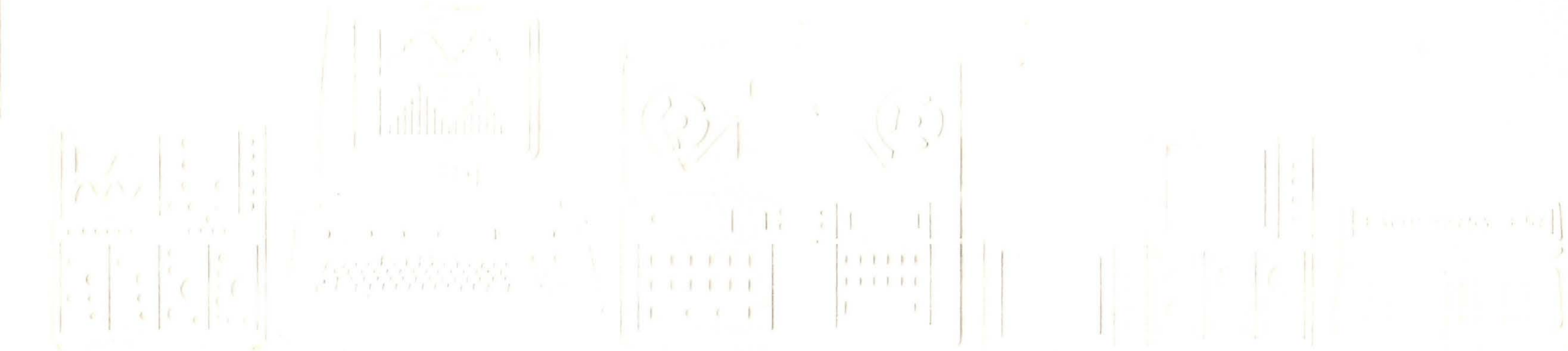


TEKTRONIX, INC. ANNUAL REPORT ▪ 25th Year Ending May 29, 1971

To Shareowners and Employees:

There has been no year without problems. They may be less noticeable, or seem more tolerable, when profits are high. But they're there, just the same.

A lot of you have indicated you read our annual report cover to cover. For this reason we've always tried to make it thorough rather than sketchy, informative rather than decorative; and to give it continuity from one issue to the next, so any given year won't be seen only in terms of isolated financial figures. After all, nothing much really "ends" on the last Saturday in May. Things keep going.

This year the financial figures speak for themselves. Orders and sales, despite a rise in the last quarter, were down for the year, especially in the US. That sound you don't hear is the economy booming.

We've done two important things this year. Each will have lasting beneficial effects:

One is the introduction or announcement of over 100 new products—a good many of them pacesetters—in the 15 months from year's start to the issuance of this report. That's a lot. One customer asked us if our engineers ever sleep.

But there's no silver lining without a cloud. Such a large number of new products increases the potential difficulties in scheduling, tooling, training and parts shortages. These are problems that need to be made quickly visible so they may be more easily solved.

In this regard, our new organization is helping a lot. That's the second important thing Tektronix has done, re-aligning into seven product-related groups, each with its own engineering, marketing, manufacturing and support people. Dividing our line into digestible chunks shows up the progress, costs, problems and profitability of individual products. Our accelerated rate of introduction (which is continuing into the new year) demands this kind of organization. And the managers involved are enthusiastic about it.

One of the greatest disservices a company can do is to fail to challenge its employees adequately. When it's growing, the task is easier; jobs and people tend to grow with it. When it isn't, the chore is more difficult.

For this reason, I feel a very important aspect of our regrouping is that it *has* provided growth opportunity for people whose talents might otherwise have been less visible. And they've responded, in most cases, with exceptional performance.

Each company achievement is a personal achievement, for someone or some group. It's been a pleasure for me this year to see individuals emerge from the organization, seize the challenge, whatever it may be, and, by outdoing themselves, master it.

It would be appropriate in an annual report to cite those individual accomplishments on which this year's company progress has depended. But I'm afraid it would be a list too long to publish.

I'm proud of each of these people, and, more important, they're very proud of one another.

The life of M. J. Murdock, Tektronix founder and board chairman, ended in a seaplane tragedy May 16 when he drowned in the Columbia river. He was 53.

Jack and I became friends 34 years ago, well before Tektronix began. A warm, outgoing man, he was also humble and unassuming, and probably the best listener I have ever met. Despite his business achievements and national stature, he was publicly not well known. This was by choice; he was an unpretentious man who shunned the limelight.

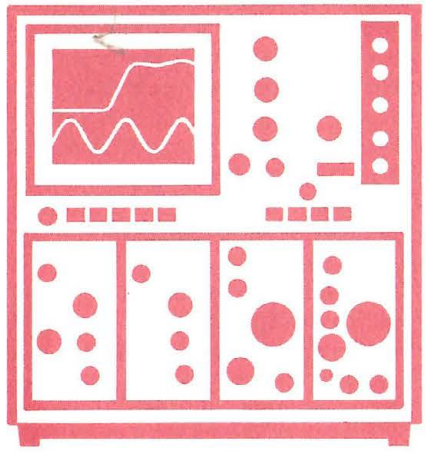
Jack had not been involved in our day-to-day operations for some years, but as board chairman he continued to contribute sound advice and invaluable insights. In the earlier days, he led largely by setting an example. His orientation toward the customer's point of view, his informality and his disregard of status symbols have all become part of the way Tektronix operates. His influence will live on in our practices and policies.

The world is always poorer when a positive influence is lost. So it will miss Jack Murdock, a good man and a close friend to so many of us.

Howard Vollum

August 5, 1971 President

THE GROWING PRODUCT LINE



The Versatile Oscilloscope

A laboratory oscilloscope is a complex, integrated system. 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). A focused electron beam from the CRT cathode makes a glowing spot on the tube's fluorescent screen. This spot of light—which can be moved up and down or from side to side—draws the graph on the screen.
- 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 graph paper. The spot "sweeps" at almost any rate—one second per ruled division, or 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 deflection system,* 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 signal voltage—thus the amplitude of whatever that voltage represents: Heat, light, sound, gravity, pressure, acceleration, chemical reaction.

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

Phenomena that happen over and over produce a continuous image. But the oscilloscope can also graph events that happen randomly, or only once: An explosion, for instance. Even if the event occurs just once and lasts only a millionth of a second, special cameras can record the graph—and some oscilloscopes can store it *on* the screen, for as long as needed.

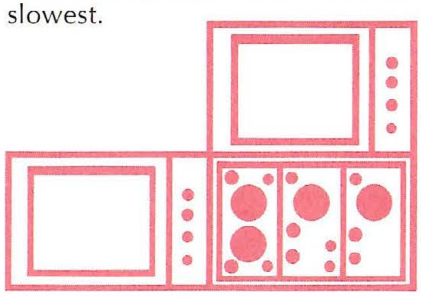
An oscilloscope has four basic characteristics:

Sensitivity describes how small a signal it can measure. Some Tektronix instruments can picture signals as small as one millionth of a volt.

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

Sweep range tells you how fast and how slowly a CRT beam can cross the screen.

The wider this range, the greater the variety of waveforms you can look at. On most Tektronix scopes, the fastest sweep is several hundred million times faster than the slowest.



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

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

Scopes vary in other special features, that allow:

- Comparing simultaneous signals, by drawing two (or more) graphs at a time with a *dual-trace* or *dual-beam* instrument.
- *Storage,* or retaining the waveform display after the signal ceases.
- *Spectrum analysis,* by converting from a time to a frequency base. This allows an equally useful analysis of complex signals, separating them into their component frequencies.
- *Sampling* successive bits of a repetitive signal and assembling the samples into a graph of the waveform—thereby measuring events far too fast for conventional oscilloscopes. The fastest "equivalent-time" sampling sweep is 3.5 times the speed of light.

Some general-purpose instruments get their great versatility through interchangeable *plug-in* units, which contain some portion or other of the scope's circuitry.

Some plug-ins control *vertical* deflection, converting the signal into up-and-down CRT beam

movement. Most of these are *amplifiers* (or pre-amplifiers).

Some 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.

Dual- or *four-trace* plug-ins 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.

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

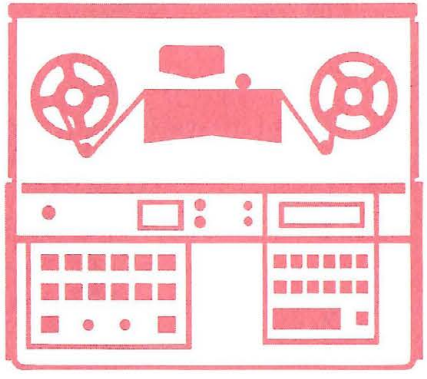
Time, like amplitude, can be magnified with plug-ins. In one method, a timing device (called a *delaying sweep)* delays the waveform until the desired segment of the signal occurs; then it triggers a second, faster sweep that fills the display area with that segment.

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

Sampling and *spectrum analysis,* mentioned earlier, may also be obtained through plug-ins.

Unique *multimeter* and *counter* plug-ins let the Tektronix 7000-series oscilloscope user combine in one instrument the visual advantages of a waveform display with related digital measurements of voltage, current, resistance, temperature and frequency. Formerly, meters and counters were purchased only as separate stand-alone instruments.

Machine-Control Units



One of the world's giant industries is machine tooling. Almost everything mass-produced of metal relies on machine tools to cut, bore, punch, turn, form, mill and weld.

All these processes used to be controlled by hand; then mechanical controls began to supersede manual ones. Now an increasing number of mechanized processes are electronically controlled by punched tapes, usually computer-generated. These tapes, run through a machine-control unit, are translated into machine directions to build the required part.

An engineering drawing of the part is converted into a numerical list of coordinates describing the machine steps needed to build it—plus coded instructions for tool changes and velocities. This data is then turned into a punched tape of mylar or paper. The tape, fed into the controller, governs the movement of the machine tool up and down, back and forth and from side to side; its speed; its feed rates, and its tool changes.

Tektronix produces five MC models, offering various features. Available with three of them is a Tek-made storage display unit. While the controller's tape reader converts the tape into tool movements, a digital-to-analog (numbers-into-pictures) converter produces, on the storage screen, a display of the tool path. Thus the operator may "draw" the part while the machine tool produces it —or without having to make the part at all, thus quickly and inexpensively checking for errors in the tape.

A separate product, unique to Tektronix, is a program verifier, which proves out a tape by "drawing" the part on the display screen, but does not control a machine tool.

Graphic Computer Display

Ever since computers were invented, people have worked at faster, easier and better ways to "converse" with them. Among the very early ways was to insert information on coded punched cards and get data out on sheets of paper.

Later on, came the computer terminal. Terminals, various in kind, are alike in that they let the user, whether he's located near the computer or at some distance from it, directly address the machine. He may easily put in information, ask questions and get rapid answers back.

Most terminals insert the information, in code, from a typewriter keyboard, and get data from the computer in words and numbers, sometimes printed on paper, sometimes shown on a big picture tube.

Graphic terminals add to this alphanumeric capacity the ability to display charts, maps, graphs and other pictorial material (the most useful way to portray certain kinds of information) and to look at, manipulate and modify those pictures.

Tektronix terminals receive their information on large Tek-developed storage cathode-ray tubes, which hold the computer-produced graphics in place while they're being studied. Coded in-

formation is sent on a keyboard, aided by a *joystick* that acts much like a pencil on the CRT screen. The computer is thus told to move, erase, enlarge or alter the displayed graphics.

Related display products include *hard-copy units,* which quickly make paper duplicates of information from the CRT screen; and a variety of *display monitors,* which do not offer two-way communication but merely picture computer output in a variety of ways.

"Minicomputer" Calculators

A *programmable calculator* may almost be termed a minicomputer, although it's less complex (and less costly) and has less data storage. Their similarity is that both *are* programmable. This means the user may give the calculator not only a mathematical problem but also complete instructions for solving it, then get the correct solution at the touch of a single key.

The first hand adding machine made arithmetic more accurate. The first electronic calculator made the whole process much faster. But, in comparison, the step to programmability was a giant step indeed.

Tektronix manufactures two models, both designed largely for scientific usage. Like other programmable calculators, ours provide the entire range of mathematical functions—including trigonometry, so useful to the engineer. Ours require no training in computer programming. They may be addressed directly in the language of mathematics, rather than the language of computers. Thus they are very simple to use.

Related products include *programmers,* which extend the program-step storage of the calculator; *printers,* which make a permanent copy of the program and the solution; *instructors,* which provide instructions, not only in code to the calculator, but also on an audio tape to the user; and other peripheral products.

ECONOMIC CLIMATE: NO CHANGE

The weather, reports the weatherman, will be "partly cloudy, changing to partly sunny."

A layman may well have trouble detecting just when that subtle shift takes place. Similarly, US businesses have had a hard time this year discerning changes in the economic climate.

It seems pretty well agreed that the US recession "bottomed out" in early winter. But nothing very dramatic has happened since then. The recession has been termed "shallow" by some economists. Yet it's not the depth of the decline but rather its long duration that has made its effects so severe. Like a rubber ball that's come to rest, it seems hard for the economy to start bounding upward again.

The recession has lasted long enough to discourage some capital-goods buyers from buying capital goods. That hasn't helped Tektronix at all.

Our orders, particularly in the US, fell sharply in the first quarter; stabilized in the second, and recovered somewhat in the third. Then they turned up briskly in the fourth, spurred by the largest single order month in our 25-year history.

Heartening though that latter news may appear, we've learned to view with caution any such sudden surges. Many of the same factors that dampened economic activity in the past year still abound. So, despite high-order blips and bubbles, it would be premature for us to say the economic weather has changed from partly cloudy to partly sunny.

Tektronix' year had a few bright spots: Excellent TV instrument sales, worldwide; growth in demand for digital systems, for information-display products and for the lower-priced Telequipment oscilloscope line; and (if you looked very closely) an increase in overseas net sales.

The best you can say for the rest of the year, as more than one manager wryly commented, is that it was better than a poke in the eye with a sharp stick:

Net sales came to $146 million. Last year they were $165.2 million.

Sales outside the US increased about 1 per cent, moving to $62.3 million from $61.9 million.

However, *the US portion of sales,* $83.7 million, was down from last year's $103.3 million.

Customer orders totaled $142.8 million. Last year they came to $166.8 million.

Earnings totaled $9.3 million, compared with last year's $14.3 million. *Earnings per share* were $1.15. The year before they were $1.76.

Earnings might have been higher were it not for a very difficult policy decision made in January: That was to try to retain employees, despite a gap between incoming orders and production capacity.

Use of 17 unpaid days off for everyone reduced expenses, and normal attrition helped bring our *employee* total down to 8886 at year's end, from 9857 last year.

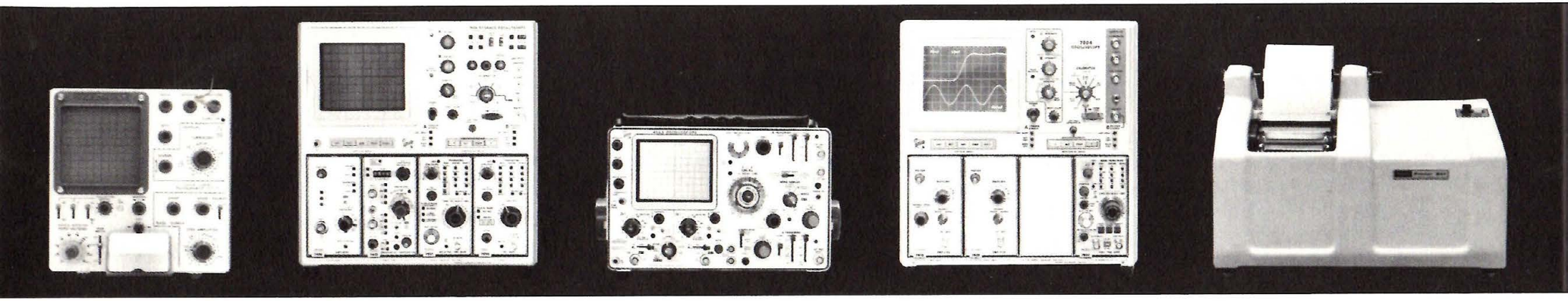
Acquiring the assets and business of Cintra Incorporated, Sunnyvale, Cal., in May brought the figure up to 8991.

Tektronix 1971 Financial Highlights

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

1970		1971		Increase (Decrease)		
$165,205,000	100%	$145,999,000	100%	($19,206,000)	(12%)	**RECEIVED BY THE COMPANY** For the sale of products, accessories, repair and replacement parts.
150,951,000	91½%	136,670,000	93½%	(14,281,000)	(9%)	**RELATED COSTS AND EXPENSES**
55,746,000	33½%	52,629,000	36%	(3,117,000)	(6%)	TO OUTSIDE SOURCES To pay for raw materials, purchased parts, rent, utilities, insurance, advertising, interest and other business expenses.
78,068,000	47%	69,650,000	47½%	(8,418,000)	(11%)	FOR EMPLOYEES To pay the men and women who design, make, sell and service our products—including profit share, social security and other employee benefits.
4,823,000	3%	5,813,000	4%	990,000	21%	FOR USE OF FACILITIES OWNED To provide for depreciation in value of buildings, machinery and furniture resulting from use, wear and age, mostly computed by sum-of-years-digits method.
12,314,000	7½%	8,578,000	6%	(3,736,000)	(30%)	FOR TAXES To pay U.S., foreign, state and local taxes.
14,254,000	8½%	9,329,000	6½%	(4,925,000)	(35%)	**RESULTING IN EARNINGS** Reinvested in expansion of our business.
$1.76		$1.15		(.61)	(35%)	**EARNINGS PER COMMON SHARE** Dilution if all outstanding share options had been exercised would not have reduced primary earnings more than one cent.
166,783,000	101%	142,765,000	98%	(24,018,000)	(14%)	**ORDERS RECEIVED** Customers' orders measured at catalog price.

1970	1971	Increase (Decrease)	
$ 98,430,000	$ 99,084,000	$ 654,000	Current Assets
$ 38,573,000	$ 29,481,000	$(9,092,000)	Current Liabilities
$ 59,857,000	$ 69,603,000	$ 9,746,000	Working Capital
$ 48,185,000	$ 48,062,000	$ (123,000)	Facilities—Net
$ 332,000	$ 1,857,000	$ 1,525,000	Long-Term Indebtedness
$112,276,000	$122,213,000	$ 9,937,000	Shareowners' Equity
9,857	8,991	(866)	Number of Employees at Year End



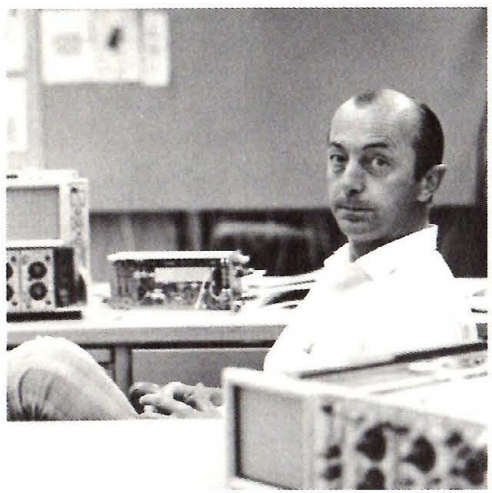
TELEQUIPMENT CT71
Curve Tracer

7514
90-MHz Storage Oscilloscope

454A
150-MHz Dual-Trace Portable Oscilloscope

7904
500-MHz General-Purpose Oscilloscope

941
Printer



ONE HUNDRED TEN NEW PRODUCTS

A competitor, overlooking a sea of new Tektronix products at a recent electronics show, remarked that we'd obviously been busy. Our Engineering vice-president agreed:

"Tickle a tiger," he said, "and that's what you get."

One hundred ten new products, announced or introduced. That's what it amounts to, in the 15 months that have elapsed since the fiscal year began.

Last year this report told you Tektronix had begun to streamline its organization in order to speed up product introduction. It's obviously working.

But sheer numbers tell only part of the story. The rest of it has to do with the impact of individual products, and with Tektronix' greatly enhanced competitive posture.

In *oscilloscopes,* we bolstered our position in market areas where we already were strongest, and recaptured the lead in those segments where competition was keenest. And, by offering performance never before available, we have begun to create entirely *new* markets.

In *information display,* our product line, our marketing force, and our reputation increased; manufacturing costs decreased. Another encouraging sign: In a total market that went down, Tektronix sales went up.

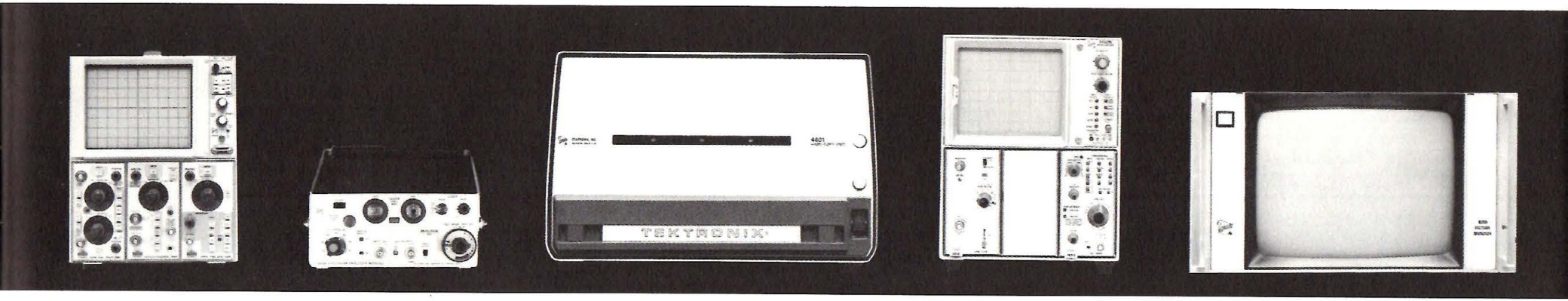
And we moved into two new fields, with unique and exceptional products: *Machine-control units* and *programmable scientific calculators.*

Much of our oscilloscope effort goes to *maintain* our pre-eminent position. (Most often, when a Tek scope becomes obsolete, it's because a more advanced Tek scope has been developed; thus, we are our own strongest competitor.)

But in these two new Tektronix markets, because our initial share is small, we're competing with others and not ourselves; the result is undiluted "add-on" business.

The 7904: Ahead in the Horse Race

Leadership is a hard thing to define. To some it means having the lion's share of the market; to some, marking up a lot of "firsts" and "bests"; to others, merely the satisfaction of being followed. In oscilloscopy, a traditional measure of leadership has been "horsepower"—that is, bandwidth.



5103N
2-MHz Oscilloscope, with Dual-Beam Storage Module

1401A
Spectrum Analyzer Module

4601
Hard-Copy Unit

7403N
60-MHz General-Purpose Oscilloscope

630
Black-and-White Television Picture Monitor

In the high-frequency area, Tektronix has nearly always led. This year we reinforced that lead with the 500-MHz 7904. The world's fastest general-purpose oscilloscope, it offers unequalled performance, clearly at the frontier of the state of the art.

Typical users will be developers of very fast computer memories; and, once superfast computers are built, this instrument will be bought to maintain them.

(A quibbler may point out that a scope with twice that bandwidth has existed for 12 years. That's correct; however, it is a special-purpose instrument used solely for extremely fast random or one-shot signals, such as in nuclear phenomena. We're not knocking that instrument; after all, we built it: The 1-GHz Tektronix 519. Designed in 1959 and unsurpassed in bandwidth, it has continued to meet the specialized needs of some customers.)

But the 7904 is a versatile general-purpose instrument. It accepts a wide variety of signals; it offers scale-factor readout on a bright CRT screen; and it can use, at one time, as many as four of 24 existing plug-ins, including meters and counters.

Also, for users with even higher-frequency requirements and no need for great sensitivity, we offer, through direct signal access to the CRT, the option of 1-GHz bandwidth.

The first 7904 will be available by December 1. Despite this relatively long waiting period, we have a large number of orders already in-house.

The 5103: Modularity Plus

In the past, the low-frequency oscilloscope user always had an awkward choice. He could meet his needs by buying an expensive general-purpose instrument. Or, he could buy a non-plug-in scope to meet a specific need; then, as his criteria changed, he'd have to buy another instrument.

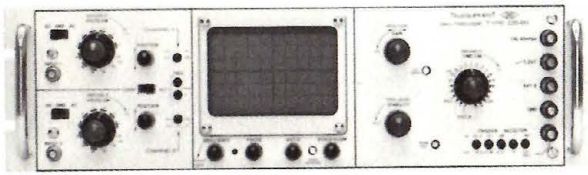
He no longer must face this choice.

The Tektronix 5100 series is the world's only plug-in low-frequency system. Its first mainframe, the 5103N, accepts up to three of 13 plug-in units at a time. It thus offers the user as little or as much of the available performance as he wants.

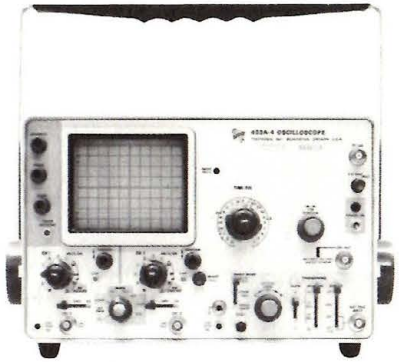
Versatility has always been a strong selling point at Tektronix. But in the 5100 we've extended it to new limits.

The display modules, like the plug-ins, are also interchangeable, a feature never before offered in a scope system. The user now has

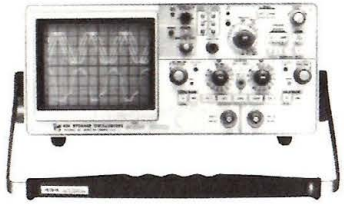
"Competitively, we're in a position to put up a whale of a scrap..."



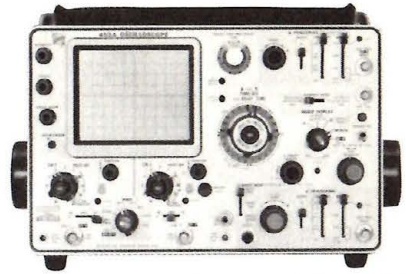
TELEQUIPMENT D54R
10-MHz Rack-mount Oscilloscope



453A-4
60-MHz Dual-Beam Portable
Oscilloscope



434
25-MHz Portable Storage Oscilloscope



453A
60-MHz Dual-Beam Portable
Oscilloscope

"Don't your engineers ever sleep?"

his choice of four CRTs: Storage or non-storage, single-trace or dual-trace.

Another versatile feature: The instrument converts, in just minutes, from a cabinet model, with the display module on top, to a rack-mount unit, with the module on the left.

Other features include a large (6½-inch) CRT, and scale-factor readout through the use of back-lighted skirt knobs.

The 5100 has 10 times the sensitivity and twice to four times the bandwidth of competing scopes, and equals or exceeds them in all measurement capabilities. On top of all that, it has the advantage in price.

This series, which also features simplified construction, has had an exceptional early order rate, and is clearly "the scope to beat" in the low-frequency market.

Strength in the Middle of the Line

Sales of our new 7400-series instruments are doing excellently.

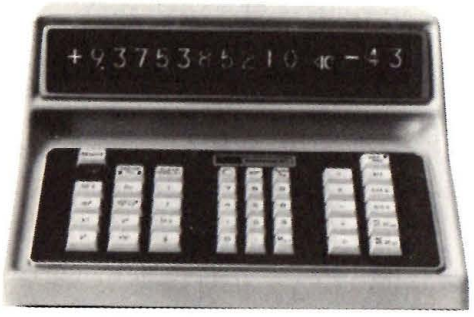
The "bread-and-butter" area—where most scopes are sold—is the 25 to 50-MHz range, which meets more customer measurement needs than any other. That center of the line is now firmly anchored by the 7403.

This series, which brings high performance down into a lower price range, owes a lot to the hard work that went into our first "new generation" scopes, introduced in 1969. You'll find many features of those more advanced instruments in the 7400 also, at much less cost due to simplified construction.

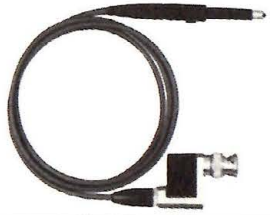
This small, lightweight 50-MHz scope, with its 6½-inch CRT, is a formidable entry, priced to compete with any laboratory instrument on the market. It offers three-plug-in capability; no competitor offers more than two.

Three plug-ins constitute a greater advantage over two than two did over one. The second plug-in was a horizontal one, giving simply time-base variety. But a couple of time bases will take care of most requirements. However, in the vertical system, where the signal to be measured is introduced, there is a need for *many* specialized plug-ins. The ability to insert and compare any two, by time-sharing the CRT beam, is a great asset to the user.

One of the most popular instruments at the IEEE electronics show at New York City in March was Telequipment's 25-MHz D67, designed and built by our subsidiary in London. This dual-trace delayed-sweep scope sells for less than $1000—an excellent value.



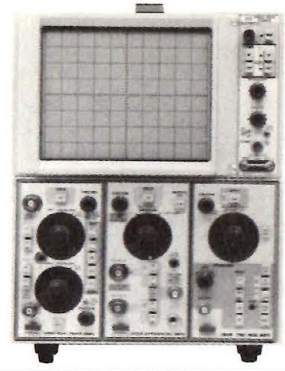
911 STATISTICIAN
Calculator



P6054
Miniature Voltage Probe

C-5
Oscilloscope Camera

172
Programmable Test Fixture



5103N
2-MHz General-Purpose Oscilloscope
with Single-Beam Storage Module

Portable Storage is Here

It was just a matter of time—and considerable ingenuity—until Tektronix merged two features whose development it has spearheaded—storage and portability. The result: The new 25-MHz 434.

It offers the advantages of a conventional portable with those of split-screen storage. Waveform comparison is easy on this scope; the full screen, or its upper or lower half, may be operated in stored or conventional mode. One stored waveform thus provides a stable reference against which to compare another, either stored or conventional.

Simple to operate, the 434 can store a bright trace up to four hours. It can even be set up to "capture" a random waveform while the operator is away, so he may view it at his convenience.

Lighted knob skirts automatically provide scale-factor readout—compensating, when needed, for use of a 10-times probe.

The portable weighs just over 20 pounds, and stands only 5¾ inches tall. It comes in a rack-mount model also, as does its non-storage version, the 432.

Also in the area of portables:

From a strictly marketing standpoint, the 453A and 454A rank among our strongest new products. They are significantly upgraded models of the 453 and 454, the standard instruments of the large computer-service market, and widely used by others who also need compact laboratory performance.

The 453A has a brighter CRT and increased bandwidth (from 50 to 60 MHz) than its predecessor; the 150 MHz 454A has increased sweep speed.

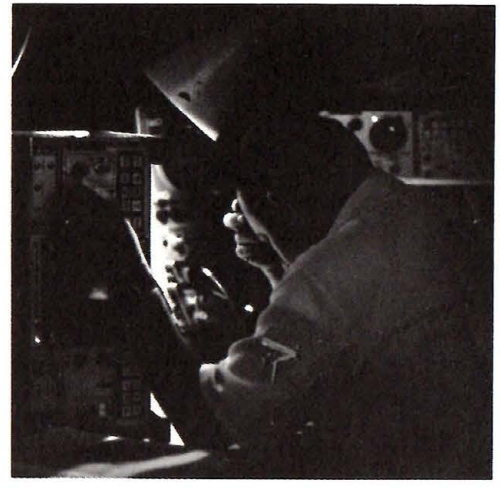
Both have larger CRTs than the models they replace; and both use a new "mixed sweep" technique, that lets the user switch in mid-waveform from one time base to another, allowing closer inspection of some desired portion of the electrical event.

If you talk about "portable portables," you must mention the handy 10-MHz SONY/Tektronix 324, designed and built by our jointly owned Tokyo subsidiary. It weighs only eight pounds.

Plugging Away

Along with this year's many scope advances, we made equivalent progress in the development of plug-in units.

Probably chief in importance are the 7D13 and 7D14, briefly mentioned in last year's annual report. The former is a digital multimeter; the latter an extremely fast



"Tickle a tiger, and that's what you get."

(500 MHz) real-time counter. The 7D13 measures voltage, current, resistance and temperature; the 7D14 counts electronic events in some chosen time span, and thus can measure, for instance, frequency.

Meters and counters are very common electronic tools, but normally must be bought as separate products, not plug-ins. Since they are *part of* our scope, it becomes a true integrated test system. The operator gets all the information he needs, in its most useful forms, by looking in just one place. Not only is this convenient and helpful in preventing error; but having one instrument instead of three also is a great space saver.

You save money, too, by not having to pay for a separate power system and a separate readout; the scope provides them. And you can make otherwise-impossible measurement combinations by letting plug-ins interact with one another. For instance, the signal-processing ability of the scope's vertical preamplifier plug-in may be used to beef up weak signals (such as from communications equipment) so that the counter can count them.

The idea of making these instruments as plug-ins has clearly been validated. So it's worth mentioning in passing that there are as many kinds of meter and counter as there are things to meter and count. So far, we've built two.

Other plug-ins worth special mention:

- The 5CT1N and 7CT1 are semiconductor curve-tracer units for 5000-series and 7000-series oscilloscopes respectively.

These plug-ins enable CRT display of the "family" of typical waveforms representing the behavior of a transistor or similar device under test. Until now, curve tracers have been available only as self-contained instruments, never as plug-ins.

These two units, which perform the more common curve-tracer functions, are very low in cost.

- The 7S12, a double-width plug-in combining vertical and horizontal elements, is a time-domain reflectometer for our 7000 series.

This TDR unit extends our ability in the area of sampling, a method of re-creating a waveform of an event too fast for a conventional oscilloscope to measure, by assembling successive bits of a repetitive signal.

Time-domain reflectometry is a way to measure length of electrical cable and connectors, or for detecting and measuring faults in

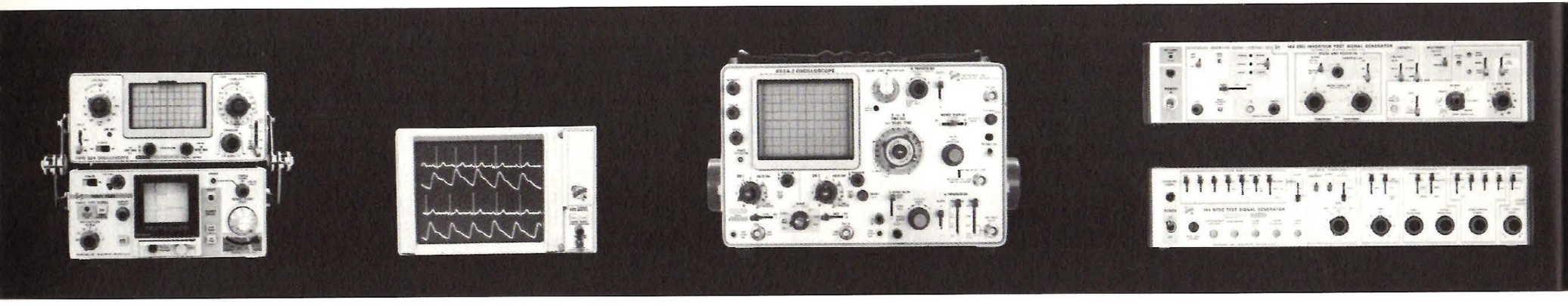
1501
Time-Domain Reflectometer (shown with SONY/Tektronix 324 Oscilloscope)

603
Storage Monitor

453A-2
60-MHz Portable Oscilloscope

148
Test Signal Generator (top)

144
NTSC Test-Signal Generator



them. A pulse sent into an electrical line is reflected back and observed on the scope CRT. The line length and the presence of any faults may be deduced from the characteristics of the displayed reflection—like shouting into a cave and analyzing the echo.

The state-of-the-art 7S12 has a reflected risetime of 45 picoseconds. That's 45 millionths of a millionth of a second.

A Whiz-Bang Year for TV Products

We had our best year ever in television instruments. Exclamation point.

Sales continued to reflect Tektronix' leadership. No company in the television measurement field has the instrument breadth or the worldwide acceptance that we enjoy.

Even at that, a number of our significant new products came out near or after the fiscal year's end; so their sales impact is yet to be felt. They were, however, extremely well received.

• *Picture monitoring.* We brought out our first black-and-white picture monitor, the 630, engineered and built by Tektronix Holland; and our first color monitor, the 650, which uses the SONY single-gun Trinitron tube to produce a sharp, bright, stable picture that enables critical quality measurements.

Unlike television waveform monitors, which exhibit the transmitted signal in a variety of ways, picture monitors display the actual TV image, for visual analysis.

Whereas most competing monitors merely let the user "eyeball" the picture to assess its quality, both our new products are professional-grade measuring instruments that can perform, for example, waveform analysis of studio timing errors or signal jitters.

• *Signal generation.* To our line of color-bar and television sync generators, we have added the capability of transmission testing, with the 147, for TV systems in the Western Hemisphere and Japan, and the 148, for Europe. These instruments allow insertion of test signals *while the program is being broadcast,* permitting continuous transmission quality control.

The 147 and 148, the most inclusive generators now on the market, let the user perform all known tests of any portion of the television signal anywhere along the line. For instance, a local station now may compare its received signal against prescribed standards. If it is deteriorated, the station may reject the telephone circuit and get alternative service from the phone company.

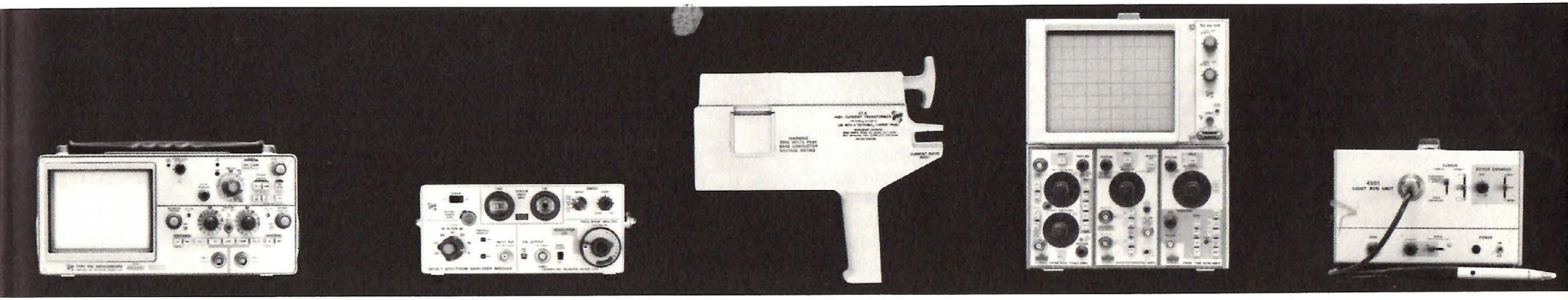
432
25-MHz Dual-Beam Portable Oscilloscope

1401A-1
Spectrum-Analyzer Module

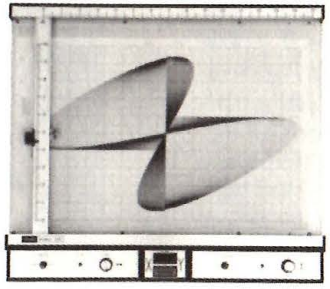
CT-5
High-Current Transformer

5103N
2-MHz General-Purpose Oscilloscope with Dual-Beam Display Module

4551
Light Pen Unit

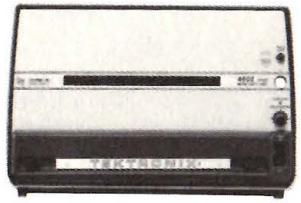


T4002A
Graphic Terminal



915
Plotter

1701
Machine-Control Unit



4602
Video Hard-Copy Unit

T-4005
Graphic Display Unit

"If we're not changing, we probably have no new problems—which probably isn't a very good thing..."

The 148 and the 650 series have met with particular interest in the growing Eastern European market.

Competing generators cost more than ours, and are bulkier and less flexible. Compactness offers a particular advantage for installation in mobile video trailers, commonly used for coverage of remote events.

• *Cable television.* We introduced two products designed for the growing CATV market. The 1401A is an improved version of our 1401 spectrum analyzer. The 1501 is a time-domain reflectometer.

The 1501 produces an oscilloscope trace and a permanent paper recording, "fingerprinting" the performance of part of a cable system. A user, by comparing recordings of a normal and a degraded signal, may detect the exact point in a line where a flaw is present, such as might be caused by intrusion of water into the cable.

• *A Worldwide Commitment.* Tektronix is a vigorous and highly respected participant in all major national and international television exhibitions. And our commitment is clear: To supply measuring instruments for all television systems, anywhere.

As a result of these continuing efforts, your TV picture, and those of viewers throughout the world, will continue to be sharper and better.

People Discover Graphics

Sales of information-display products were up.

This field still represents just a small portion of our business. Also, the *total* information-display market shrank. Still, up is up, which is the way Tektronix sales went. And next year promises to be better.

• *Terminals.* Two years ago we introduced a terminal that displayed not only computerized words and numbers but also pictorial material. This year much of the industry has come to agree with our assessment of graphics as an important feature.

At the Spring Joint Computer Conference in Atlantic City, most terminal manufacturers had added graphics capability. Even those who hadn't were "making do" with their alphanumeric terminals, drawing "pictures" with keyboard symbols.

So, it is into a growing area of awareness that we've introduced the 4002A, an advanced graphic terminal. Like its predecessors, it gives two-way communication, in characters and pictures, back and forth between man and computer. It can display over 3000 letters or numbers without flicker or drift (or equivalent fine-line graphics), and

do so inexpensively, thanks to our patented storage CRT, which holds the information on its screen, once it's received. By contrast, TV-type "refreshed" tubes must either eat up time and money "rewriting" the information while it's being viewed, or be accompanied by expensive memory units to provide storage.

In addition, the 4002A offers new capabilities:

- An easy-viewing display. Even when you stand back six to eight feet in a lighted room, the on-screen information is bright and clear.
- A "scratch pad" on the bottom of the display area, for alphanumeric composing and editing. Unlike the main portion of the display, which is a storage screen, the scratch pad works in "refreshed" mode. This feature lets you (or the computer) make *selective* additions, deletions or changes—such as correcting one number in a series of 50. The information may then be sent to the computer, or to the display area, or both.
- Strong software support. For a terminal to be used in particular applications, written computer programs and electronic "interfacing" are needed. This all comes under the heading, "software." We believe we now can interface with more kinds of computer than any other terminal manufacturer.

Interfacing and software support will couple our terminal to the very popular IBM 360-series computers; into data-communications systems that time-share the services of a very powerful computer, and to the growing array of compact "minicomputers."

And—an uncommon achievement in these times of rising prices—the 4002A costs no more than its predecessors.

There has never been a low-cost graphic terminal. This fall we will show you one: the 4010, that will offer the business-oriented user the same kinds of capability the 4002A provides the scientific user. The 4010 has at least twice the alphanumeric capacity of any competitive terminal. And it will do something none of them can—provide the ability to make charts, graphs and other very useful visual analyses.

Selective previews of this compact unit have reinforced our feeling that it's a winner.

- *Other display products.* We broadened our offerings for both storage and refreshed display systems.

The 4601 hard-copy unit, introduced last year, has sold very well. It makes an inexpensive $8^1/_2$x11-inch dry paper copy from the display on a Tektronix terminal or other storage display device. Now we've introduced the 4602 *video* hard-copier, which does the same thing for television images—from refreshed terminals, CATV systems or closed-circuit video. It can make a half-tone copy of any continuously transmitted picture that's stable for 18 seconds. A typical user might be a law-enforcement agency, transmitting photographs of wanted persons.

The 4701, an eight-channel analog multiplexer, accepts up to eight signals and processes them for display on a viewer, such as a Tektronix 611 display unit or 630 picture monitor. A hospital might use this product to let physiological information on eight patients be time-shared for display on a storage screen.

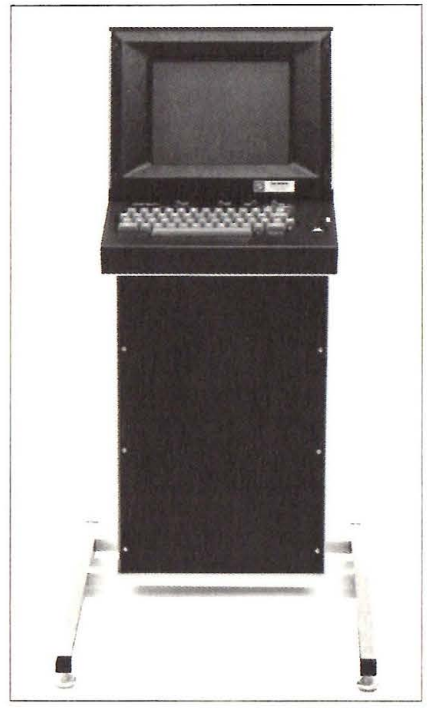
The 4551 light pen is a means of "drawing" on a TV image and transmitting that superimposed information (for instance, weather notations drawn on a satellite photo) to other video viewing devices.

To our line of display monitors, we're adding the 603 (storage) and 604 (refreshed). They offer bigger, brighter, faster displays than their predecessors, the 601 and 602. And they cost considerably less.

Machine Control: Sleeping Giant

The machine-tool market is a tremendous one. It's also tremendously depressed, having dropped 20 per cent this year, and over 50 per cent the year before that.

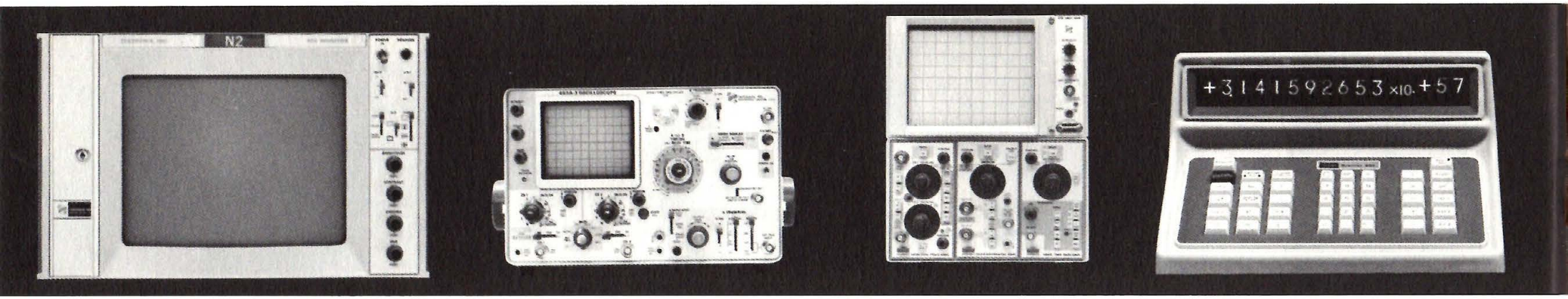
But a recession, when no one is out buying competitors' products, is a good time for a newcomer to make itself known. And that's what Tektronix has done this year. Our six machine-control products are earning an excellent name for themselves, in a market which appears to have nowhere to go but up.



4010
Low-Cost Graphic Terminal

We've introduced five models of machine controller, which use computer-generated punched-paper tapes to automatically direct the action of production machinery; and one program verifier, which very rapidly checks tapes for human or computer error.

Three of the MC units, the 1701, 1702 and 1704, are contouring machines. They direct two or three-dimensional cutting, milling, forming or turning operations. They are



650
Television Color Picture Monitor

453A-3
60-MHz Portable Oscilloscope

5103N
2-MHz Oscilloscope with
Single-Beam Display Module

909 SCIENTIST
Calculator

also available with a Tektronix 611 display unit, which on its CRT screen traces the machine-tool path, thus "drawing" a part as the coded tape directs.

The 1791 program verifier doesn't control machinery but merely checks the tape. Even if the machine-tool industry doesn't grow dramatically this year, the 1791 has a ready market in the thousands of existing machine-controller owners, who now must actually build the part to verify the tape program—that, or check the tape on a slow mechanical plotter. The 1791, which "draws" the part as fast as the tape can be fed to it, can check for program errors in seconds instead of minutes—or minutes instead of hours.

The 1711 and 1712 are "point-to-point" machines, or positioning controls. They do not direct cutting or routing, but merely move the tool quickly from one spot to another, to bore or punch or weld.

Our MC units are competitive packages. Their cost is low; they are compact, table-top-sized in comparison to most competitors' floor-standing racks of gear; and they are reliable. There are two additional plusses: One is the 611 visual feature, for users who desire it; the other is close-at-hand service, worldwide.

The latter feature is of great importance; when an MC unit is down, so is the machinery it controls—and that's costly. Not only are many machine tools made in foreign countries; those built in the US are often installed overseas. Whether you're in Brussels or Tokyo, it's reassuring to have a field engineer nearby.

The Instant Mathematician is Here

Our purchase of the assets of Cintra Incorporated gave us an exceptional new product line: Programmable scientific calculators.

A programmable calculator is like a small computer, but designed to do mathematics at electronic speeds, not data processing.

Ours is unique in a pretty special way: That is, you can walk right up and use it.

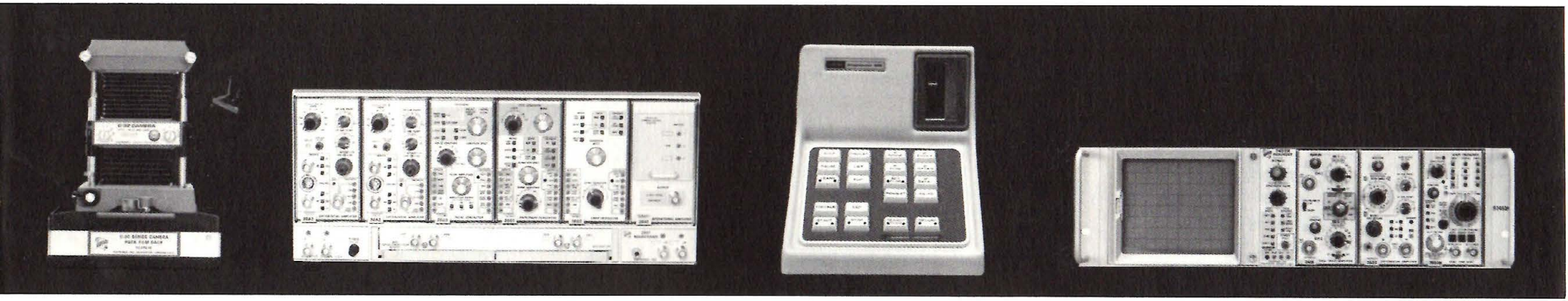
Interestingly, you won't be able to add 2 and 2 on other programmable calculators—not until you learn the necessary keyboard procedures.

Tektronix calculators respond directly to the language of mathematics. For instance, when a roomful of five- and six-year-olds was given access to our instrument—with no instructions in its use—they were immediately able to use it to do arithmetic at their level.

Our calculators recognize what's called the "mathematical hierarchy"—a long-established sequence for solving numerical problems (first multiply, then divide, then add, then subtract). You just plunk in the problem in the proper sequence, and the calculator gives you the answer at the push of one key—accurate up to 12 significant figures.

This means that if you were to insert the problem $1 + 2 \times 3$, you'd get 7, the right answer. On competing calculators, you'd get 9, because, not recognizing the hierarchy, they would process the steps in sequence: 1 + 2 equals 3, times 3, equals 9.

Since there are no complex machine set-ups to learn, the infrequent user of a Tektronix calculator doesn't have to *re*-learn them each time. To operate calculators that require more complicated procedures is like playing golf; you get rusty if you don't keep at it.



C-32
Oscilloscope Camera

2600 SERIES
Modular Signal System

926 PROGRAMMER

R7403N
60-MHz General-Purpose Rack-mount
Oscilloscope

Re-learning takes time; thus it costs money.

The market for scientific calculators is a growing one. What's more, oscilloscope users tend also to be users of scientific calculators. Thus we are now able, through our worldwide marketing organization, to offer customers two very useful closely related products.

Calculator products include the 909 "Scientist"; the 911, a calculator for statistical functions; the 915 plotter (to be shown this fall), which provides an *x-y* graph of the solution; the 941 printer, which gives you a "hard" copy of the answer or the programmed instructions, or both; the 926 programmer, which multiplies the program-step storage 60-fold, thus giving more nearly minicomputer capability; and other peripherals that make calculator use faster or more versatile.

A unique product is the 928 Instructor. It can interface any cassette tape-recorder with the calculator. As a result, someone can, on the same tape, provide digitally coded commands to the calculator and voice instructions to the user. This audiovisual playback is an exceptional teaching device, of understandable interest to the educational field.

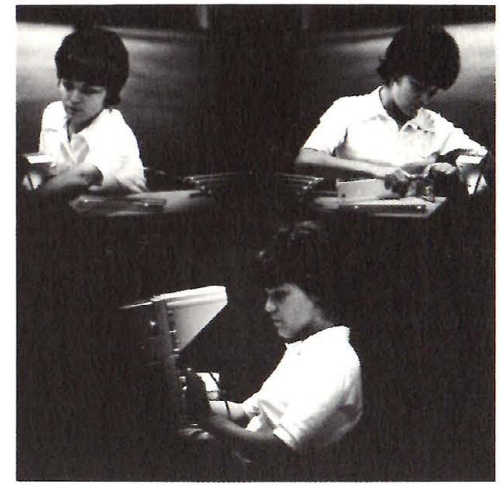
ET CETERA: THE PRODUCTS KEEP COMING

Once upon a time, not too long ago:

The oscilloscope user, to display a waveform, had to synchronize the sweep repetition rate (or try to) with the frequency of the signal to be viewed—much like a photographer "pans" his camera along with a fast-moving subject. But, because the sweep or the signal frequency (or both) would vary, displays tended to wobble and blur. You'd get a good look at the waveform, once in a while. But displays of one-shot events were generally impossible.

Another problem was that bumping and flickering power-line voltages made the scope misbehave. The CRT spot, for instance, might get so bright as to burn the phosphor screen; or, on the other hand, it might just fade from sight. Also, any scope adjustment was likely to affect all the others, like turning on the shower affects the water pressure in some old homes.

Probes posed another problem. Their job is to connect the scope to a circuit under test. Early probes were merely shielded wire, which had a resonant frequency of its own; when a sudden voltage change occurred, the wire would



resonate at that frequency. (In the same way, when you rap your knuckles on an empty barrel, the resulting hollow "boom" is a characteristic of the barrel, not the rap.) Thus the scope received distorted signal information.

Today's scope users seldom face such problems. They have a *triggered sweep* and *trigger-level selection,* so the sweep circuit doesn't have to be synchronous with the measured event, but starts instead when the waveform hits some predetermined voltage level. They have *regulated power supplies,* letting the scope operate unhampered by power-line foibles. They have *non-resonant probes,* whose center cores of resistive wire dissipate unwanted frequencies and present an undistorted signal.

These features, common to almost all oscilloscopes today, were all developed or introduced by Tektronix.

Other innovations have included *alternate-sweep* dual or multi-trace amplifier circuitry, which lets the user view, on the same screen at the same time, two or more intact and different waveforms; *plug-in units,* that allow an oscilloscope to operate at a wide variety of frequencies and sensitivities; (our competitors poked fun at this idea, but our customers didn't); *direct-view bistable storage,* with cathode-ray tubes whose stored image doesn't fade; and *portability,* packing increasingly more performance into compact, rugged, lightweight packages.

The point of this story is that a *very* great many of the basic oscilloscope features and functions—things so common to almost all scopes that we now take them for granted—began as Tektronix innovations.

And those innovations continue.

If the same person invented the wheel and the sandal, he'd be the likely one to also become the inventor of the roller skate. That is, the necessary pieces are there.

In any field, the leading company is responsible for most of the technical advances. These achievements rarely have only a one-time application; in fact, sometimes they're so basic as to gain almost immediate widespread use. But, most often, they're put together later in new ways whose benefit exceeds the sum of their parts.

Through this kind of combination, Tektronix has created some of its most useful products. And, because our past two years have seen such a large number of ad-

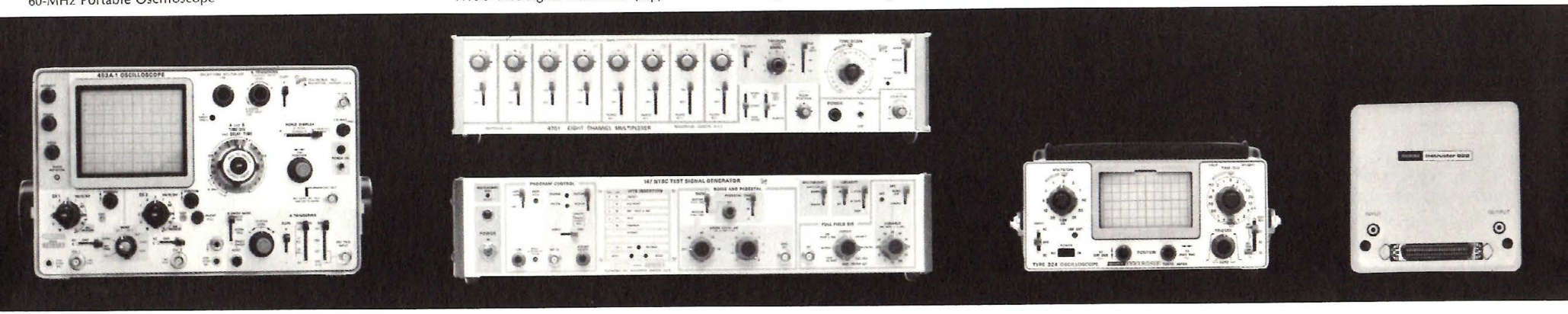
453A-1
60-MHz Portable Oscilloscope

147
NTSC Test-Signal Generator (top)

4701
Eight-Channel Multiplexer

SONY/Tektronix 324
10-MHz Portable Oscilloscope

928 INSTRUCTOR



vances, our potential for productive combinations may never have been greater than it is today.

Our history has been one of making as many useful features available to as many kinds of user as could benefit from them. Thus we combined storage (once limited to a single instrument, then called "the storage oscilloscope") with general-purpose plug-in versatility; with spectrum analysis, and, this year, with portability. A portable storage scope is not merely convenient; it also lets the user make measurements he couldn't otherwise economically make—of one-shot phenomena, for instance, that happen away from the laboratory.

Similarly, we combined high-frequency with portability, and thus have maintained a strong position in the computer-service market, which needs both. And this year we brought plug-in flexibility into the low-frequency use domain.

No one has stopped designing new instruments just so the total could be reckoned for this annual report. The same outpouring that has characterized this past year is still going on. For instance, at the August WESCON show in San Francisco, we're bringing out 13 new products.

So, as our new-instrument output continues at full speed through the coming year, you can expect to see useful new combinations of capabilities. The pieces are there, ready for combining.

Here are some—almost all of them unique to Tektronix:

Scale-factor readout. The CRT beam provides on the screen—in letters, numbers and symbols—exact information related to the displayed waveform. Users who have the option are buying readout over non-readout, despite some added cost.

Multiple plug-in capability. It looks from here like the three-plug-in scope is destined to become the standard general-purpose instrument of the future, because of the variety of signal processing it makes available. We also offer four-plug-in capability for those who need it.

Display modularity. The 5100 series this year proved the value of interchangeable display modules, containing CRTs and related circuitry. They give the same kind of flexibility in display that plug-ins do in signal processing.

Simplified construction. Streamlined fabrication and design techniques, exemplified in the 5100 and 7400, allowed us to bring three-plug-in "new generation" performance down into a lower price range—in a year when price was a prime consideration.

Miniaturization. Tektronix has always led in the ability to get more and more electronics into less and less space. SONY/Tektronix portables, very small and lightweight, offer performance near that of bulky bench models of not too many years back. Our growing skills in integrated-circuit development also let us build more compactly; the four ICs that provide character generation contain the equivalent of 112 emitters each.

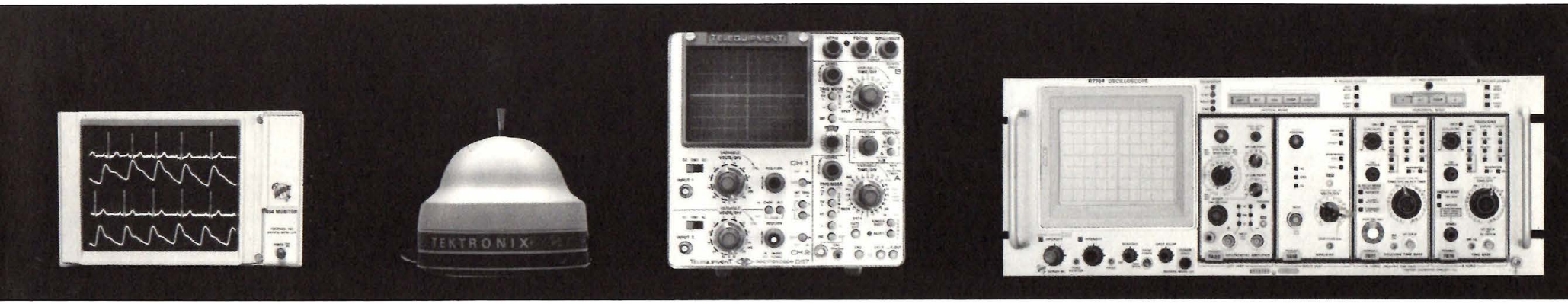
Innovative plug-ins. Meters and counters, formerly available only as self-contained instruments, have proved their worth as plug-ins, and have expanded the user's concept of just what an oscilloscope is. May other kinds of digital instruments be useful as plug-ins? It's an interesting question.

604
Display Monitor

4951
Joystick

TELEQUIPMENT D67
25-MHz Dual-Trace Portable
Oscilloscope

R7704
150-MHz Rack-mount General-
Purpose Oscilloscope



"The title of the book I'm writing is, 'Up WHAT Organization?' "

High-frequency: The 7904, which enables up to 1-GHz performance, leads the world in this important characteristic, bandwidth.

Calculators. Our programmable calculators were designed to work closely with instruments. For instance, they can accept directly any single-valued function—like a count from a counter—and process it as they've been told.

Today there is no ultra-high-frequency, low-cost multi-plug-in oscilloscope with character readout; nor is there a scope tiny enough to fit into your coat pocket. There is no calculator plug-in that displays its answers on the scope CRT; and no computer terminal with interchangeable "refreshed" and storage modules. And there never may be.

But who's to say which (if any) are technical and economic possibilities, and which (if any) are fantasy?

Watch this space next year.

INSIDE, LOOKING IN

Maybe all that needs to be said about our new organization is that it's working.

Concepts that were mere gleams in an engineer's eye have become significant products in the marketplace in less than a year. That's fast. Engineering designs are increasingly buildable; manufactured products, increasingly sellable.

They'd better be. For, production and marketing people have been in on each product concept from the word "go." They've had continuing opportunity to influence key decisions.

For example, the 7400 and 5100 introductions went off like clockwork, to use a worn but barely improvable phrase.

Our organization has been through quite a change in the past two years. The dust hasn't yet settled, but here's how things look:

We now comprise seven product-line groups, two of them new this year: Calculator Products and Low-Frequency Oscilloscopes. The others are Information Display Products and four groups that share the remaining responsibility for oscilloscopes and related products. Each has its own link-up of engineering, marketing and production people (although these linkings vary a great deal), who have been charged with full individual responsibility for a segment of the product line.

When we were a smaller company, the "arm's length" relationship between Engineering (which made most of the decisions), Manufacturing and Marketing worked pretty well, each handing the product to the next like relay racers passing a baton.

But a monolithic organization can't absorb two new-product introductions per week, such as Tek has had to do. For instance, the Manufacturing manager who can keep his eye on 110 new products hasn't yet been born.

Our product line hasn't been broken into what you'd call bite-sized pieces, but at least they're digestible. Not only does the regrouping underline personal responsibility for products; it also makes their costs more visible; and it pretty well singles out the achievers from the non-achievers.

Also, it has created new opportunity for people whose abilities were less evident in the single large organization—a challenge all the more welcome in a year when the company has provided none through growth of its own.

We've gone about the change in a typically Tektronix way: "The organization," comments our executive vice-president, "needs to be pertinent to whatever you're trying to do at the time. It almost *never* fits a nice, neat organizational chart."

It's easy to pontificate about reorganizing—to say, for instance, that rearranging penciled lines and boxes on paper has thus "changed" a company. But the only changes that last are those which the people involved know are helpful.

Never very impressed by organizational formality anyway, we've let the company realignment evolve from individual product-

line groupings that seemed to work out comfortably and well—on what someone here termed a "pay as you go" basis. That approach may, on paper, look like a lovably eccentric one. But a wise man once pointed out that the value of a second-best solution, unlike an ideal one, is that it just might work. And ours *is* working—well (despite the assertion by one vice-president that he's writing a book called "Up *What* Organization?").

The emphasis has shifted from meeting imposed schedules to exercising individual responsibility, from putting out "brush fires" to preventing them, and from single to shared decision-making. Does this cause more fights than before? one manager was asked. He agreed that it does. "But they're less violent ones," he said, "and far more productive." (He had no visible scars.)

To offset any divisiveness that the product-line structure might create, each manufacturing product manager is also responsible for one major component activity. The interdependence between his area and others is thus underlined; he needs their help, they his.

The ability of builder and seller to help the designer influence product directions has created new enthusiasm. And, not surprisingly, you hear far less often of "*their* problem" (Engineering's, for instance) and more frequently of "*our* problem."

And, under the new set-up, you don't put things off. One engineer grins: "When you've got an energetic, mean Marketing man practically sitting in your lap, you just don't *get* lazy."

"We *have* to keep changing," observes a senior engineer. "If we don't, that means we probably have no new problems—and that's probably not a very good thing."

In a company with broad technical skills but a large monolithic organization, it's usually easier to overcome obstacles than to identify them. "At Tektronix," our executive vice-president notes, "if you can just focus on a weakness, pretty soon that weakness doesn't exist." The new structure shows up problem areas that the former larger one obscured.

The changes ought to lead to growth. Similar ones have in other companies; and we have one precedent of our own: Each time we've replaced a manufacturer's representative (who handles many product lines) with our own field engineer (who is concerned with ours alone), our business has increased.

Ours is a far better-informed organization than it has ever been. Many interactive sessions, not all of them painless, have been held both on and off-campus. One goal of these exchanges has been to isolate the causes of growth from the factors that merely *accompany* growth. In a year with enough time-eating problems for any two companies, we've chosen to put in many hours in these sessions.

The consensus of those who took part is that the time thus spent has been one of our better investments.

As to specific events affecting the company, three stand out:

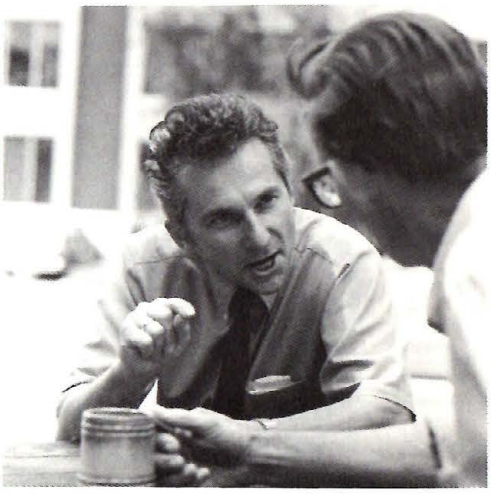
- Tektronix won its patent-infringement suit against the US government in the US Court of Claims. The court's June 11 decision was favorable in every respect, but we were almost too weary to cheer, for it had been well over 10 years since we filed suit.

The delay has caused us frustration and expense. You may have forgotten some of the particulars, it's been so long:

On March 2, 1961, we filed a petition charging that the government infringed several of our patents by encouraging copying of our instruments. Three others, Hickok Electrical Instrument Co., Jetronic Industries and Lavoie Laboratories, Inc., were brought in later as third-party defendants.

The issues centered on eight patented Tektronix circuits. The defendants admitted infringement of some, not of others; then they came up with a surprise: The government countersued, claiming that two of its patents had been infringed by Tektronix.

This was the really historic part



"There ARE more fights. But they're less violent — and far more productive."

M. J. MURDOCK, Tektronix founder and board chairman, died May 16, 1971 following a seaplane mishap. Jack was deeply involved with the mental-health and human-relations aspects of industry. He served several years as a governor of Menninger Foundation, and was a director of DeLaunay Institute for Mental Health, of National Association of Manufacturers and of Junior Achievement.

of the case, for the government had never before sued for infringement of patents assigned back to it. We challenged the countersuit. The Court of Claims in October 1965 agreed, and dismissed the counterclaim. We believe it was a true landmark decision, one that will continue to benefit US industry in years to come.

The main suit took form during 1962-64. The trial finally opened in February 1965 in the Court of Claims, then was recessed until November because one defendant's attorney had become ill. There were two more recesses before the trial adjourned in March 1966.

Other delays followed. One thing after another happened: First, the commissioner's case load was overwhelming; then one defendant went bankrupt; then the commissioner was elevated to judgeship, and a successor named. All this, plus the undoubted complexity of the case, delayed the commissioner's report until April 22, 1970. Then Commissioner James Davis recommended to the court that the Tektronix patents *were* valid and had been infringed. The defendants filed exceptions; that meant more briefs, another hearing—and about another year's delay.

The Court has now adopted the commissioner's findings, which entitle us to "reasonable and entire compensation" for defendants' unauthorized use of patents. Just what that phrase means in dollars must yet be decided in a future proceeding. We look at it on the plus side of the ledger, although we have never expected the damages to be large.

It may even be that the government will ask the Supreme Court to review the matter. After 10 years of waiting, more delay would hardly surprise us.

• Leslie F. Stevens was appointed September 24, 1970 by the board of directors to a new position: Vice-president, Finance. As the company's chief finance and accounting officer, he will direct our financial policies, operation and planning. The treasurer and controller report to him.

Les has been with us 20 years, in various financial positions. The past six years he has served as International Finance manager. Our increasingly cosmopolitan company will benefit equally from his financial expertise, his long acquaintance with Tektronix and his global orientation.

• The accidental death May 16, 1971, of M. J. Murdock, Tektronix founder and board chairman (described earlier in this report by President Howard Vollum) was a profound shock to his many friends and an immeasurable loss to the business world and the community at large. He gave unselfishly of himself to each, a warm and humane man the extent of whose contributions was somewhat obscured by his genuine modesty.

Reports that his death would result in a large sale of Tektronix shares are conjectural and false. Since his estate was left to a charitable trust, there is no pressure for sale to pay estate taxes.

Although Jack had not been active in day-to-day operational decisions for several years, we will feel his loss as board chairman as well as a valued, knowledgeable and wise advisor and good friend.

Other people will move in and assume the various responsibilities he held; but no one will "replace" Jack Murdock.

ON BALANCE:

When Linus kept fussing for his share of the crayons, Lucy finally relented—and let him have the black, the gray and the white. Like Linus, we find that our ability to paint a cheery picture of the coming year is limited.

Our product line—refurbished and expanded—puts us in our strongest competitive position in several years. Just the same, if there's an industrial equivalent of blood, sweat and tears, we'll probably have contributed our share by the time you read the next annual report.

The US economy—and its effect on those of other countries—is as unpredictable as ever. Aerospace is limping. Reduced government funding has affected many of our customers. And the slowdown has gone on so long that some businesses have just gotten used to it. There's a lot of latent plant and equipment capacity. Customers are not willing to buy (or can't pay for) as many electronic instruments as they did in boom years. Also, increases in wages and salaries have caused companies to do things with fewer people — and, when possible, with fewer high-paid people (like engineers, who use electronic equipment).

And, even as the economy continues to pick up momentum, it's doubtful that the demand for capital goods will grow as fast as some other elements.

The "economic upturn" is much like cotton candy, in that you never seem to be getting into it. So we plan on increasing our business next year the hard way, by taking it away from competitors (and by creating *new* markets with new products).

A (fictitious) company president told his shareholders he had both good news and bad news to report:

"First, the bad news: Production costs have gone up so much that we're losing money on every product we sell.

"Now, the good news: Orders are increasing."

Things aren't that bad, certainly. But Tektronix, along with most US businesses, can sympathize with him. Our major internal concern as we move into the new year is to concentrate on, and reduce, our manufacturing costs.

Part of it is the cost-price squeeze. Up go taxes; up go material, service and utility costs. At the same time, the increasingly competitive nature of the scope market has kept prices down.

But other factors affect our costs, and we're doing something about them:

Our first "new-gen" instruments contained many advanced Tek-made components. Early production quantities were small and thus costly, and it took time to learn to produce and use these components. Now the learning curve has leveled off; and, as more new-gen scopes are sold, components can be produced in increasingly economical quantities.

Scheduling, always a headache when orders are down, has been made tougher by our rapid rate of instrument introduction. Shortages also are multiplied. Our product-line organization is helping in this respect, by making problems visible before they're critical.

Simplified construction, evident already in several instruments, will be expanded into other lines. It has resulted in a significant drop in costs—passed on to customers as lower prices, and reflected back to us as increased sales.

We see, then, three critical problem areas in the year ahead:

First, the competitive situation. Here we feel we're doing excellently—and improving. Exulted a Marketing man, "We're in a position this year to put up a *whale* of a scrap." The big effect of the new products this year was exuberance; the big effect in the years ahead will be sales.

Second, manufacturing costs. We've committed ourselves to their reduction.

Third, the US economic situation. *Other* people are working on that one—and, in an election year, anything could happen.

In summary, here's what we have going for us:

Competitive strength; increasingly smooth new-product introduction; a reasserted reputation for technical leadership; management capable of incisive and thoughtful decisions; an integrated production facility, providing the necessary superiority in key component areas; a capable and very enthusiastic worldwide marketing force; all the buildings we need; financial solidity, with no liquidity problems; and an organization restructured for growth.

And, from one end of that organization to the other, there are people with skills and attitudes equal to any task.

The job this year may be the patient conscientious performance required by moderate growth, or the "hit the ground running" responsiveness that an economic upswing would demand.

The people of your company can handle either challenge, or any other you might name.

SHAREOWNERS' MEETING

The annual meeting of shareowners of Tektronix, Inc. will be held on Saturday, September 18, 1971, at 9 a.m. Pacific Daylight Time, in the Cafeteria Building, S.W. Karl Braun Drive, Tektronix Industrial Park, near Beaverton, Oregon.

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
TEKTRONIX, INC.
P.O. Box 500
Beaverton, Oregon 97005
Telephone
503/644-0161

ACCOUNTANTS' OPINION

TEKTRONIX, INC.:

We have examined the statements of consolidated financial condition of Tektronix, Inc. and subsidiaries as of May 29, 1971, May 30, 1970, and May 31, 1969 and the related statements of consolidated earnings and reinvested earnings and of consolidated resources provided and applied for the years then ended. Our examination was made in accordance with generally accepted auditing standards, and accordingly included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances.

In our opinion, the accompanying statements present fairly the financial position of the companies as of May 29, 1971, May 30, 1970, and May 31, 1969 and the results of their operations and the resources provided and applied for the years then ended, in conformity with generally accepted accounting principles applied on a consistent basis.

Portland, Oregon
July 15, 1971

EXPLANATION OF FINANCIAL STATEMENTS

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

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

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

Another statement called Resources Provided and Applied shows the connection between the other two statements. Note that the first item on the resources statement is the earnings shown on the earnings statement. The last item is the working capital shown on the financial condition statement.

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

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

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

Tektronix Consolidated Resources Provided and Applied

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

(THOUSANDS)		
1969	1970	1971
$20,569	**$20,602**	**$18,418**
14,089	14,254	9,329
3,823	4,823	5,813
447	418	438
1,634	187	277
199	515	579
179	205	330
48	—	—
—	—	1,452
150	200	200
13,715	**18,386**	**8,672**
11,861	16,770	5,956
464	47	26
327	75	1,854
305	1,295	589
758	—	—
—	199	247
6,854	**2,216**	**9,746**
11,687	**14,117**	**654**
(1,294)	(4,241)	(204)
4,461	1,446	(2,186)
5,946	17,024	4,107
2,574	(112)	(1,063)
4,833	**11,901**	**(9,092)**
2,806	10,549	(3,601)
2,136	787	(968)
22	37	(2,663)
(131)	528	(1,860)
50,787	57,641	59,857
57,641	**59,857**	**69,603**

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

THESE (additional) **RESOURCES BECAME AVAILABLE FROM:**

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

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

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

DISPOSITION OF TREASURY SHARES Net proceeds from sale of Tektronix, Inc. treasury shares to employees exercising stock options or as part of our employee share purchase plan.

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

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

OWNERS OF MINORITY INTEREST IN SHAREOWNERS' EQUITY OF SUBSIDIARY Minority shareowners' portion of earnings of subsidiary which corresponds to portion of its equity not purchased by Tektronix, Inc., until 1969.

LONG-TERM INDEBTEDNESS INCURRED The portion of the estimated purchase price of the businesses acquired to be paid in instalments as earned.

REDUCTION OF LONG-TERM ADVANCES Amounts becoming current assets due within one year.

THESE RESOURCES WERE USED FOR:

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

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

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

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

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

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

RESULTING INCREASE IN WORKING CAPITAL Made up of

INCREASE (DECREASE) IN CURRENT ASSETS Minus

CASH AND CASH EARNING INTEREST

ACCOUNTS RECEIVABLE—NET

INVENTORIES

SUPPLIES, PREPAID EXPENSES AND DEPOSITS

INCREASE (DECREASE) IN CURRENT LIABILITIES

NOTES PAYABLE AND CURRENT PORTION OF LONG-TERM DEBT

ACCOUNTS PAYABLE AND OTHER CURRENT LIABILITIES

EMPLOYEE PROFIT SHARING

U.S., STATE AND FOREIGN INCOME TAXES

WORKING CAPITAL AT BEGINNING OF PERIOD Plus increase in working capital equals

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

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)

1969	1970	1971	
$148,857	**$165,205**	**$145,999**	**NET SALES** Amounts receivable for products sold. Tektronix sold directly to customers at retail in the U. S., and countries in which it has marketing subsidiaries, 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
74,470	**83,827**	**80,085**	**MANUFACTURING COST OF SALES** The cost of materials used in the products sold. Also, the payroll costs of the employees who fabricated and assembled them, their supervisors, those who assisted them, those who devise improved manufacturing methods and those who design and make tools and equipment. Also, the expense of running the manufacturing operations, leaving
74,387	**81,378**	**65,914**	**GROSS PROFIT** From which must be deducted
49,407	**56,293**	**49,869**	**OPERATING EXPENSE AND PROFIT SHARING**
12,267	14,555	15,718	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.
13,032	15,384	14,509	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; and assure that new product designs provide "buildability" by the improved methods. The expenditure includes cost of materials, supplies, space and related expenses.
10,748	13,210	11,367	ADMINISTRATIVE Including payroll of executives and personnel working on accounting, employment, data processing, facilities and communications functions, and the many expenses related to them.
13,360	13,144	8,275	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
24,980	**25,085**	**16,045**	**OPERATING INCOME** Which is (increased) or decreased by non-operating items
(347)	**341**	**366**	**NON-OPERATING EXPENSE (INCOME)**
(169)	(163)	(207)	GAIN ON DISPOSITION OF FACILITIES Amount in excess of depreciated cost recovered from sale of machinery and equipment no longer needed.
194	680	1,154	INTEREST EXPENSE Cost of borrowed money.
(372)	(176)	(581)	OTHER Including interest income, royalties, amortization of intangibles, and one half the earnings of 50% owned SONY/Tektronix Corporation, leaving
25,327	**24,744**	**15,679**	**INCOME BEFORE INCOME TAXES** From which is deducted
11,190	**10,490**	**6,350**	**PROVISION FOR INCOME TAXES** Estimated income taxes of Tektronix, Inc. to be paid to the United States and twenty-four 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
8,155	7,451	3,771	U. S.
850	825	575	STATE
2,185	2,214	2,004	FOREIGN
14,137	**14,254**	**9,329**	**INCOME BEFORE MINORITY INTEREST** From which is deducted
48	—	—	**MINORITY INTEREST** Share of earnings of one marketing subsidiary corresponding to portion of its equity not purchased by Tektronix, Inc. until 1969, leaving
14,089	**14,254**	**9,329**	**EARNINGS** The measure of company performance–the amount reinvested in expansion of business.
77,603	91,346	105,581	REINVESTED EARNINGS AT BEGINNING OF YEAR From which is deducted
(346)	(19)	31	PROCEEDS FROM SALE OF TREASURY SHARES IN EXCESS OF (LESS THAN) COST
91,346	105,581	114,941	REINVESTED EARNINGS AT END OF YEAR
8,094	**8,108**	**8,124**	**COMMON SHARES OUTSTANDING AT END OF YEAR**
$1.75	**$1.76**	**$1.15**	**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 31, 1969	May 30, 1970	May 29, 1971	
$84,313	**$98,430**	**$99,084**	**CURRENT ASSETS** Those assets likely to be converted to cash or used in the ordinary operation of the business, made up of:
988	3,661	1,069	CASH Mostly in checking accounts or deposits in transit.
11,232	4,318	6,706	CASH EARNING INTEREST Invested in savings accounts, certificates of deposit, U. S. treasury bills, prime commercial paper or short term tax exempt securities.
27,223	28,668	26,538	ACCOUNTS RECEIVABLE Amounts due from customers for sales on credit.
(150)	(149)	(205)	ALLOWANCE FOR DOUBTFUL ACCOUNTS Estimate of erosion in value of accounts receivable because a few customers may not pay us.
3,989	3,673	2,667	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.
1,004	1,208	1,151	SUPPLIES Items that will be consumed in operating offices, maintaining facilities and running manufacturing plants.
40,027	57,051	61,158	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:
7,613	11,270	16,360	Finished goods
19,227	27,583	29,127	Work in process
13,187	18,198	15,671	Purchased materials
26,672	**38,573**	**29,481**	**CURRENT LIABILITIES** Obligations due to be paid within one year, including
2,951	13,500	9,800	NOTES PAYABLE Amounts borrowed for less than one year.
26	26	125	CURRENT PORTION OF LONG-TERM INDEBTEDNESS (Note 2) Installment payments due within one year.
6,248	6,296	6,768	ACCOUNTS PAYABLE Amounts due suppliers for materials and services bought on credit.
5,771	6,299	4,439	U.S., STATE AND FOREIGN INCOME TAXES Taxes not yet paid.
6,378	6,415	3,752	EMPLOYEE PROFIT SHARING (Note 3) Due employees and their retirement funds.
3,266	3,643	2,903	PAYROLL AND PAYROLL TAXES Amounts due employees next payday, and taxes due on or withheld from pay.
1,620	1,926	1,400	VACATIONS Amounts earned by employees for their vacations, but not yet used or paid.
412	468	294	INTEREST AND MISCELLANEOUS TAXES Sales taxes collected and interest not yet paid.
57,641	**59,857**	**69,603**	**WORKING CAPITAL** Current Assets minus Current Liabilities.
36,195	**48,185**	**48,062**	**FACILITIES AT DEPRECIATED COST** (Note 2) The cost of buildings and equipment used in the business, reduced by depreciation.
31,310	42,962	45,150	BUILDINGS AND GROUNDS Cost of buildings, including parking lots and landscaping.
18,816	24,644	31,789	MACHINERY AND FURNITURE Cost of furnishings.
178	186	254	LEASEHOLD IMPROVEMENTS Cost of remodeling rented space.
(22,183)	(26,565)	(31,843)	ACCUMULATED DEPRECIATION (Note 7) Reduction of value for use, wear and age which has been claimed as an expense of doing business, mostly computed by accelerated depreciation methods.
1,569	1,870	1,927	LAND Cost of land used in business.
6,505	5,088	785	CONSTRUCTION IN PROGRESS Costs on invoices received before completion of buildings.
2,768	**2,426**	**3,842**	**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.
1,268	**2,114**	**2,438**	**INVESTMENTS AND LONG-TERM RECEIVABLES** The investment in and advances to 50% owned SONY/Tektronix Corporation and one half its reinvested earnings. Also included are installments of sale and lease contracts receivable due after one year.
353	**306**	**1,732**	**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.
97,519	**112,276**	**122,213**	**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). Shareowners' equity is made up of:
6,196	6,711	7,290	COMMON SHARES The amount the company received for issuance of common shares.
(23)	(16)	(18)	TREASURY SHARES The cost of Tektronix, Inc. common shares repurchased by the company and held in the company treasury.
91,346	105,581	114,941	REINVESTED EARNINGS The accumulation of earnings that has been reinvested in the business.

Notes to Financial Statements:

NOTE 1. PRINCIPLES OF CONSOLIDATION AND INVESTMENT IN SUBSIDIARIES:

The consolidated financial statements include all of the Company's subsidiaries (all wholly-owned) operating in Canada, United Kingdom, Channel Island of Guernsey, The Netherlands, Switzerland, Australia, France, Denmark, and Sweden. The accounts of Tektronix A/S (Denmark) and Tektronix Datatek N.V. (The Netherlands), organized during the year ended May 30, 1970, and of Tektronix A.B. (Sweden), organized during the year ended May 29, 1971, are included in the consolidated financial statements since dates of organization. The Company purchased the remaining 20% of the outstanding shares of its French subsidiary in February 1969. During the year ended May 29, 1971, Tektronix Holland N.V. acquired the business of the distributor in The Netherlands.

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

Translation of foreign currencies to United States dollars has been made at appropriate rates of exchange. Such translation resulted in no material unrealized gains or losses.

The equity of the Company in the net assets of consolidated subsidiaries (after eliminating approximately $900,000 of intangibles carried on the balance sheet of Tektronix S.A., formerly Relations Techniques Intercontinentales) exceeded the cost of the Company's investment by $27,667,378 at May 29, 1971, $22,442,212 at May 30, 1970, and $15,870,653 at May 31, 1969. These amounts are included in the statements of consolidated financial condition as follows:

May 31, 1969	May 30, 1970	May 29, 1971	
$17,118,715	$23,036,228	$27,344,858	Consolidated reinvested earnings
1,480,272	1,731,965	2,258,324	Intercompany profit eliminated in consolidation
(2,728,334)	(2,325,981)	(1,935,804)	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)
$15,870,653	$22,442,212	$27,667,378	TOTAL

Assets, liabilities and equity in earnings of the subsidiaries in the following amounts (translated at appropriate rates of exchange) are included in the consolidated financial statements:

May 31, 1969	May 30, 1970	May 29, 1971	
$24,478,822	$30,040,661	$33,657,228	Current Assets
6,635,713	7,801,869	8,662,829	Property—net
2,202,780	1,996,467	1,836,380	Intangible assets and investments
5,612,471	5,646,287	5,317,057	Current liabilities
353,199	306,040	279,630	Long-term indebtedness
6,189,522	6,061,554	4,465,619	Equity in earnings

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 consists of the following:

May 31, 1969	May 30, 1970	May 29, 1971	
$139,334	$139,334	$ 139,334	Capital
243,228	394,326	477,113	Current year's earnings
67,080	310,309	704,635	Prior years' earnings
$449,642	$843,969	$1,321,082	TOTAL

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 29, 1971 is sufficient to cover any U.S. income taxes expected to accrue by reason of required repatriation of foreign earnings to May 29, 1971 under such Regulations. Pursuant to Subpart F of the Internal Revenue Code, provisions have been made for U.S. income taxes on approximately $900,000 of undistributed foreign income.

NOTE 2. LONG-TERM INDEBTEDNESS:

Long-term indebtedness at May 29, 1971 consists of the following:

$ 279,630	Note payable to the City of Heerenveen, The Netherlands (original amount, $528,200)
1,452,205	Contract payable (less current portion of $98,795)
$1,731,835	TOTAL

The indebtedness to the City of Heerenveen (which was the only long-term debt at May 30, 1970) is payable in annual installments of $26,410 plus interest at 4½%. Facilities which cost $1,300,000 are pledged as collateral.

The contract payable represents the estimated contingent portion (discounted at 5%) of the purchase price of the assets of an electronic calculator business acquired in May, 1971. Contingent payments will be based on sales of calculator products to May, 1976. The Company intends to amortize 60% of the contingent payments as they accrue over five years and the balance over ten years.

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.

Tektronix, Inc. and Subsidiaries

NOTE 4. SHAREOWNERS' EQUITY:

Authorized capital consists of 20,000,000 shares without par value. Issued and outstanding shares are as follows:

May 31, 1969	May 30, 1970	May 29, 1971	
8,094,565	8,108,285	8,124,522	Issued
712	320	731	Held in treasury
8,093,853	8,107,965	8,123,791	Outstanding

NOTE 5. EMPLOYEE STOCK OPTION AND SHARE PURCHASE PLANS:

Under stock option plans for employees, in which the options are "qualified stock options" as defined by the Internal Revenue Code, 413,880 common shares of the Company are reserved. The plans provide that the option price shall be not less than 100% of the fair market value of the shares on the date of grant and that the options are exercisable in four (or fewer, where the option period is less than five years) cumulative annual installments beginning one year after the date of grant.

At May 29, 1971, options to purchase 371,975 shares were outstanding for which the option price, ranging from $24.45 to $58.20 per share, amounted to $14,892,039, and options to purchase 101,770 shares were exercisable for which the option price amounted to $4,658,179. During the year then ended, options which became exercisable and options exercised were as follows:

Options		
Which Were Exercised	Which Became Exercisable	
16,237	59,145	Number of shares
		Option price:
$31.10 to $38.45	$27.45 to $58.20	Range per share
$579,102	$2,702,120	Total
		Market value at date exercisable or exercised:
$36.60 to $43.15	$23.15 to $43.15	Range per share
$673,254	$2,007,047	Total

During the years ended May 1969 and 1970, option prices and market values of options which became exercisable and options which were exercised were as follows:

1969	1970	
		Options which became exercisable:
$1,729,834	$1,870,796	Total option price
3,420,370	2,561,238	Market value at date exercisable
		Options Exercised:
1,663,616	514,847	Total option price
5,256,373	870,382	Market value at date exercised

Under an "Employee Share Purchase Plan" 175,815 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), has been charged to income as follows:

Year Ended	Amount
May 29, 1971	$17,674
May 30, 1970	6,261
May 31, 1969	5,926

NOTE 6. COMMITMENTS AND CONTINGENT LIABILITIES:

The companies are committed to pay aggregate rentals of approximately $2,082,000 on building leases expiring from June 1971 to June 1985. Rentals under these leases for the year ending May 27, 1972 will be approximately $548,000.

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 and declining balance methods based on estimated useful lives of the properties. Estimated useful lives of buildings and grounds vary from ten to forty years and estimated useful lives of machinery and equipment vary from three to fifteen years.

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

Tektronix Consolidated Financial Statistics

(DOLLARS, SHARES AND SQUARE FEET IN THOUSANDS)

1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	Fiscal year ending in May
60,136	**70,451**	**75,503**	**81,099**	**101,759**	**129,031**	**133,656**	**148,857**	**165,205**	**145,999**	**NET SALES**
4,607	**5,771**	**6,308**	**7,319**	**11,052**	**13,389**	**13,429**	**14,089**	**14,254**	**9,329**	**EARNINGS**
58¢	72¢	78¢	91¢	$1.38	$1.68	$1.68	$1.75	$1.76	$1.15	Per Share
7.7%	8.2%	8.4%	9.0%	10.9%	10.4%	10.0%	9.5%	8.6%	6.4%	% of Sales
22.7%	23.3%	20.7%	19.1%	25.0%	24.4%	19.9%	17.3%	14.6%	8.3%	% of Beginning of Year Shareowners' Equity
6,390	**7,981**	**8,636**	**9,718**	**13,589**	**16,577**	**17,335**	**18,359**	**19,495**	**15,580**	**CASH FLOW**
9,787	**11,433**	**12,200**	**13,566**	**19,602**	**25,179**	**25,102**	**25,327**	**24,744**	**15,679**	**INCOME BEFORE INCOME TAXES**
16.3%	16.2%	16.2%	16.7%	19.3%	19.5%	18.8%	17.0%	15.0%	10.7%	% of Sales
52.9%	49.5%	48.3%	46.0%	43.6%	46.6%	46.0%	44.2%	42.4%	40.5%	Income Tax Rate
21,978	**26,143**	**26,146**	**26,018**	**32,489**	**38,192**	**41,356**	**48,686**	**59,515**	**55,426**	**PAYROLL BEFORE PROFIT SHARE**
5,179	**6,488**	**6,509**	**7,553**	**10,810**	**13,744**	**13,542**	**13,360**	**13,144**	**8,275**	**EMPLOYEE PROFIT SHARE**
507	**496**	**485**	**289**	**61**	**192**	**29**	**194**	**680**	**1,154**	**INTEREST EXPENSE**
1,092	1,144	1,185	1,198	1,436	1,588	1,698	1,800	2,081	2,299	Facilities in Use at Year End in Square Feet
22,139	**24,623**	**27,123**	**30,712**	**35,781**	**41,157**	**47,168**	**58,378**	**74,750**	**79,905**	**COST OF FACILITIES**
4,600	**2,749**	**3,043**	**3,910**	**5,705**	**5,803**	**6,464**	**11,861**	**16,770**	**5,956**	**INVESTED IN FACILITIES** (during year)
1,783	**2,194**	**2,301**	**2,342**	**2,456**	**2,991**	**3,436**	**3,823**	**4,823**	**5,813**	**FACILITIES DEPRECIATION** (mostly accelerated)
4,913	**7,009**	**9,031**	**11,196**	**13,061**	**15,724**	**18,836**	**22,183**	**26,565**	**31,843**	**ACCUMULATED DEPRECIATION**
45,627	**51,329**	**55,322**	**59,147**	**76,116**	**92,720**	**104,962**	**124,544**	**151,155**	**153,426**	**TOTAL ASSETS**
8,401	**8,958**	**10,801**	**12,679**	**17,053**	**21,557**	**22,612**	**27,073**	**28,519**	**26,333**	**ACCOUNTS RECEIVABLE NET**
17,208	**21,033**	**20,430**	**19,678**	**28,473**	**34,150**	**34,982**	**41,031**	**58,259**	**62,309**	**INVENTORY** (including supplies)
27,995	**33,318**	**36,857**	**39,064**	**52,781**	**62,952**	**72,626**	**84,313**	**98,430**	**99,084**	**CURRENT ASSETS**
16,683	**14,138**	**12,762**	**14,397**	**20,864**	**23,258**	**21,839**	**26,672**	**38,573**	**29,481**	**CURRENT LIABILITIES**
11,312	**19,180**	**24,095**	**24,667**	**31,917**	**39,694**	**50,787**	**57,641**	**59,857**	**69,603**	**WORKING CAPITAL**
4,528	**7,128**	**4,728**	**501**	**458**	**2,077**	**988**	**379**	**332**	**1,857**	**LONG-TERM INDEBTEDNESS** (including current portion)
7,980	7,980	8,073	8,008	7,984	7,970	7,998	8,094	8,108	8,124	Common Shares Outstanding
24,815	**30,463**	**38,258**	**44,275**	**54,819**	**67,548**	**81,597**	**97,519**	**112,276**	**122,213**	**SHAREOWNERS' EQUITY**
3,990	**3,990**	**5,844**	**5,997**	**5,997**	**5,997**	**5,997**	**6,196**	**6,711**	**7,290**	**COMMON SHARE CAPITAL**
20,825	**26,473**	**32,414**	**39,733**	**50,785**	**64,174**	**77,603**	**91,346**	**105,581**	**114,941**	**REINVESTED EARNINGS**
5,285	5,430	4,910	4,982	6,482	7,270	7,852	8,752	9,857	8,991	Number of Employees at Year End

Directors, Officers and Management

BOARD OF DIRECTORS

HOWARD VOLLUM, *President*
*PAUL L. BOLEY, *Partner, Davies, Biggs, Strayer, Stoel and Boley*
JAMES B. CASTLES, *Secretary and General Counsel*
WALTER P. DYKE, *President, Field Emission Corporation*
ROBERT G. FITZGERALD, *Former Executive Vice President*
EARL WANTLAND, *Executive Vice President*
FRANK M. WARREN, *President, Portland General Electric Company*

OFFICERS

HOWARD VOLLUM, *President*
EARL WANTLAND, *Executive Vice President*
LESLIE F. STEVENS, *Vice President—Finance*
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 and Assistant Secretary*
F. H. NEISSER, *Assistant Secretary*

FINANCE AND ADMINISTRATION

LESLIE F. STEVENS, *Vice President—Finance*
DON A. ELLIS, *Treasurer*
ELWELL E. SWANSON, *Controller*
WILLIAM B. WEBBER, *Vice President, Community Relations*
FRANK CONSALVO, *Vice President*
LARRY D. FROST, *Facilities*
HUGO PANKOW, *Data Services*
GUYOT FRAZIER, *Personnel*

*Elected July 15, 1971, to fill the vacancy caused by the death of M. J. Murdock. Mr. Boley is a co-executor of Mr. Murdock's estate.

ENGINEERING

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

CALCULATOR PRODUCTS

FRANK ELARDO, *Manager*
NORMAN N. NILSEN, *Finance and Accounting*
CHARLES F. ANTONY, *Manufacturing Operations*
FRANCIS J. MICHEL, *Engineering*

CATHODE-RAY TUBE ENGINEERING AND MANUFACTURING

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

INFORMATION DISPLAY PRODUCTS

LAWRENCE L. MAYHEW, *Manager*
JOHN BOWNE, *Engineering*
MORGAN E. HOWELLS, *Marketing*
HOWARD W. MIKESELL, *Manufacturing*

MANUFACTURING

MICHAEL J. PARK, *Vice President*
BURTON A. AVERY, *Product Group Manager*
FERDINAND P. BARICEVIC, *Product Group Manager*
ROSS PORTER, *Product Group Manager*
THOMAS E. SLY, *Product Group Manager*
OTTO B. ZACH, *Product Group Manager*
RICHARD E. CARNAHAN, *Quality Assurance and Administration*
SCOTT E. FOSTER, JR., *Purchasing*

U. S. MARKETING

CHARLES L. BOUFFIOU, *Vice President*
EDWARD M. VAUGHAN, *Field Marketing Manager*
FRANK ELARDO, *Field Marketing Manager*
RICHARD HERDMAN, *Field Marketing Manager*
TOM LONG, *Product Manager*
DAN V. GUY, *Product Manager*
ROBERT A. LeBRUN, *Product Manager*
WILLIAM STAFFORD, *Advertising Manager*

INTERNATIONAL

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

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

SONY/Tektronix Corporation, Tokyo, Japan:
MASANOBU TADA, *President*
TAKASHI KUMAKURA, *Senior Managing Director*

Tektronix United States Facilities

UNITED STATES

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

FIELD OFFICES

*Albany, N. Y.
*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.
Las Vegas, Nev.
*Long Island, N. Y.
Methuen, Mass.
Milwaukee, Wis.
Minneapolis, Minn.
*Mountainview, Cal.
Natick, Mass.
Oklahoma City, Okla.
*Orange, Cal.
*Orlando, Fla.
Palo Alto, Cal.
Pensacola, Fla.
*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.

*denotes Service Centers.

Tektronix International Facilities

MARKETING SUBSIDIARIES

Australia—Tektronix Australia Pty. Limited, Sydney, Melbourne, Canberra and Adelaide;

Canada—Tektronix Canada Ltd., Montreal, Toronto, Ottawa, Calgary and Vancouver;

Denmark—Tektronix A/S, Copenhagen, Denmark;

England—Tektronix U.K. Ltd., Harpenden, London, Manchester and Scotland;

France—Tektronix, Paris, Toulouse, Nice, Lyons and Rennes;

Japan—SONY/Tektronix Corporation, Tokyo and Osaka;

Sweden—Tektronix AB., Bromma and Gothenburg;

Switzerland—Tektronix International A.G., Zug and Geneva;

The Netherlands—Tektronix Holland N.V., Voorschoten;

The Netherlands—Tektronix Datatek N.V., Schiphol.

MARKETING REPRESENTATIVES

Serviced by Tektronix Limited, Guernsey, Channel Islands

Angola, Equipamentos Tecnicos, Lda., Luanda;

Austria, Inglomark Markowitsch & Co., Vienna;

Belgium, Regulation Mesure, SPRL, Brussels;

Finland, Into O/Y, Helsinki;

Greece, Marios Dalleggio Representations, Athens;

Iran, Berkeh Co. Ltd., Tehran;

Israel, Eastronics Limited, Tel Aviv;

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

Kenya, Engineering & Sales Co., Nairobi;

Lebanon, Projects, Beirut;

Morocco, F. Pignal, Casablanca;

Mozambique, Equipamentos Tecnicos, Lda., Mozambique;

Norway, 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;

Tunisia, Selection Internationale, Tunis;

Turkey, M. Suheyl Erkman, Istanbul;

West Germany, Rohde & Schwarz Vertriebs-GmbH, Cologne, Hamburg, Munich, Berlin, Karlsruhe;

Zambia, Baird & Tatlock (Zambia) Ltd.

MANUFACTURING SUBSIDIARIES

Tektronix Guernsey Limited, Guernsey—Principally serving European Free Trade Association;

Tektronix Holland N.V., Heerenveen, The Netherlands—Principally serving European Common Market;

Tektronix U.K. Ltd., London—Telequipment Instruments;

SONY/Tektronix Corporation, Tokyo, Japan—Serving Japan.

MARKETING REPRESENTATIVES

Serviced by Tektronix, Inc., Beaverton

Argentina, Coasin S.A., Buenos Aires, Cordoba, Rosario;

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

Ceylon, Maurice Roche Limited, Colombo;

Chile, Equipos Industriales, S.A.C.I.;

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, Tecnicos Argostal S.A., Mexico D.F., Monterey, Guadalajara;

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

Pakistan, Pak-Land Corporation, Karachi;

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

Philippines, Philippine Electronics Industries, Rizal;

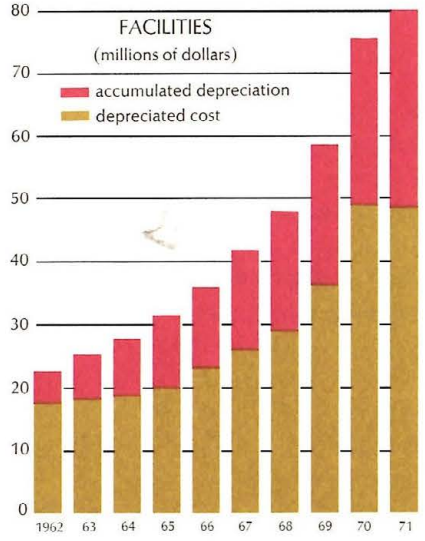
Singapore, Mechanical & Combustion Engineering Co., Ltd., Singapore;

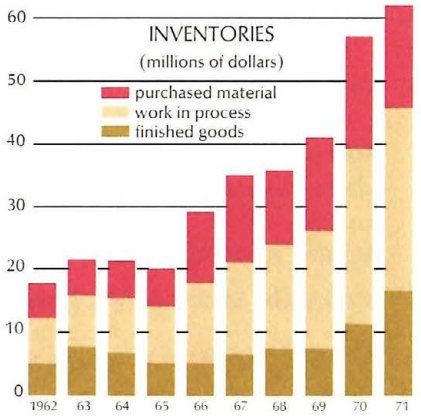
Taiwan, Heighten Trading Co., Ltd., Taipei;

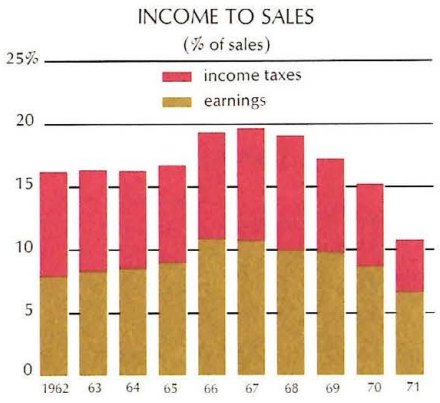
Thailand, G. Simon Radio Company Ltd., Bangkok;

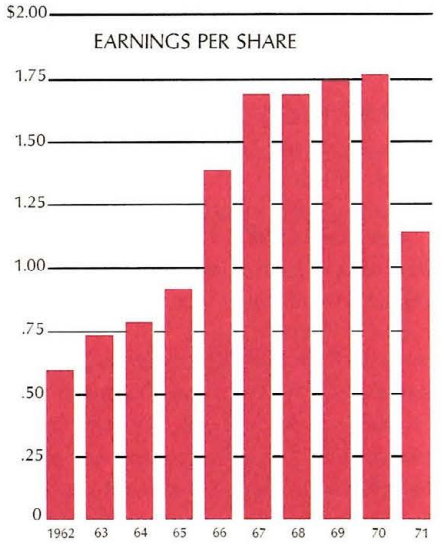
Uruguay, Coasin Uruguaya S.A., Montevideo;

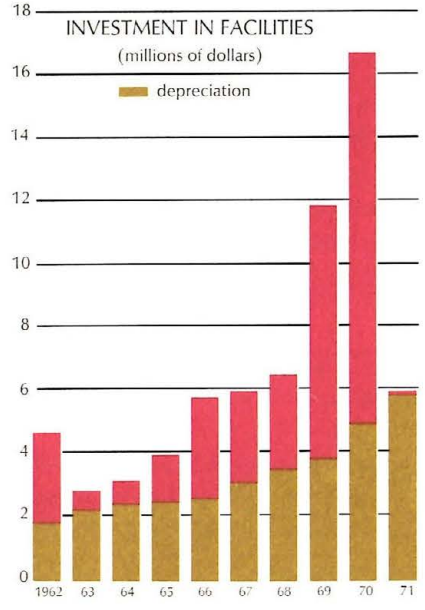
Venezuela, Coasin C.A., Caracas.

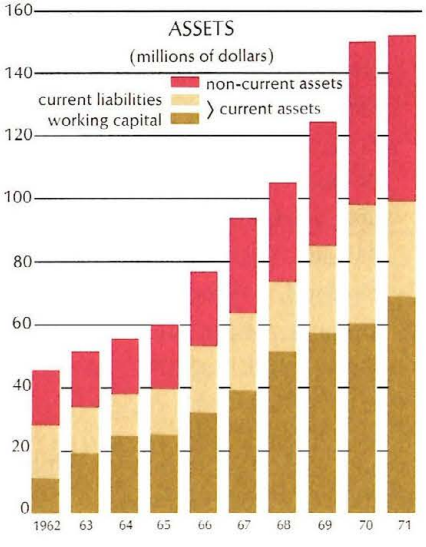

FACILITIES
(millions of dollars)
accumulated depreciation
depreciated cost
80
70
60
50
40
30
20
10
0
1962 63 64 65 66 67 68 69 70 71

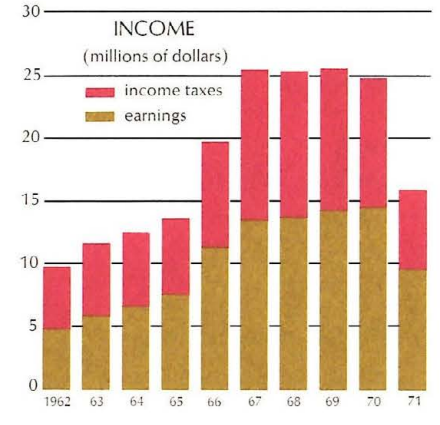

INVENTORIES
(millions of dollars)
purchased material
work in process
finished goods
60
50
40
30
20
10
0
1962 63 64 65 66 67 68 69 70 71

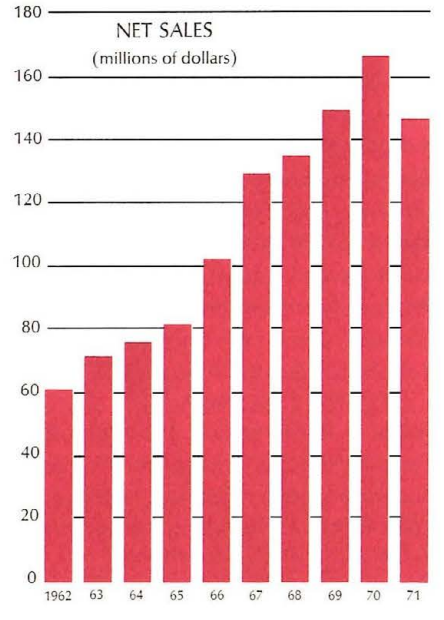

INCOME TO SALES
(% of sales)
income taxes
earnings
25%
20
15
10
5
0
1962 63 64 65 66 67 68 69 70 71


EARNINGS PER SHARE
$2.00
1.75
1.50
1.25
1.00
.75
.50
.25
0
1962 63 64 65 66 67 68 69 70 71


INVESTMENT IN FACILITIES
(millions of dollars)
depreciation
18
16
14
12
10
8
6
4
2
0
1962 63 64 65 66 67 68 69 70 71


ASSETS
(millions of dollars)
non-current assets
current liabilities
working capital
current assets
160
140
120
100
80
60
40
20
0
1962 63 64 65 66 67 68 69 70 71


INCOME
(millions of dollars)
income taxes
earnings
30
25
20
15
10
5
0
1962 63 64 65 66 67 68 69 70 71


NET SALES
(millions of dollars)
180
160
140
120
100
80
60
40
20
0
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