer switches. A good deal of the front panel's ease of use is due to recent strides in switch development.

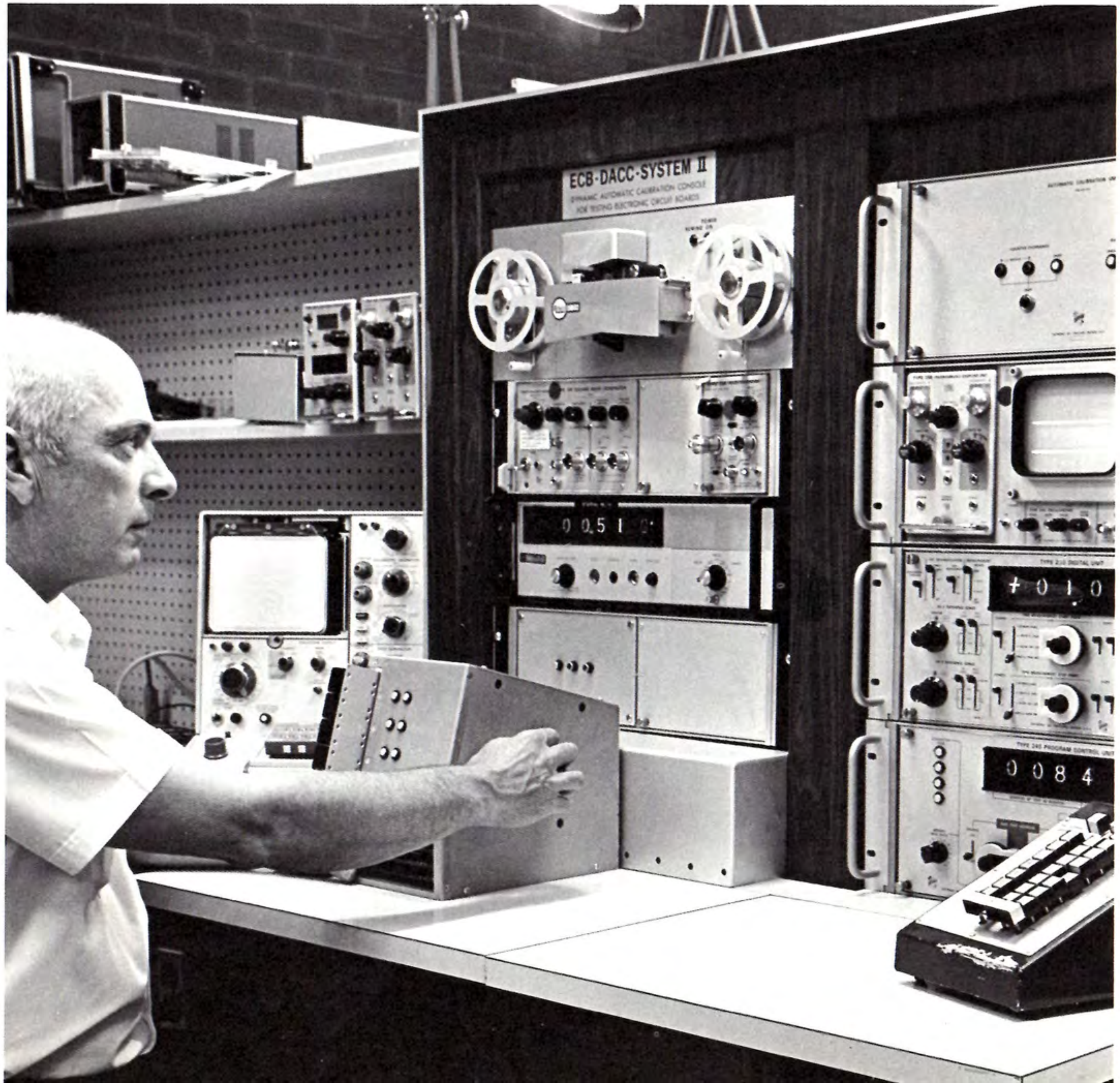
Manufacturing cost has been held down by designing these components for automated assembly, and by the use of advanced thermoplastic packaging.

• Other Tek-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.

The cost of producing these new components accounts for a good share of our manufacturing cost of sales, which went up 14 per cent last year.

And, since we haven't offered any of the 7000-series instruments for sale yet, the dollars are all on the expense side of the ledger.

Men, Machines, Money...



DYNAMIC TESTING (left photo) of the readout circuit board for a type 576 semiconductor curve tracer is performed automatically in the Tektronix manufacturing area. In right photo, numeric-control equipment inserts electrical components into an EC board.

The man inventing the gismo can't buy specialized gismo parts—nor is gismo testing equipment available. He must in many cases devise his own.

Our new-product effort, the most extensive in our history, has been paralleled, rather than preceded, by development of Tektronix-made components. That meant our instrument designs incorporated some components that did not at that time exist.

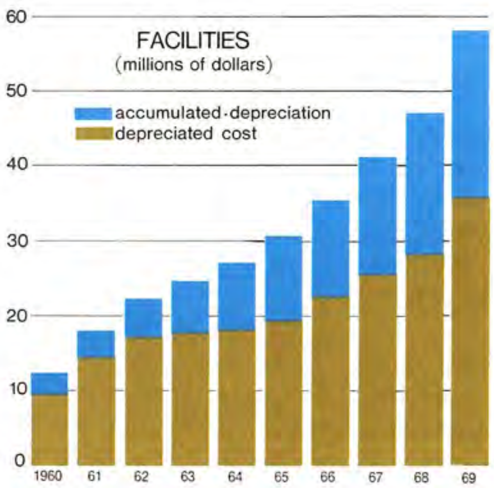
A third parallel activity has been in developing automated production and testing methods, and building the complex equipment for them.

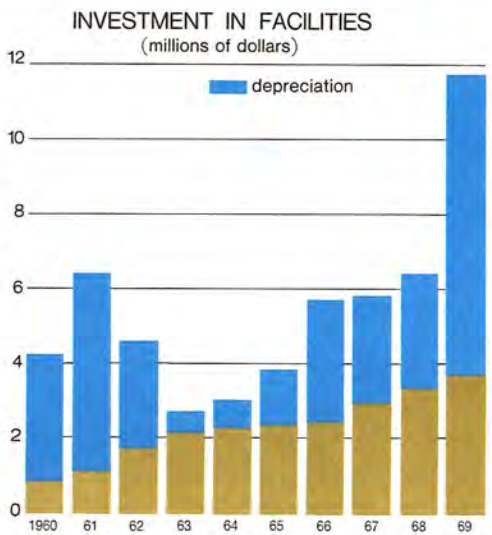
In this integrated three-part program, each of the developmental efforts has contributed to the success of the others. And each has required substantial investment in specialized equipment.

The shift toward integrated densely packaged electronics has brought about a change in the circuitry engineer's job itself. He used to be able to wire up individual reliable components on a trial-and-error basis; but today he must do far more theoretical computation—because integrated, hybrid and etched circuits must be designed and built in totality—*then* tested and evaluated. It's like the moon shot, in a sense, in that there's no way to *really* rehearse.

A good deal of this computation is now done by machines. To its already considerable computer power, Tektronix this year added three DEC PDP-8 computers, and freed an IBM 1130, for engineering use. In addition, four PDP-8s were added in manufacturing and testing areas, and a second 1130 was obtained for use with numerically controlled equipment. To our central computer area we added a larger IBM type 360 than what we had, for multiple data-processing uses.

The nature of our manufacturing process is being changed by the combination of precise circuit boards and numerically controlled equipment, which automatically drills, punches, mills, inserts components and performs





complex testing. Numeric-control machines are programmed by insertion of a punched tape, made by feeding dimensional information from a drawing into the computer. Our usage of N-C machinery is bound to increase greatly.

The new instruments have been designed to stress "buildability" in general, and automated assembly and testing in particular, because of the increases they provide in speed, precision and reliability.

Specialized testing equipment for state-of-the-art oscilloscopes is hard to come by, so we must design and construct our own (or radically modify what *is* available). Tektronix' growing expertise in this area has exacted praise from commercial manufacturers of similar equipment.

Automated testing, which simulates the entire range of instrument operating conditions, allows very rapid proving of components, entire circuit boards and even completed products. To this *functional* testing (to see whether the parts and boards are working) will soon be added computer-aided *diagnostic* testing (to pinpoint the faulty part of the system).

In the past two years we have built an entire integrated-circuit laboratory worth perhaps a half million dollars; and this year we set up facilities and began to fabricate these microscopic components in production quantities.

Extensive equipment additions also were made in physics and chemistry support—for gas analysis, x-ray, metallizing and photo processing; for the electrochemical area; for die-casting; and for Ceramics, where our third giant kiln was added, as was an additional isostatic press for forming large CRT funnels.

And the long, tedious but crucial battle continues for control of technical and production-area environments, a growing number of which require "clean-room" characteristics or other equally difficult-to-achieve specialized atmospheres.

Automation of oscilloscope assembly does not come easily, since it typically involves great variability of parts and many small production runs. But we will continue to work on this problem, as one means of holding down the seemingly inexorable upward trend of production costs.

Buildings. Another expense is associated with the need for more space—not only to house our growing work force but also to provide the specialized facilities required for our new products and components, or necessitated by increased demands on existing advanced technologies.

About the first of the year, we will move into our 131,500-square-foot Electron Devices building, to be used ultimately for CRT, display-tube and integrated-circuit production. This building uses a unique sandwich construction, with a process floor over each operating level.

We have occupied a 63,000-square-foot addition to the Electrochemistry building, which more than doubles the plant. New instruments will have greatly increased use of etched-circuit boards.

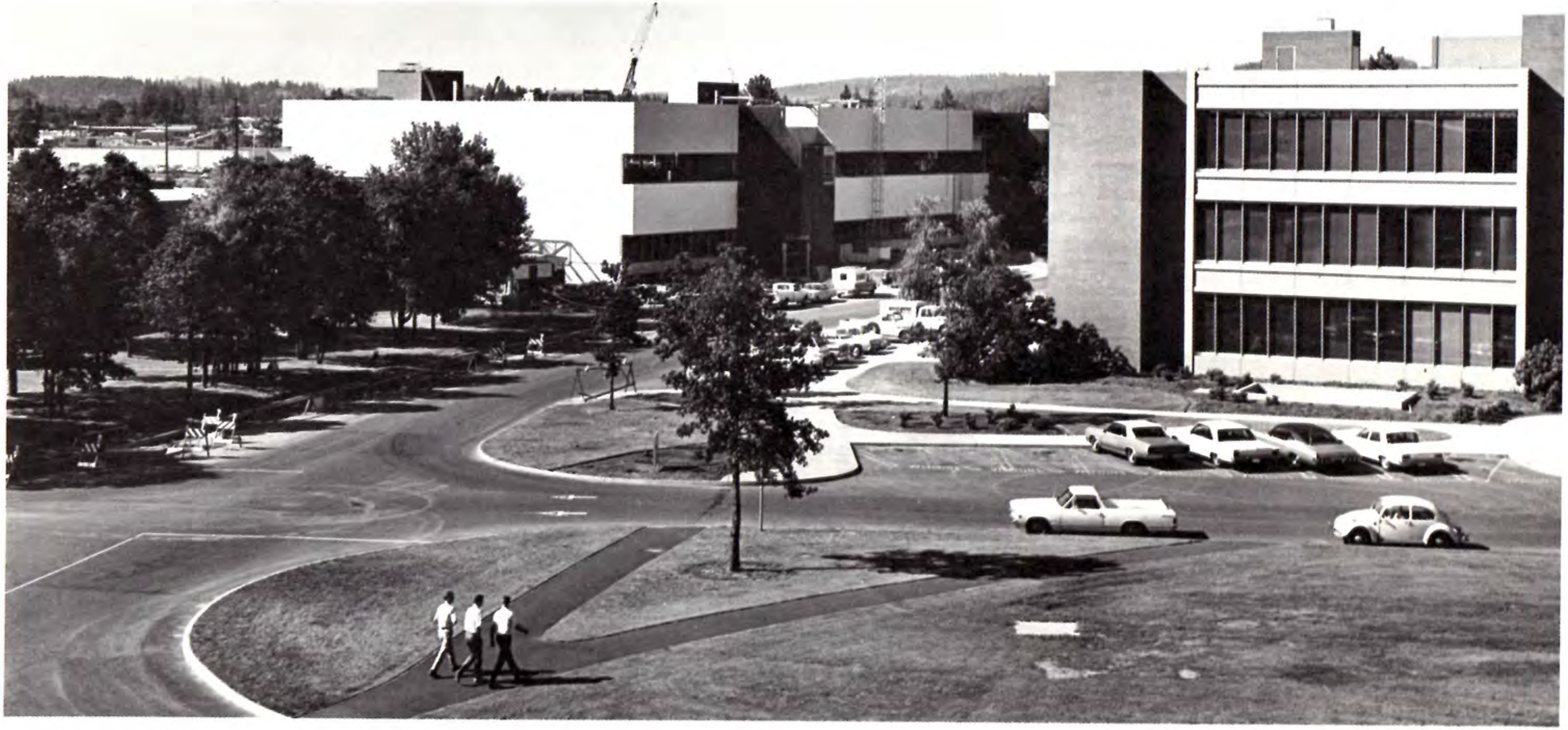
Move-in is scheduled in November for a 44,000-square-foot addition to the Ceramics building, built to keep up with increased production of CRTs and the gradual conversion of most of our tube envelopes from glass to ceramic.

Plans are in the preliminary stage for an additional 200,000 square feet of manufacturing space, to be used for fabrication and other processes.

An addition to our large Technical Center will be built in two phases in the next two years, and will total 180,000 square feet. Although the five-level Center probably already contains more engineering space than the Free World's other scope makers combined, quarters are becoming cramped.

All our photographic, printing and related functions have been grouped in the expanded Graphics building, to which were added 30,000 square feet this year. One benefit will be increased production of instrument manuals.

We also expanded our Maintenance building by 9000 square feet.



Relations Techniques Intercontinentales, our marketing subsidiary near Paris, occupied its new 24,000-square-foot building. Our manufacturing plant on the Isle of Guernsey occupied 35,200 square feet of new manufacturing space. Tektronix Australia Pty. Limited moved into its new 8800-square-foot headquarters.

Completion is set this fall for a three-story addition to SONY/Tektronix' first building of its own, in Tokyo, containing in excess of 40,000 square feet. SONY/Tektronix, which now employs about 150 people, has been using space that it has leased from SONY Corporation.

In Heerenveen, The Netherlands, a 30,000-square-foot addition is in progress. Telequipment Ltd., our British manufacturing subsidiary, has continued to renovate and occupy 70,000 square feet of buildings, on the 13 acres it acquired the year before. This will ultimately triple Telequipment's production capability.

Today, world-wide, Tektronix now occupies 1,800,000 square feet of space. Buildings now planned or under construction will increase that total by 420,000 square feet.

CATHODE-RAY TUBE and integrated-circuit manufacture will be housed in a new building (left) rising east of our Technical Center. The new structure "sandwiches" unique process floors and operating levels.

The Year, and the Markets

OPERATION OF the new Type 140 television waveform generator and the Type 520 vectorscope is explained by Charles Rhodes of Tektronix to William Vandermay, chief engineer, KATU, Portland, Oregon.

Tell someone that America has landed a man on Mars, and he may well believe you. In our age of catapulting technology, what, after all, is incredible?

Satellite television brings the world into your parlor, "live" and in color. Medical science has moved heart transplants from the top headlines to the inside pages (and *then* only on a dull news day). And the moon is a stranger no more.

Behind each scientific and technical advance, almost certainly there's an oscilloscope story. The ability, through the use of *transducers*, to convert pressure, gravity, heat, acceleration, sound, light and chemical phenomena into measurable electrical signals has extended the use of this instrument far beyond the electronics industry.

Scope markets, broad and growing, cover—and extend—the entire range of mankind's strivings. An increasing number of those efforts eventually rely on electronic instrumentation, and the most likely "beachhead" is an oscilloscope.

"Ain't that something?" said the first man on the moon to the second.

Probably nothing more than that needs to be said now about the fantastic voyage. After all, you *watched* it happen. Unlike most of the great exploits that embellish history, this was no solitary excursion of discovery; it was, through the visual reach of television, a participative adventure for earthbound millions.

The lunar mission depended on the reliable high performance of great numbers of Tektronix oscilloscopes: In laboratories where spacecraft and rocket components were designed; on production lines where they were built and tested; by the thousands as monitors in the huge Apollo checkout systems; then—from liftoff to splashdown—monitoring telemetric data from the speeding spacecraft, not only at ground stations but also over vast stretches of sea, from naval "flying laboratories."

One fringe benefit of our free society has been the openness of the U.S. space program. Win or lose, it was on television. And the picture you saw was clearer and better because of the many thousands of Tektronix instruments that monitor TV signal transmission.

It was a good market year for us. Internationally, despite the tenuousness of politics, the volatility of temperaments and the fragility of currency, our sales increased in every major market country. Those in the U.S. went up by 8.9 per cent; in other markets, nearly double that.

Among more than 30 new products this year were:

The Type 576 semiconductor curve-tracer. As its name may suggest, this special-purpose oscilloscope displays on its CRT the "family" of typical voltage patterns representing the behavior of a transistor or similar device under test.

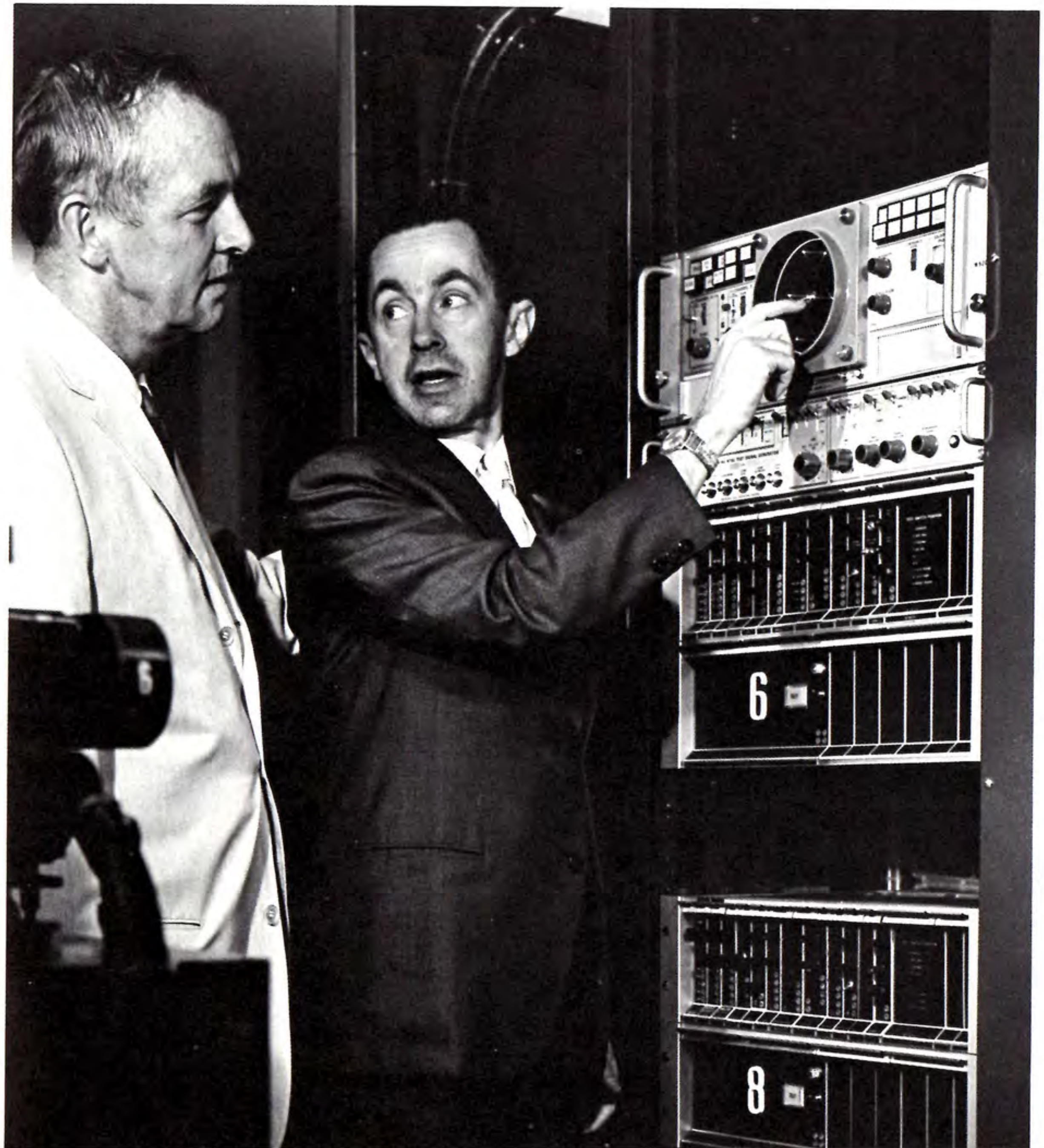
The 576 performs functions like those of the Tektronix Type 575, but it's far from being merely a warmed-over version of that instrument. Rather, it has brought significant new capabilities to the field. It is more versatile and more sensitive. It offers the industry's largest display area—a 6½ inch screen—and digital readout next to the CRT, telling you the sensitivities you have chosen and the test-signal amplitude. Curve analysis is aided by a small built-in "computer."

It was the first instrument to incorporate Tektronix-made integrated circuits. It contains nine.

Customer response? We had 300 orders before we'd completed the first production model.

The Types 140 and 141. These waveform generators are a distinct contribution to the television industry, a market in which we enjoy pre-eminence. We built them first for our own "in-house" use, as test equipment, because existing generators were unable to fully exercise the measurement capabilities of our TV vectorscopes and waveform monitors. Now, for the first time, Tektronix equipment will *provide* the industry's test signals as well as monitor their transmission quality.

The Type 140, a superior, economically competitive generator, will be specially attractive to the burgeoning CATV industry. Cable television, which in the past has merely *relayed* signals into areas with poor reception, now



has begun limited programming of its own, with federal encouragement.

Tektronix believes CATV to be a dynamic new market.

The Type 141A, built for the PAL color systems used overseas, is an American instrument designed for export. We feel very bullish about its ability to compete with foreign-manufactured generators on their own home ground.

The Type T4501 scan-converter unit, like the T4002 terminal, provides a means of displaying alphanumeric and graphic information that has been stored in a computer.

The scan-converter, using a five-inch storage tube as a memory, retains this information for display on a conventional television-type CRT. This feature allows multiple reproductions of a single stored image; large-screen presentations; and displays at locations remote from the terminal —or combinations of these benefits. This capability, we expect, will give us inroads into a number of markets new to Tektronix.

Other increases worth special note:

Sampling gear. Our sampling system, the world's fastest, uses a unique plug-in-within-plug-in approach. Into the Type 3T2 sampling plug-in unit fit five interchangeable sampling heads. This feature enables a user to make both routine and very advanced measurements simply by changing the head.

Sampling sales growth was exceptional.

High-performance portables. These include the 150 MHz Type 454, equally useful for bench use and carry-about diagnostic work, such as trouble-shooting of high-speed computers; and the battery-operated Type 323, the first scope to bear the name "SONY/Tektronix." This instrument, which you can hold in one hand, has had excellent reception.

Sales of the Type 564 storage oscilloscope and the improved all-solid-state 564B did well, as did those of the Type 491 spectrum analyzer. And television instrument sales held up satisfactorily despite dire forecasts that the

TV industry itself was in for a bad year. Sales increases also were made by digital systems, complex assemblies of coordinated instruments designed for high-speed testing of transistors and integrated circuits. And plug-in general-purpose oscilloscopes, as we have already mentioned, accounted for over half our total sales.

Our engine-analyzer system, comprising standard oscilloscopes and modified plug-in units, uses signal transducers to convert pressure, vibration, ignition, rotation and other mechanical phenomena into electrical signals, for display. It has been well-received by the mechanical industry, which is not noted for its use of electronic instruments.

We did well in markets outside the U.S. Foreign sales accounted for more than one-third of Tektronix' total sales.

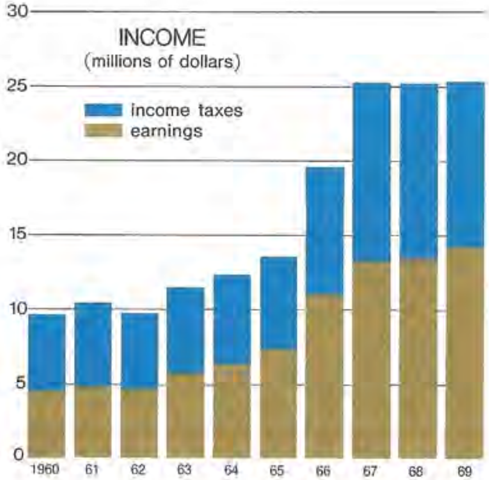
It was a profitable year, but there were problems:

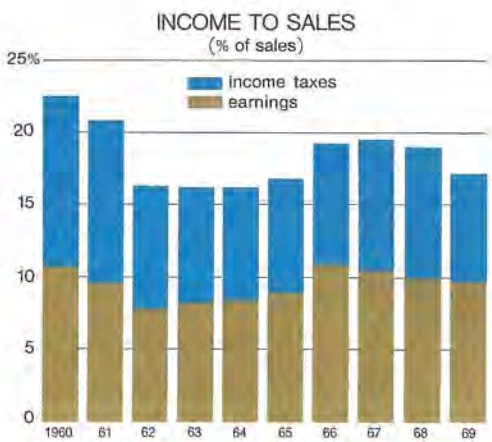
The U.S. Office of Foreign Direct Investment's complex restrictions on international financing were difficult to interpret, and costly to live with. They, coupled with political disruption (street insurrection in France, and the resignation of Gen. DeGaulle) and weaknesses in foreign currencies, caused us a good deal of costly maneuvering—handling some overseas financing differently than an astute businessman would have done by choice. There was a resulting increase in our expenses.

Tektronix, in testimony in Washington, took a firm stand in opposition to the OFDI regulations.

Too late in December for us to use more than half of it, we received the relief we had asked from some OFDI restrictions. We completed our first calendar year under the program without suffering too much from high interest rates on money we were forced to borrow overseas, or from forced repatriation of earnings. But costs are showing up in this calendar year, and are reflected in the financial sections of this report.

Markets in Germany and Italy, where business was depressed a year earlier, rebounded strongly. In spite of the student-worker revolt in France, RTI in Paris turned





MAGNETIC TAPE CLUSTER in computer system is checked out by Burroughs Corporation field engineers, using a Tektronix portable oscilloscope.

in a good year. Israel was a strong market; Canada did very well.

In the United Kingdom, Tektronix instruments again proved their appeal. Sales continued to increase—in the face of a variety of deep economic woes, high duties and an onerous new import-discouragement scheme that required the deposit, for six months, without earning interest, of half the value of the instruments imported.

But British electronics are among the world's best, and *must* have the most advanced test and measuring equipment. Hence, they bought Tektronix oscilloscopes—in spite of everything.

Sales of Telequipment oscilloscopes, in a lower price and performance range than Tektronix instruments, went up about 50 per cent, world-wide; and we foresee another good year, as the buildings acquired near London last year are increasingly put to productive use. Telequipment sells more oscilloscopes than any other UK manufacturer.

We have already mentioned the success of the SONY/Tektronix Type 323. Sales by that subsidiary, of Tektronix and S/T instruments, went up 137 per cent during the year, including exports from Japan. And sales to Japan from Tektronix also increased, by 19.1 per cent.

In fact, our exports from Beaverton continue to grow along with sales increases by our international subsidiaries. Last year, Tektronix exports increased by 6.6 per cent.

One noteworthy aspect of the European market is that its interest in our computer terminal is, if anything, stronger than in the United States. One possible reason is that, unlike in the U.S., transmission facilities (telephone lines, for instance) and most universities are typically government-owned; and governments may feel freer to underwrite early research and development of promising technical ventures, such as computer time-sharing, in which area Europe has taken a headstart. Governments, for instance, do not have to justify these expenditures to shareowners, as private companies do.

Also, electronics mergers, often large ones, are enabling European companies to more effectively compete with U.S. computer giants. These enlarged economic entities thus have more money available for research and investigation.

Whatever the reason, interest in terminals is strong in Europe. Our showings of the T4002 in France, England and Germany have already uncovered a gratifying number of potential applications.

The technological world covers only a fraction of the earth's surface. Many nations are just emerging (sometimes from near-primitivity) into the electronics age. These less-developed countries, although not a large market, are the object of continued attention by our roving international field engineers. Sales in those areas continue to increase markedly, but they don't mean much in dollars — yet.

Again this year we took part in a cooperative touring electronics show in Latin America; and, again, the response was heartening from those nations' technical communities. And, in another kind of market, we showed Telequipment instruments at exhibitions in Moscow and Bucharest.

What the future holds as far as trade with Iron-Curtain nations is uncertain, and not up to us. There has been some liberalization of U.S. government attitudes, and some Tektronix instruments not crucial to national defense may now be sold to certain Communist countries.

There is little point to speculation in this regard. But one is reminded of an oft-printed cartoon, in which a salesman tells another: "Listen, if the client says Russia is a big country—don't argue."

Tektronix: The Changing Configuration

The simultaneous forward thrust of instrument, component and process development in which we are engaged will surely challenge what our president has called the "pioneer spirit" of Tektronix men and women. It also will test the ability of the organization itself to continuously re-form to fit its changing technical/economic context.

Here, Tektronix is on strong ground. Since we began, one concept has stood us in good stead: Our reliance on individual judgment; and our avoidance of "rule books" and stiff organizational constructs that might impede communication and cooperative effort, and restrict our ability to change. Our organization is a tool, not an end; and the only true status is the status you *earn*.

It's easy for a company, once its youth fades, to become set in its ways. But today, a striking aspect of Tektronix (even to the outsider) is the innovativeness and creative outlook of individuals at *all* levels. An employee's value to this company, as our director of education points out, is his ability to *contribute* to the changes that occur.

At any given time, Tektronix's own education program will have over 2500 of our people enrolled in courses given on our "campus" after working hours. Course material ranges from elementary to complex and from technical to broadly philosophical. Teachers include faculty members from colleges and universities in the state, and selected Tektronix employees with special skills and knowledge and the proven ability to impart them to others.

As in any year, internal changes were many:

New Officers. In February, Tektronix added its second executive vice-president, and increased its number of vice-presidents from four to seven.

New executive vice-president, Earl Wantland, has the responsibility for U.S. Marketing, Engineering and Manufacturing. Robert Fitzgerald, executive vice-president since December 1966, remains responsible for our other U.S. activities and all International operations.

The four new vice-presidents include Charles Bouffiou, William Walker, Frank Consalvo and Donald Alvey. Each will also retain his operating responsibilities, as follows: Chuck, U.S. Marketing; Bill, Engineering and Product Planning; Frank, Administrative Services, and Don, International Operations.

The other vice-presidents are William Polits, William Webber and Michael Park.

Structural changes. Engineering is in an excellent organizational posture. As one indication, new-product planning, a cross-organizational effort, has worked very efficiently despite the absence of a formalized structure.

Appointment of Vice-President William Polits to head the Electron Devices activity brings his many years of engineering experience to bear on this key area, and underlines the growing importance of advanced cathode-ray tubes and integrated circuits.

Field engineers were added as fast as qualified applicants could be found. We now have 103 FEs in the U.S., with a record 39 in training, including—for the first time—nine from outside the U.S. The overseas field-engineering force totals 37.

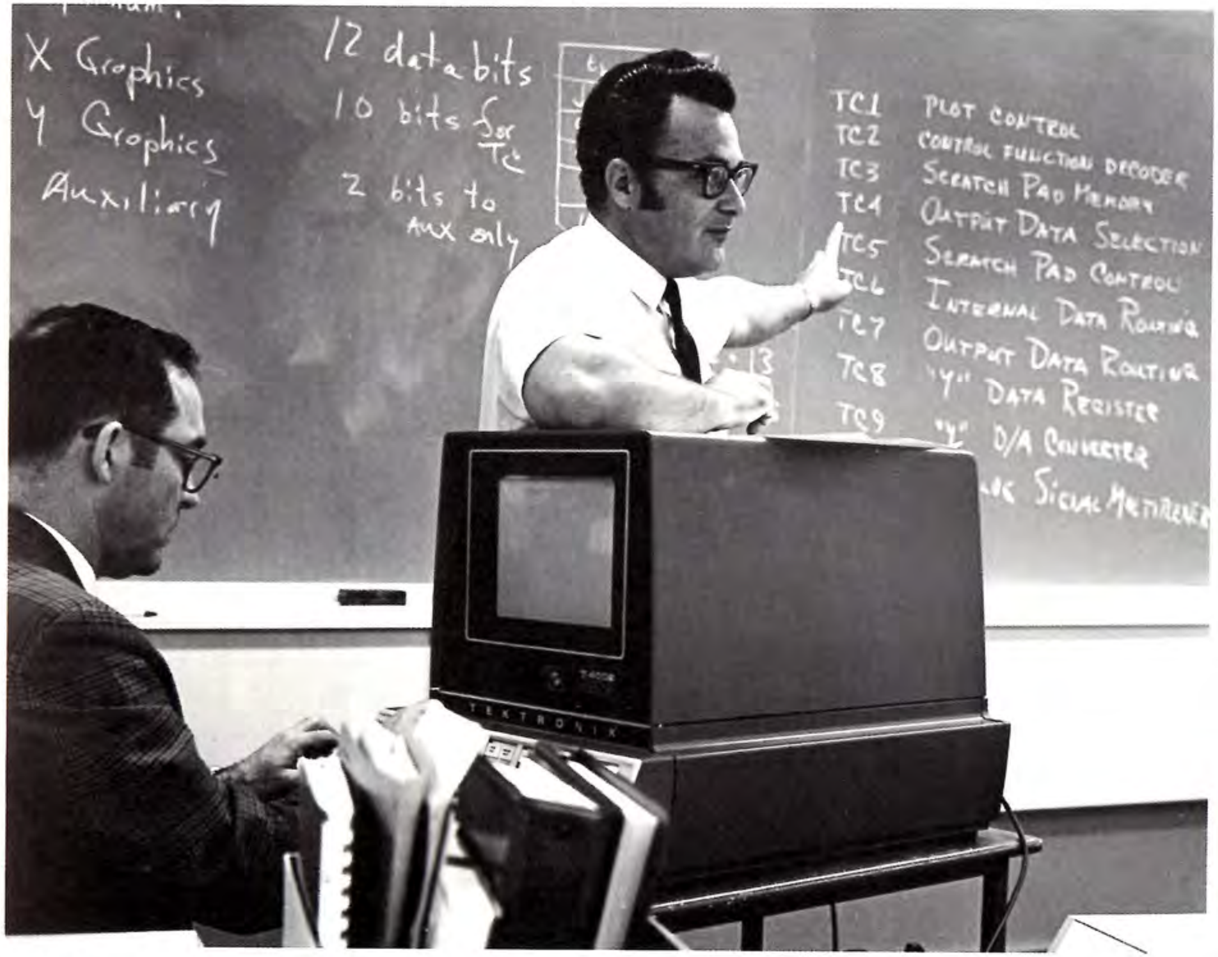
Computer-terminal marketing means not only a new kind of product for us but also, sometimes, a different sort of customer, one less technically trained than the typical engineer who uses an oscilloscope. This means a different approach to marketing and maintenance.

The nucleus of a group has been formed to market terminals and related products. Its three U.S. and four international field engineers, selected from experienced Tektronix FEs, have just completed an intensive night-and-day training program.

To ease the administrative load in the field, we created our ninth U.S. Marketing region, headquartered in Boston. A field office was added at Methuen, Mass., and another at Ft. Lauderdale, Fla., bringing our total to 54.

Keeping going. Great credit must go to our manufacturing people for their record productive effort—particularly in response to the inpouring of orders virtually at year's end.

In this respect, Tektronix operates with one hand (voluntarily) tied behind its back. Our strong belief that



FIELD ENGINEER Jack McQuain leads his fellow FEs in a technical seminar during their intensive course in marketing our new T4002 graphic computer terminal.

it is *long-term* employment that is of greatest value to the company (and most satisfying to the individual) has denied us the luxury of hire-and-fire to meet order surges and lulls. A work force of constant size is "harder to crank up," as has been said, "and more nearly impossible to shut off." Sudden sharp increases in product demand, then, call for concentrated human effort of the kind that has been tritely labeled "above and beyond the call."

Another handicap this year was the large diversion of Manufacturing effort into preparation for new instruments—manpower that otherwise would have been available to help keep moving the shipments "out the back door."

As to employment stability, we have been fortunate: Of the 4540 persons who were employees five years ago, 3376 (or 74.4 per cent) are still with us; of the 2703 here 10 years ago, 1472 (or 54.5 per cent) remain; of the 416 who worked with us 15 years ago, 210 (or 50.5 per cent) still are employees. And 23 of our employees today were among the 47 persons here two decades back.

Employment. We added 900 employees during the year, and at year's end employed 8752 persons: 6680 at Beaverton; 362 in our U.S. field offices, and 1710 internationally.

Strong emphasis has been placed on programs aimed toward problems of the disadvantaged. Minority employment increased from 3.5 per cent of the work force to 4.92 per cent—about the same proportion as minority population in the Portland metropolitan area.

Under a program sponsored by the National Alliance of Businessmen, to attack the problem of chronic joblessness, Tektronix hired 64 permanent employees, and 88 for summer work, who met NAB criteria. A program with local schools to provide work experience for young people resulted in 123 half-time placements.

Tektronix also has been a leader in the development of a community program to provide work-adjustment training for those who have been denied, or are unable to respond to, job opportunity.

"Disadvantaged," "minority" and "hard core" are words sometimes risky to define. But economic inequities *do* exist, in our area as elsewhere, and we have committed ourselves to a vigorous effort toward their alleviation.

The fact that these hiring programs have worked so satisfactorily at Tektronix stems at least in part from this fact: They are an extension of, rather than any dramatic shift in, our long-time policy of pursuing ability wherever we could find it. This pursuit has been made easier in the past two years by the formation of cooperative local and national programs aimed at economic justice.

The Results in Dollars

On the books, then, the story of the year is largely the story of the money we've put to use.

Expenditures went up. Up for research and development; up for advanced equipment; up for people; up for facilities; up for components.

These expenditures were deliberate, planned investments. Investments in tomorrow.

There were other expenses we did *not* deliberately choose, including the costly financial jiggery-pokery required to meet governmental restrictions—both foreign and domestic—on overseas investment. But the world is our market, and those—this year—were the rules.

Total expenses were up 12 per cent from the year before, to $134,768,000 from $120,227,000. Our Engineering expenditures alone increased $1,937,000 last year and another $3,930,000 this year—a 56 per cent jump in two years!

The total expenditure had a diminishing effect on earnings, as our interim financial reports to you have predicted it would . . . Still:

Earnings per share increased, to $1.75 from last year's $1.68.

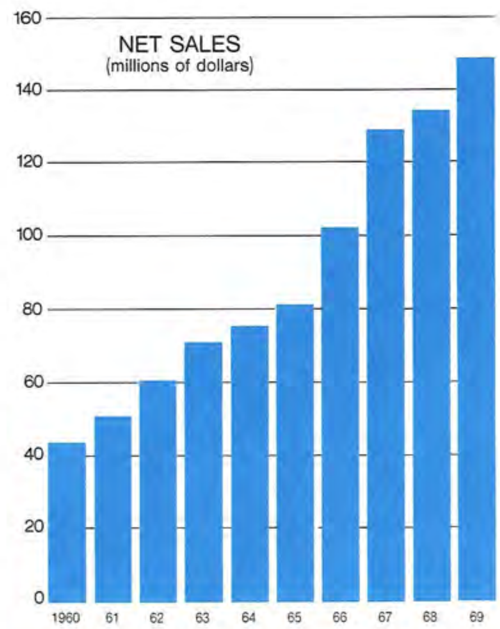
The increase resulted from very high sales as the year waned, and a productive effort by our Manufacturing people that we consider little short of Herculean—shipping a record $8.2 million in the last two weeks—$1.21 million above our previous high figure.

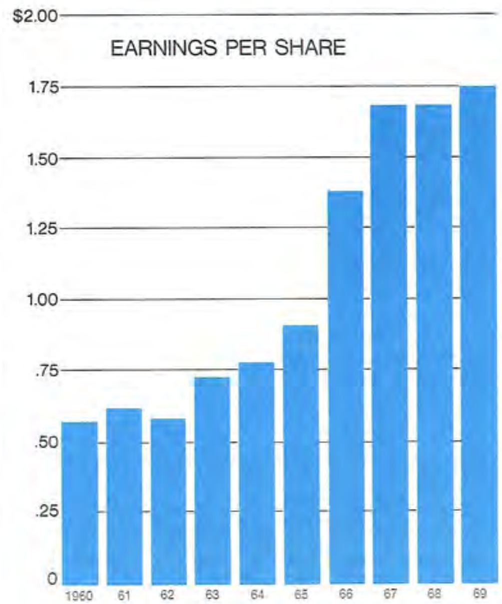
Earnings went up, to $14,089,000 from $13,429,000 a year ago.

Net sales showed a substantial gain—totaling $148,857,000, up from $133,656,000. This increase was about 11 per cent.

Of the sales, International accounted for $50,709,000, up from $43,488,000; and the U.S., $98,148,000, a gain from $90,168,000. The percentages of increase were 16.6 and 8.9 respectively. Exports from Beaverton showed a gain from $27,579,000 to $30,598,000.

And *customer orders increased* by nearly 15 per cent—to $157,634,000 from $137,474,000.





A Year Ends, a Year Begins


Photo courtesy The Oregonian

An enigmatic Chinese curse reads: May you be forced to live in interesting times.

There *is* a charm to the simple life; freedom from worry and distraction; the opportunity to contemplate and savor, and to take things one at a time.

But the pace of civilization works contrary to this kind of future. Ours is an age of multiple upheavals, in every sphere. Of these, the technological revolution most directly affects us as a company.

And, probably, to paraphrase a statement made earlier, the value of a company will be its ability to *contribute* to the changes that occur.

It would be nice to close this report with a socko ending. But there isn't anything very dramatic about continued good health. (By contrast, sudden recovery is dramatic; but you have to be sick first.)

And, the long and the short of it is, Tektronix is a healthy company.

We don't vary much from year to year, presenting rather a continuum. Its ingredients are technical innovativeness; youthful and assertive management (the average age of our vice-presidents is 43); heavy investment in research; and, we are sure, the finest employees.

In the year to come, we are optimistic about our sophisticated new oscilloscope line. We believe the T4002 terminal will begin to make an impact in the computer field. And, although we can predict continued high expenses, some of the costs incurred this year will *not* repeat: Those associated with preparation for new-instrument introduction. Other costs, for new-product support and component supply, will begin to be offset by sales as the instruments come onto the market.

Another stimulus would be the end of the Vietnamese conflict, should that occur. War tends to siphon national resources away from more productive uses. Unlike companies who produce military materials or deal in direct government contracts, Tektronix has found wartime a business depressant. (The economic benefits of peacetime are far secondary, of course, to the end of the human suffering.)

Governmental restrictions probably will continue into the indefinite future, affecting how we may finance our growing international business. Vietnam "peace" may or may not break out. The shakiness of foreign currencies is a persistent concern. And the last expert who tried to predict international politics is now a bum on a park bench.

We will keep a watchful eye on the world, and take what steps we can to be in a strong and responsive posture. We strengthened our banking practices this year, both overseas and in the U.S. Stateside interest rates have increased; but we are in a position to invest, rather than borrow.

The world in the years ahead will see accelerating change, with its potential not only for risk and worry but also for contribution and achievement.

For your company, the Chinese curse seems ill-suited. We look forward, with enthusiasm, to interesting times.

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)

1967	1968	1969	
$129,031	$133,656	$148,857	**NET SALES** Amounts receivable for products sold. Tektronix sold directly to customers at retail in the U. S., Canada, U.K., Australia, Switzerland and France, 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
59,511	60,330	68,612	**MANUFACTURING COST OF SALES** Includes the cost of materials used in the products sold, the payroll costs of the employees who fabricated and assembled them, the payroll of their supervisors and those who assisted them, and the expense of running the manufacturing operations, leaving
69,520	73,326	80,245	**GROSS PROFIT** From which must be deducted
44,484	48,154	55,265	**OPERATING EXPENSE AND PROFIT SHARING**
9,548	10,713	12,267	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.
10,428	12,365	16,295	ENGINEERING 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; design and develop improved manufacturing methods and processes, including tooling and equipment; and assure that new product design provides "buildability" by these methods. The expenditure includes costs of materials, supplies, space and related expenses.
10,764	11,534	13,343	ADMINISTRATIVE Including payroll of executives and personnel working on accounting, employment, data processing, facilities and communications functions, and the many expenses related to them.
13,744	13,542	13,360	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.
25,036	25,172	24,980	**OPERATING INCOME** Which is (increased) or decreased by non-operating items
(143)	70	(347)	**NON-OPERATING EXPENSE (INCOME)**
(293)	(174)	(169)	GAIN ON DISPOSITION OF FACILITIES Amount in excess of depreciated cost recovered from sale of machinery and equipment no longer needed.
192	29	194	INTEREST EXPENSE Cost of borrowed money.
(42)	215	(372)	OTHER Including interest income, royalties, amortization of intangibles, and one half the earnings of 50% owned SONY/Tektronix Corporation, leaving
25,179	25,102	25,327	**INCOME BEFORE INCOME TAXES** From which is deducted
11,740	11,550	11,190	**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
9,725	8,802	8,155	U.S.
750	800	850	STATE
1,265	1,948	2,185	FOREIGN
13,439	13,552	14,137	**INCOME BEFORE MINORITY INTEREST** From which is deducted
50	123	48	**MINORITY INTEREST** (Note 1) Share of earnings of one marketing subsidiary corresponding to portion of its equity not purchased by Tektronix, Inc. until 1969, leaving
13,389	13,429	14,089	**EARNINGS** The measure of company performance—the amount reinvested in expansion of business.
50,785	64,174	77,603	REINVESTED EARNINGS AT BEGINNING OF YEAR From which is deducted
		(346)	COST OF TREASURY SHARES IN EXCESS OF PROCEEDS FROM SALE (Note 5)
64,174	77,603	91,346	REINVESTED EARNINGS AT END OF YEAR
7,970	7,998	8,094	**COMMON SHARES OUTSTANDING AT END OF YEAR**
$1.68	$1.68	$1.75	**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 27, 1967	May 25, 1968	May 31, 1969	
$62,952	**$72,626**	**$84,313**	**CURRENT ASSETS** Those assets likely to be converted to cash or used in the ordinary operation of the business, made up of:
2,241	1,635	988	CASH Mostly in checking accounts or deposits in transit.
3,528	11,879	11,232	CASH EARNING INTEREST Invested in savings accounts, certificates of deposit, U. S. treasury bills, prime commercial paper or short term tax exempt securities.
21,682	22,742	27,223	ACCOUNTS RECEIVABLE Amounts due from customers for sales on credit.
(125)	(130)	(150)	ALLOWANCE FOR DOUBTFUL ACCOUNTS Estimate of erosion in value of accounts receivable because a few customers may not pay us.
1,476	1,518	3,989	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.
873	901	1,004	SUPPLIES Items that will be consumed in operating offices, maintaining facilities and running manufacturing plants.
33,277	34,081	40,027	INVENTORIES, AT LOWER OF COST (FIRST-IN, FIRST-OUT) OR MARKET The cost of products finished 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. Consisting of:
6,228	6,849	7,613	Finished goods
14,554	16,375	19,227	Work in process
12,495	10,857	13,187	Purchased materials
23,258	**21,839**	**26,672**	**CURRENT LIABILITIES** Obligations due to be paid within one year, including
—	—	2,951	NOTES PAYABLE Amounts borrowed for less than one year.
749	171	26	CURRENT PORTION OF LONG-TERM INDEBTEDNESS (Note 2) Instalment payments due within one year.
3,508	5,010	6,248	ACCOUNTS PAYABLE Amounts due suppliers for materials and services bought on credit.
7,993	5,902	5,771	U.S., STATE AND FOREIGN INCOME TAXES Taxes not yet paid.
6,494	6,356	6,378	EMPLOYEE PROFIT SHARING (Note 3) Due employees and their retirement funds.
2,486	2,746	3,266	PAYROLL AND PAYROLL TAXES Amounts due employees next payday, and taxes due on or withheld from pay.
1,203	1,405	1,620	VACATIONS Amounts earned by employees for their vacations, but not yet used or paid.
825	249	412	INTEREST AND MISCELLANEOUS TAXES Sales taxes collected and interest not yet paid.
39,694	**50,787**	**57,641**	**WORKING CAPITAL** Current Assets minus Current Liabilities.
25,433	**28,332**	**36,195**	**FACILITIES AT DEPRECIATED COST** (Notes 2 and 6) The cost of buildings and equipment used in the business, reduced by depreciation.
25,065	29,447	31,310	BUILDINGS AND GROUNDS Cost of buildings, including parking lots and landscaping.
12,646	14,944	18,816	MACHINERY AND FURNITURE Cost of furnishings.
184	186	178	LEASEHOLD IMPROVEMENTS Cost of remodeling rented space.
(15,724)	(18,836)	(22,183)	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 sum-of-years-digits method.
622	1,407	1,569	LAND Cost of land used in business.
2,640	1,184	6,505	CONSTRUCTION IN PROGRESS Costs on invoices received before completion of buildings.
3,494	**2,888**	**2,768**	**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.
841	**1,116**	**1,268**	**INVESTMENTS** Including cost of land, mostly in Tektronix Industrial Park, not used in the business and the investment in and advances to 50% owned SONY/Tektronix Corporation at cost and one half its reinvested earnings.
1,328	**817**	**353**	**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.
586	**709**	**—**	**MINORITY INTEREST IN SHAREOWNERS' EQUITY OF SUBSIDIARY** (Note 1) Portion of shareowners' equity of one subsidiary not purchased by Tektronix, Inc., until 1969.
67,548	**81,597**	**97,519**	**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:
5,997	5,997	6,196	COMMON SHARES The amount the company received for issuance of common shares.
(2,623)	(2,003)	(23)	TREASURY SHARES The cost of Tektronix, Inc. common shares repurchased by the company and held in the company treasury.
64,174	77,603	91,346	REINVESTED EARNINGS The accumulation of earnings that has been reinvested in the business.

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.

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.

1967 (THOUSANDS)	1968 (THOUSANDS)	1969 (THOUSANDS)	
$19,455	**$18,422**	**$20,419**	**THESE** (additional) **RESOURCES BECAME AVAILABLE FROM:**
13,389	13,429	14,089	EARNINGS Net income after income taxes as shown on EARNINGS STATEMENT.
2,991	3,436	3,823	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.
197	470	447	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.
548	620	1,634	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 1967 and 1968 to complete acquisition of Pentrix Corporation.
—	—	199	ISSUANCE OF COMMON SHARES Net proceeds from sale of Tektronix, Inc. unissued shares to employees exercising stock options after depleting the supply of treasury shares.
100	127	179	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.
586	123	48	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.
1,644	217	—	LONG-TERM INDEBTEDNESS INCURRED In 1967, portion of purchase price of acquired companies to be paid in instalments. In 1968, amount borrowed from a Swiss bank.
11,678	**7,329**	**13,565**	**THESE RESOURCES WERE USED FOR:**
5,803	6,464	11,861	ADDITIONS TO FACILITIES Cost of land, buildings, machinery and furniture purchased or constructed.
749	565	464	REDUCTION OF LONG-TERM INDEBTEDNESS Amounts becoming current liabilities due within one year.
3,546	25	327	INTANGIBLE ASSETS Amounts paid in excess of values ascribed to the net tangible assets of the companies acquired (goodwill).
372	275	155	INVESTMENTS Including cost of investment in and advances to 50% owned SONY/Tektronix Corporation and miscellaneous investments.
—	—	758	PURCHASE OF MINORITY INTEREST The book value of that portion of shareowners' equity in a subsidiary purchased by Tektronix, Inc. in 1969. Equals the sum of the three years shown above.
1,208	—	—	PURCHASE OF TREASURY SHARES Cost of Tektronix, Inc. common shares acquired by company.
7,777	**11,093**	**6,854**	**RESULTING INCREASE IN WORKING CAPITAL** Added to
31,917	39,694	50,787	WORKING CAPITAL AT BEGINNING OF PERIOD Results in
39,694	**50,787**	**57,641**	**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.

Notes to Financial Statements, May 31, 1969: Tektronix, Inc. and Subsidiaries

NOTE 1. PRINCIPLES OF CONSOLIDATION AND INVESTMENT IN SUBSIDIARIES:

The consolidated financial statements include all the Company's wholly-owned subsidiaries operating in Canada, United Kingdom, Channel Island of Guernsey, The Netherlands, Switzerland, Australia, and France.

In November 1966, the Company acquired by purchase 80% of the outstanding shares of Relations Techniques Intercontinentales and in January 1967, Tektronix International A.G. acquired by purchase all of the outstanding shares of Telequipment Limited. The Statement of Consolidated Earnings and Reinvested Earnings includes the operations of these subsidiaries from the dates of their respective acquisitions. The Company purchased the remaining 20% of the outstanding shares of Relations Techniques Intercontinentales in February 1969.

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 31, 1969, except that real property and depreciable personal property in 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 $917,611 of intangibles carried on the balance sheet of Relations Techniques Intercontinentales) exceeded the cost of the Company's investment by $15,870,653 at May 31, 1969. This amount is included in the statement of consolidated financial condition as follows:

Consolidated reinvested earnings	$17,118,715
Intercompany profit eliminated in consolidation	1,480,272
Intangible assets — 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)	(2,728,334)
Total	$15,870,653

The assets and liabilities of the subsidiaries (translated at appropriate rates of exchange) included in the statement of consolidated financial condition at May 31, 1969, are: current assets, $24,478,822; property — net, $6,635,713; intangible assets, $2,094,284; investments, $108,496; current liabilities, $5,612,471; and long-term indebtedness, $353,199. The Company's equity in the net income of the subsidiaries for the year ended May 31, 1969, was $6,189,522.

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 31, 1969 was $449,642 which includes $139,334 capital, $243,228 earnings for year ended May 31, 1969 and $67,080 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 31, 1969 is sufficient to cover any U. S. income taxes expected to accrue by reason of required repatriation of foreign earnings to May 31, 1969 under such Regulations. Pursuant to Subpart F of the Internal Revenue Code, provision has been made for U. S. income taxes on approximately $850,000 of undistributed foreign income, of which approximately $500,000 applies to the year ended May 31, 1969.

NOTE 2. LONG-TERM INDEBTEDNESS:

Long-term indebtedness at May 31, 1969, consists of a 4½% note payable to the City of Heerenveen, The Netherlands, which is payable in annual instalments 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 31, 1969, 8,094,565 shares were issued, 712 shares were held in the treasury, and 8,093,853 shares were outstanding.

NOTE 5. EMPLOYEE SHARE PURCHASE AND STOCK OPTION PLANS:

Under an "Employee Share Purchase Plan" 188,796 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 $5,926 for the year ended May 31, 1969 has been charged against income.

Under stock option plans for employees, in which the options are "qualified stock options" as defined by the Internal Revenue Code, 243,837 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 instalments beginning one year after the date of grant.

At May 31, 1969, options to purchase 164,847 shares were outstanding for which the option price, ranging from $27.45 to $58.20 per share, amounted to $7,412,640, and options to purchase 35,942 shares were exercisable for which the option price amounted to $1,394,272. During the year then ended, options which became exercisable and options exercised were as follows:

	Options	
	Which Became Exercisable	*Which Were Exercised*
Number of Shares	64,955	92,773
Option price:		
Range per share	$15.95 to $44.75	$15.95 to $41.50
Total	$1,729,834	$1,663,616
Market value at date exercisable or exercised:		
Range per share	$46.70 to $63.60	$44.85 to $66.50
Total	$3,420,370	$5,256,373

The Board of Directors has adopted and intends to submit to the shareowners at the September 20, 1969 annual meeting a new stock option plan providing for the reservation of an additional 200,000 common shares.

Except for 12,485 previously unissued common shares issued in 1969 to holders of stock options, treasury shares have been issued to satisfy the stock option and share purchase plans. During the year ended May 31, 1969, the cost of the treasury shares issued exceeded the proceeds therefrom by $345,864 which has been charged to reinvested earnings.

NOTE 6. COMMITMENTS AND CONTINGENT LIABILITIES:

The companies are committed to pay aggregate rentals of approximately $1,930,000 on building leases expiring from June 1969 to September 1984. Rentals under these leases for the year ending May 30, 1970 will be approximately $443,000.

In connection with the expansion of facilities, the companies were committed under contracts and purchase orders in the amount of approximately $4,490,000.

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.

ACCOUNTANTS' OPINION

TEKTRONIX, INC.:

We have examined the statement of consolidated financial condition of Tektronix, Inc. and subsidiaries as of May 31, 1969 and the related statements 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. Previously we made similar examinations for each of the two preceding years shown.

In our opinion, the accompanying statements present fairly the financial position of the companies as of May 31, 1969 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.

Haskins & Sells

Portland, Oregon
July 17, 1969

Tektronix Consolidated Financial Statistics

(DOLLARS, SHARES AND SQUARE FEET IN THOUSANDS)

1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	Fiscal Year ending in May
43,006	50,278	60,136	70,451	75,503	81,099	101,759	129,031	133,656	148,857	NET SALES
4,568	4,909	4,607	5,771	6,308	7,319	11,052	13,389	13,429	14,089	EARNINGS
57¢	62¢	58¢	72¢	78¢	91¢	$1.38	$1.68	$1.68	$1.75	Per Share
10.6%	9.8%	7.7%	8.2%	8.4%	9.0%	10.9%	10.4%	10.0%	9.5%	% of Sales
41.8%	31.7%	22.7%	23.3%	20.7%	19.1%	25.0%	24.4%	19.9%	17.3%	% of Beginning of Year Shareowners' Equity
5,411	6,098	6,390	7,981	8,636	9,718	13,589	16,577	17,335	18,359	CASH FLOW
9,668	10,448	9,787	11,433	12,200	13,566	19,602	25,179	25,102	25,327	INCOME BEFORE INCOME TAXES
22.5%	20.8%	16.3%	16.2%	16.2%	16.7%	19.3%	19.5%	18.8%	17.0%	% of Sales
52.8%	53.0%	52.9%	49.5%	48.3%	46.0%	43.6%	46.6%	46.0%	44.2%	Income Tax Rate
12,318	16,520	21,978	26,143	26,146	26,018	32,489	38,192	41,356	48,686	PAYROLL BEFORE PROFIT SHARE
5,708	5,889	5,179	6,488	6,509	7,553	10,810	13,744	13,542	13,360	EMPLOYEE PROFIT SHARE
183	355	507	496	485	289	61	192	29	194	INTEREST EXPENSE
536	867	1,092	1,144	1,185	1,198	1,436	1,588	1,698	1,800	Facilities in Use at Year End in Square Feet
12,366	17,970	22,139	24,623	27,123	30,712	35,781	41,157	47,168	58,378	COST OF FACILITIES
4,233	6,486	4,600	2,749	3,043	3,910	5,705	5,803	6,464	11,861	INVESTED IN FACILITIES
843	1,189	1,783	2,194	2,301	2,342	2,456	2,991	3,436	3,823	FACILITIES DEPRECIATION (mostly sum-of-years-digits)
2,442	3,426	4,913	7,009	9,031	11,196	13,061	15,724	18,836	22,183	ACCUMULATED DEPRECIATION
27,054	37,384	45,627	51,329	55,322	59,147	76,116	92,720	104,962	124,544	TOTAL ASSETS
5,345	6,436	8,401	8,958	10,801	12,679	17,053	21,557	22,612	27,073	ACCOUNTS RECEIVABLE NET
10,936	15,228	17,208	21,033	20,430	19,678	28,473	34,150	34,982	41,031	INVENTORY (Including supplies)
17,130	22,404	27,995	33,318	36,857	39,064	52,781	62,952	72,626	84,313	CURRENT ASSETS
11,583	13,075	16,683	14,138	12,762	14,397	20,864	23,258	21,839	26,672	CURRENT LIABILITIES
5,547	9,329	11,312	19,180	24,095	24,667	31,917	39,694	50,787	57,641	WORKING CAPITAL
—	4,000	4,528	7,128	4,728	501	458	2,077	988	379	LONG-TERM INDEBTEDNESS (Including current portion)
7,980	7,980	7,980	7,980	8,073	8,008	7,984	7,970	7,998	8,094	Common Shares Outstanding
15,471	20,309	24,815	30,463	38,258	44,275	54,819	67,548	81,597	97,519	SHAREOWNERS' EQUITY
3,990	3,990	3,990	3,990	5,844	5,997	5,997	5,997	5,997	6,196	COMMON SHARE CAPITAL
11,481	16,319	20,825	26,473	32,414	39,733	50,785	64,174	77,603	91,346	REINVESTED EARNINGS
3,515	4,330	5,285	5,430	4,910	4,982	6,482	7,270	7,852	8,752	Number of Employees at Year End

Statistics for years prior to fiscal 1960 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, *Executive Vice President*
HOWARD VOLLUM, *President*
FRANK M. WARREN, *President, Portland General Electric Company*

OFFICERS

HOWARD VOLLUM, *President*
ROBERT G. FITZGERALD, *Executive Vice 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. POLITS, *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*

ENGINEERING

WILLIAM D. WALKER, *Vice President*
LANGDON HEDRICK, *Instrument Design*
C. NORMAN WINNINGSTAD, *Information Display*
WILLEM B. VELSINK, *Advanced Products Development*
J. LARRY BOWMAN, *Integrated Circuits Design*
CARLOS L. BEECK, *Electromechanical Component Design*
HOWARD W. MIKESELL, *Evaluation*
WALLACE L. BLACKBURN, *Industrial Support*

CATHODE-RAY TUBE ENGINEERING AND MANUFACTURING

WILLIAM J. POLITS, *Vice President*
GORDON BARNETT, *Cathode-Ray Tube Development*
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*

MANUFACTURING

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

INTERNATIONAL

DONALD ALVEY, *Vice President*
LEWIS C. KASCH, *Marketing*
LAWRENCE L. MAYHEW, *Manufacturing*
LESLIE F. STEVENS, *Finance*

Managers of Subsidiaries:
FRANK DOYLE, *Tektronix Limited and Tektronix Guernsey Limited*
TONY H. BRYAN, *Tektronix Holland N.V.*
HARRY SELLERS, *Tektronix U.K. Ltd.*
CHARLES BILLET, *Relations Techniques Intercontinentales, Paris, 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 Ltd., London, England*
SONY/Tektronix Corporation, Tokyo, Japan:
TAKASHI KUMAKURA, *SONY/Tektronix Corporation, Japan*
WILLIAM PYLE, *Tektronix Corporate Representative*

U. S. MARKETING

CHARLES L. BOUFFIOU, *Vice President*
FRANK ELARDO, *Assistant, U. S. Marketing*

Regional Sales Managers:
GORDON R. ALLISON, *Dallas*
THEODORE BRANDT, *Long Island*
HAROLD D. BUTTS, *Boston*
RALPH F. EBERT, *Chicago*
DAN V. GUY, *Los Angeles*
RICHARD K. HERDMAN, *Annapolis*
WILLIAM F. KLADKE, *Syracuse*
EDWARD M. VAUGHAN, *Atlanta*
WILLIAM WARD, *San Francisco*

FINANCE AND ADMINISTRATION

FRANK CONSALVO, *Vice President*
HUGO PANKOW, *Facilities*
DWAIN QUANDT, *Data Services*
GUYOT FRAZIER, *Personnel*
BYRON BROMS, *Corporate Planning*
DON A. ELLIS, *Treasurer*
DERROL PENNINGTON, *Education and Training*
ELWELL E. SWANSON, *Controller*
WILLIAM B. WEBBER, *Vice President, Community Relations*

Tektronix United States Facilities

UNITED STATES

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

REGION OFFICES

Annapolis, Md.
Atlanta, Ga.
Boston, Mass.
Chicago, Ill.
Dallas, Texas
Long Island, N. Y.
Los Angeles, Cal.
San Francisco, Cal.
Syracuse, N. Y.

FIELD OFFICES

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

SERVICE CENTERS

Albuquerque, N. M.
Alhambra, Cal.
Atlanta, Ga.
Baltimore, Md.
Beaverton, Ore.
Boston, Mass.
Chicago, Ill.
Concord, Cal.
Dallas, Texas
Detroit, Mich.
Endicott, N. Y.
Greensboro, N. C.
Houston, Texas
Huntsville, Ala.
Indianapolis, Ind.
Long Island, N. Y.
Orange, Cal.
Orlando, Fla.
Palo Alto, Cal.
Philadelphia, Pa.
Rockville, Md.
San Diego, Cal.
Springfield, N. J.
Syracuse, N. Y.
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;

England—Tektronix U.K. Ltd., Harpenden; Telequipment Ltd., London;

France—Relations Techniques Intercontinentales, Paris, Toulouse, Nice, Lyons and Rennes;

Japan—SONY/Tektronix Corporation, Tokyo and Osaka;

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;

Denmark, Tage Olsen, A.S., Copenhagen;

Finland, Into O/Y, Helsinki;

Greece, Marios Dalleggio Representations, Athens;

Israel, Eastronics Limited, Tel Aviv;

Italy, Silverstar Ltd., Milan, Rome, Turin;

Kenya, Projects Development Ltd., Nairobi;

Lebanon, Projects, Beirut;

Mozambique, Equipamentos Tecnicos, Lda., Mozambique;

Norway, Morgenstierne & 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;

Sweden, Erik Ferner, A.B., Stockholm, Goteborg;

The Netherlands, C. N. Rood, N.V., Rijswijk;

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

Telequipment Ltd., London—Telequipment Instruments

SONY/Tektronix Corporation, Tokyo, Japan—Serving Japan

MARKETING REPRESENTATIVES

Serviced by Tektronix, Inc., Beaverton

Argentina, Coasin S.A., Buenos Aires;

Brazil, Importacao Industria E Comercio Ambriex, S.A., Rio de Janeiro, Sao Paulo;

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;

Korea, M-C International, Seoul;

Malaysia, Mecomb Malaysia Sendirian, Berhad, Selangor;

Mexico, Electronica Fredin, S.A., Mexico;

Morocco, F. Pignal, Casablanca;

New Zealand, W & K McLean, Ltd., Auckland, Wellington;

Pakistan, Pak-Land Corporation, Karachi;

Peru, Importaciones y Representaciones Electronicas, S.A., Lima;

Singapore, Mechanical & Combustion Engineering Co., Ltd., Singapore;

Taiwan, Heighten Trading Co., Ltd., Taipei;

Thailand, G. Simon Radio Company Ltd., Bangkok;

Tunisia, Selection Internationale, Tunis;

Uruguay, Coasin Uruguaya S.A., Montevideo;

Venezuela, Coasin C.A., Caracas.