



# tek talk

employees' publication of Tektronix, Inc.

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field engineer on the job at IRE show



# tek talk

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## toward the 'big picture'....

You'll find no departmental news in this Tek Talk, or in any issue to come. The new Tekweek, carrying those items, has been approved and will continue.

Tek Talk will contain feature material of general plant-wide interest and importance, and try to paint an overall picture of Tektronix.

Not each issue will be a balanced one, because of the way news breaks. As the country editor said, "Some weeks, everybody's born."

But our aim, over the months, is to show the big Tek picture. As always, what you think about it matters, and will help us paint the picture better.

....J.F.

# PRO and CON

## Workers Well Off

To The TEK TALK Editor:

"If fifty men did all the work,  
And gave the price to five,  
And let those five make all the rules—  
You'd say the fifty men were fools  
Unfit to be alive."

Charlotte Gilman

Such mundane, yet serious problems as job evaluation and wages deserve sincere thought from women too—thus I found the following information very interesting.

From Richard Neuberger's January "Washington Calling" I read, "...during 1958 the average steel worker earned \$5,616., the average Federal employee generally \$5,193., and the average Post Office worker only \$4,809." With my own tax income statement before me I observed the figures with dismay, and was well on the way to feeling sorry for me.

I decided to learn if possible just what the wages are generally over the country. Accordingly I devoted some time to searching out the facts and figures presented herewith.

Average family income in U.S. in 1956 was \$5,520—US Dept. of Commerce  
Average income per person in U.S. in 1957 was \$2,009.

Average income per person in Oregon in 1957 was \$1,928—US News  
Trades generally earn highest wages per hour

Farm worker	1.91
Textile worker	1.40
Retail clerk	1.55
Factory worker	1.92
Printing worker	2.37
Electrician	3.33

(U.S. News & World Report)

Starting pay for college graduates entering business fields:

	a month
Engineers	\$433.
Accountants	389.
Salesman	385.
Business workers	382.

(U.S. News & World Report, Jan. 4, 1957)

1955-56 Average Weekly Earnings

Bureau of Labor Statistics

Women Factory Workers

New York	\$74.71
Detroit	107.89
Portland	86.70
	(\$4,152 per yr.)

Los Angeles	91.18
Women Clerical Workers	
New York	\$73.50
Detroit	78.00
Portland	74.00
	(\$3,600 yr.)

Los Angeles	76.00
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From the editorial page of the Oregonian, Feb. 14, 1959, came the following figure, "...\$5,160. national average teacher's salary."

From THE CHRISTIAN CENTURY, April 13, 1955 on "What Do Americans Value Most Highly" came this information: "Physicians are highest paid in America, lawyers, next dentists, then businessmen, and teachers and ministers are lowest paid." It would seem that we place low value on intellectual and spiritual life.

From FORTUNE, July, 1955 came this piece of wisdom: "Industrial prices increase at about the same per cent as wages, thus the cost is passed on to the consumer and thus the cost of living inches upward."

From this effort I've concluded that the average worker in the Portland area is as well off, or better off, than the average worker across the country, and Tek workers are better off yet. "Fringe benefits" are to be taken into consideration also, such as paid vacation time, sick leave, insurance plans, and most of all, the possibility of increasing the overall take home pay in a profit sharing plan. Such homely thoughts as:

"Beware of little expenses: A small leak will sink a great ship."

take on new and important meaning. This is not a complete research paper on this subject, but is offered with the hope that it will prove as enlightening and constructive to someone as this knowledge was to me.

Helen Solem  
IBM

## Wanted: Informed Guides

To the editor,

Of late, too many people misinformed as to the duties of various departments in production are taking guests through the plant. Naturally, the visitors are interested in the heart of our company—the production line.

It's my contention—and I'm sure others at Tek feel it—that if visitors have enough interest to visit, they should have a guide who has some knowledge of what is going on in the departments. If the guide feels incapable to give a satisfactory explanation of any job, by all means the department supervisor should be sought out. Here's an example:

I'm known as a Line Tuner in the Test department. How many, even at Tek, know exactly what a line tuner is—her duties and her contribution to the production line?

Picture girls sitting all day in little semi-dark cubicles. The only light is a

lamp at each bench, and many times this is turned off during the actual tuning.

Some people have the idea there's nothing to line tuning, that it's a cut and dried problem for us. Don't you believe it! We have our problems, even more than some departments.

Then we have visitors. They look like prospective customers. We have no way of knowing, so we must always assume this attitude.

The guide blows through the department like a tornado. He doesn't explain what we are doing because he's at a loss. He doesn't ask because he's too proud.

Instead he says, loud and clear: "These girls are line tuners. There isn't much to this job!" And he makes his exit with his guests behind him, still wondering—or certainly not knowing—just what it is we are doing.

"Line tuning is one of the toughest jobs in the whole plant." These words were said by a gentleman in the know.

The patience of Job is required, plus the touch of the blind and the ability to respond to boundless challenge. When you've tuned a scope and sent it on its way, a wonderful feeling of satisfaction takes over.

A lot rests on the shoulders of the so-called weaker sex. I feel privileged in being a member of this necessary department. I thoroughly enjoy my work and the great group of girls I work with.

Oftimes our department is entirely forgotten. Pamphlets have been written on our scopes and more times than not Line Tuning is never mentioned. (Example, the Centennial booklet).

We have a wonderful company, with wonderful people. We're building a highly technical instrument, the Cadillac of all scopes.

So let's go one better and have well-informed guides, so when our visitors leave they can give a reasonable account of what they saw.

Respectfully  
Patricia Michener  
Test



at Tek, who decides?

# Overall Management

(The employee who wonders how many people we're going to hire, the one who asks about profit share, the man who'd like to know how the market is holding up and the worker who's curious about where the next building will be all are concerned about the same big question—in short, Where is Tektronix Headed, and How Fast?

This is the first in a series of articles aimed to shed some light on the matter:)

Slowly but surely, and a bit at a time—like a plant popping new leaves—Tektronix is developing its first written policy.

It will replace conflicting departmental policies, unwritten policy or, in some areas, no policy at all.

"People here are against tight rules and regulations," points out executive vice-president Bob Davis, "but stating our policy won't make it any less liberal. More likely, it will make policies in all departments equally liberal.

"Written policy will do away with inequities. The way it's been, two people working in separate areas and riding in the same car have often been treated differently as to vacation, absence or pay.

"This makes it look to one of them like the grass is greener in the other's department. You might say our aim is to make each piece of grass equally green."

Written policies relating to vacation and employees' length of service were first to go into effect plantwide—but not until they'd been meticulously gone through, hashed over, picked apart and reassembled by Bob and the division managers.

In the works next are policies on termination, performance review, education and sick leave.

## Group's Job Varied

For people who've asked—and for those who've wondered but not asked—just what Bob's group is up to, written policy is one concrete example.

Composed of 11 division managers, the group has completed an eight-month shakedown period and is now on the move in several areas.

One of these is plantwide distribution of printed aids to supervision—material drawn from many sources but largely from ATS which Production has used for several years. Those materials which apply to all Tek areas will be sorted out, revised where needed and put to use.

What sort of materials? Aids in filling out payroll time cards are a good example. In the past, lack of a uniform time-card procedure "has thrown Accounting into a tizzy," Bob comments.

## No Glamor Here

Besides building a body of written policy and procedure, the group at its thrice-weekly meetings attends to the vital and glamorless chore of making day-to-day operational decisions for the entire plant.

It also holds briefing sessions from time to time: A member—or a nonmember guest—explains a problem or project in his area but affecting the whole company. An engineer, for example, may tell about proposed new instruments.

These two jobs are like those done by the old Tek operations group. However, the division managers can implement their decisions. The old group could not. There's a big difference.

To keep the board of directors informed, Bob confers regularly with Howard and Jack.

## Grass Roots Important

In its efforts to find what Tek policy should be and to state it briefly and workably, the group must rely on employee groups and the rank-and-file Tek.

One source of basic material is the reorganized advisory group. It bears the same name as always, but has a different job than it used to.

The advisory group, now making a thorough study of sick leave policy, is assigned one problem at a time, and sub-

...and they ask you

## for feedback

mits recommendations to the division managers.

During the project the group's membership is "frozen." When it completes the job, it may replace some members.

To get feedback on policies and procedures, the division managers consult with the supervisor chairman's group once during each SCG chairman's term of office and at least once with the chairman alone.

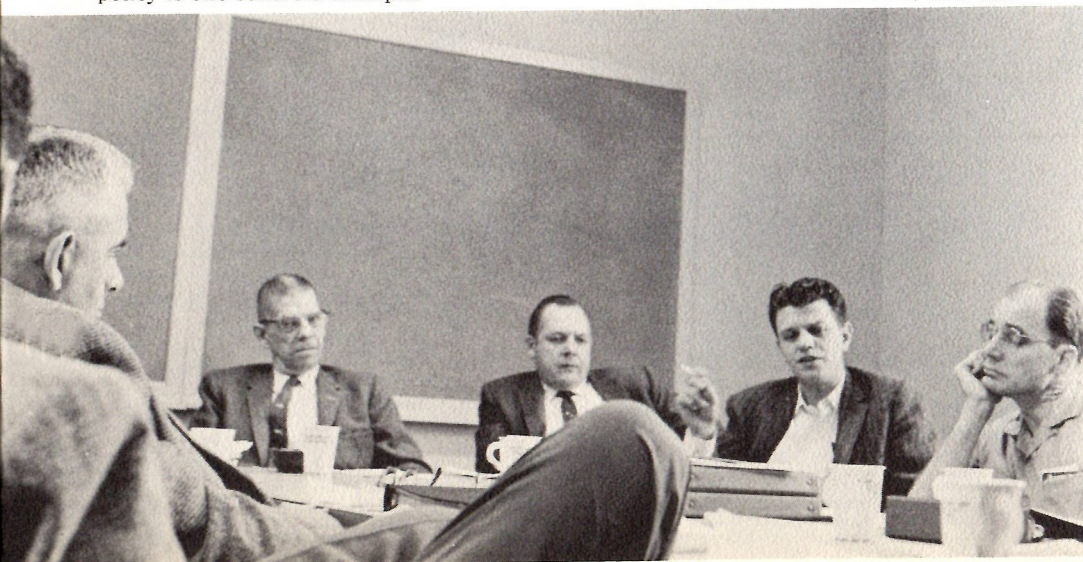
To open employee-management communication channels still wider, Bob has asked Tek's to comment frankly on what's going on.

They've responded, and letters still are coming in—most of them expressing concern over irregularities in policy.

Employees are urged to speak up through one medium or another: Group representatives, plant publications or letters to management.

It's no idle request. Getting more information more often from more people will, in the long run, be the strength of Tektronix' new approach.

(Next issue: Facilities—Tek's Race for Space.)



REPORT FROM the supervisors' chairman's group draws a comment (left) from Bill Polits, Engineering, at a recent session of our overall management group. From left: Earl Scott, Instruments and Electrical Components; Dal Dallas, Marketing; Irwin Ashenbrenner, Mechanical Fabrication; Bill, and treasurer Don Ellis. Above (from left): Irv Smith, SCG chairman-elect; Paul Tripp, outgoing chairman, and Bob Davis.



# IRE: Bigger Show Than Ever

March 21-24, in a New York Coliseum jammed wall-to-wall with people, Tektronix and most of the nation's other top electronics firms trotted out their wares.

Occasion was the New York IRE show, the nation's largest annual display of electronics.

For four days, technical personnel, engineers and buyers in a steady parade elbowed their way from booth to booth to see new instruments and watch them work. It was the biggest IRE show ever. Tek representatives said it was almost too big.

Along with the increased size went signs of more and keener competition throughout the industry.

Tek fielded an array of 11 new instruments, highlighted by its first entries into a half-dozen new fields, offering a strong challenge to firms already solidly in those markets:



CLIFF MOULTON and a heap of Tek instruments ready to be set up.

**COVER**—Chuck Bouffiou (Atlanta) was one of many Tek field engineers plying their trade at the jam-packed New York IRE show March 21-24.

Our 503 and 504 (and their rack-mounted versions), high-performing, low-priced oscilloscopes, made an impressive debut in the low-frequency market. Both of them are already in stock.

The 519 scope, introduced at the 1959 WESCON show in San Francisco, represented Tek in the distributed-deflection field at IRE. It has 20 times the band width (and thus 20 times the performance) of our 517.

Moving into the well-established sampling field, Tek submitted its N-unit and 110, 111 and 113 auxiliary pieces (all in early stages of production), shown with a 531 scope. They add up to a high-sensitivity sampling system.

An engineering prototype of the Tekamera signaled our bid for a share of the scope camera market.

Invading still another field was the 945 militarized scope—a modified 545, beefed up to withstand unfriendly environment and rough treatment.

We also showed our first current probe, displayed with a 545A scope and a CA-unit.

Besides making its first moves into these completely new areas, Tek showed four other new instruments:

The Z unit, which extends a scope's vertical accuracy by 10 to 20 per cent and has differential amplifier capacity; the S unit diode-test; the type 81 adapter, which allows use of standard 53 and 54 plug-ins in our 585 scope, and our transistorized 321, which made its bow at WESCON and is now in production.

A 551 scope was used to show four plug-in units, and a 551 with two N units gave a dual-trace sampling demonstration.

#### Large Crew Attends

In charge of Tek's display (designed by Ken Ireland, Communications) was eastern division manager Scotty Pyle. Also on hand were managers Ed Bauder

## tek talk asks: how did IRE look to you?



**NORM WINNINGSTAD, ENGINEERING—**

"I like to look at the oscilloscope market as a great big room, in which you stand and blow a balloon. When the balloon gets too big and forces you out the door, it fills up the room except for the corners. Then you have to blow like the devil..."

"These 'corners' consist of certain classes:

"The very fast instruments, like our N sampling unit; the traveling-wave instruments, such as our 519; the low-cost instruments—our 503 and 504, for example; the special-purpose instruments, like current probes; the militarized scope and so on.

"These are all peripheral areas, in which we've been pushed hard, areas where our opposition has been able to make inroads because Tek up to now simply hasn't been there..."

"While we're plugging the holes, the new 519 is doing an excellent job of heading off opposition in the single-transient high-speed traveling-wave field. It's lower in price and superior in performance to its EG & G counterpart..."

"We're a little behind on sampling, but we intend to catch up. Although our N-unit is relatively unsophisticated and no match for a full-scale sampling instrument, it does have vastly superior trig-

gering ability and is a versatile low-cost system.

"Our 'low-priced' instruments have preserved all the niceties of our wide-band scopes. Because we haven't taken away these quantitative features, the 503 and 504 aren't what you'd really call cheapies..."

"We're catching up nicely in current probes, and can offer superior display because of our scopes' wide band..."

"We have a better militarized scope than the competition offers. Ours is probably 95 to 99 per cent 'militarized'. Our opposition's is 80 to maybe 85 per cent. Ours offers a wider band, and so is a little higher-priced..."

"Aside from these 'corners' in the scope market: In all areas where our competitors meet us head-on—our instruments continue to be just a little bit better and just a little bit cheaper..."



**JACK CASSIDY, MILITARIZED PRODUCTS**

"It's too early to get a real good solid reading on how our militarized scope was received.

"There were two important people there that we really wanted to impress. Both of them liked the scope—one of them drooled all over it.

"Several companies had militarized scopes at the show..."

"I think competition has pushed us into recognizing that the military market

has its own requirements, and we definitely have to be in it. We can't compete in a military market without a militarized scope..."



**BYRON BROMS, MARKETING—**

"This year's was an exceptionally fine show, although it's getting so big the visitor can't adequately cover it.

"Hard to say which instrument got most attention. There was good interest in the 519 and N-unit, and in the Tekamera. The 503 and 504 drew a lot of comment, but since we're new in the low-frequency market, visitors had a 'wait-and-see' attitude.

"In trying to break into this existing market, we're going to have to work harder than we do in fields which we entered first and others chugged along behind. Another example is the sampling area, in which we've just put our N-unit.

"Competition is increasing, both in number of companies and number and variety of instruments.

"Although the fact that we're the leader in the scope field means we have the highest degree of acceptance at the moment, maintaining our position grows more and more difficult, for this reason:

"The state of the art is such that we've used up a lot of our initial advantage. Now it takes increasingly more time, engineering effort and money to make a new and major contribution to the field..."



**EARL SCOTT, PRODUCTION—**

"The show was very big. Over 70,000 people registered and there were some 850 booths, with about 150 more waiting for space.

"I'd saw our new offerings were better than last year's, although maybe not up to our IRE average.

"In sampling instruments, we ran third best to Hewlett-Packard and to Lumitron, which was the first company to manufacture a sampling unit. H-P exhibited a complete sampling scope, while we showed our N unit.

"We weren't pushed in other areas. Our 503 and 504 low-frequency models appeared to have gotten good acceptance. However, since most people look to us for high-frequency instruments, we'll have to develop a following in the low-frequency field.

"Electron Tube corporation, which made dual-beam scopes before we did and which produces the same model tubes we do, has been in this field a couple years—and this year is in it big.

"No brand-new outfits competed with us this year, although one new firm that had planned to attend will start making low-frequency high-quality scopes to compete with our 503s and 504s.

"Although Hewlett-Packard is getting more and more into the scope market, it's not doing so at the expense of other areas, but is expanding in the whole electronics field..."

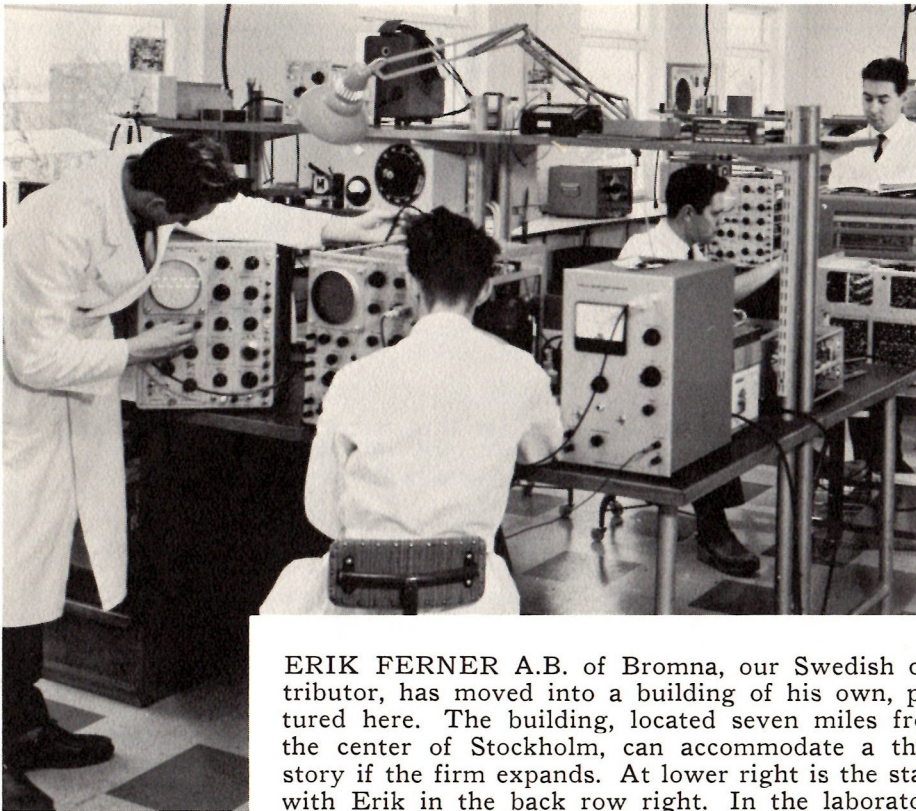


**THIS WAS TYPICAL** of the crowds that packed the coliseum.



**DICK ROPIEQUET** (right) talks with a booth visitor.



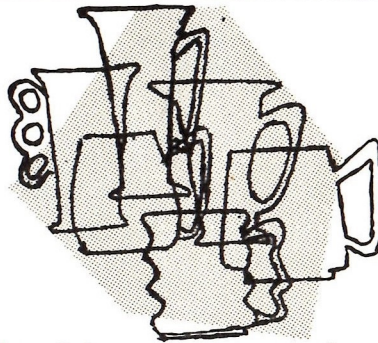


ERIK FERNER A.B. of Bromna, our Swedish distributor, has moved into a building of his own, pictured here. The building, located seven miles from the center of Stockholm, can accommodate a third story if the firm expands. At lower right is the staff, with Erik in the back row right. In the laboratory scene at left, a technician repairs one of our scopes.



GRINNING BIG, Hans Montag of Rohde & Schwarz, our West German distributor, helps truck away one of 259 cartons of Tek instruments received recently at Cologne. The 19,174-pound shipment, our largest single air consignment, was one of several factors reflected in our improved March profit share.

## coffee break



... WITH TOM WILLIAMS

The launching of **Pioneer V**, a space Technology Laboratories communication vehicle, was successful. STL wrote our West Los Angeles office and through them extended to Tektronix a hearty thank you for our company's part in helping them take this step forward in space exploration.

Dr. A. K. Thiel, Director of Experimental Space Projects joined STL Procurement Department personnel to let Tektronix and other suppliers know that without delivery of high quality, highly reliable instruments it would have been impossible for them to accomplish this mission.

Oscilloscopes and test equipment supplied by Tektronix were specifically acknowledged by members of the STL technical staff to **Francis Frost**, West L. A. who sent along this item to share at coffee break.

Voter registration at three plant locations on April 6 made it easy for 275 employees to place their names on the official polls of Washington County. Volunteers from the Beaverton area returned to the plant at 8 p.m. to satisfy swingshift interest in signing up.

An observation made by a Tek who is regularly active in community affairs was, "Does **registering** to vote actually **qualify** a person to vote?" Legally **yes**, but the point made was this—without studying issues and getting to know candidates an increased but indifferent electorate could very well sway government into some bad decisions. Politically, this is an interesting year. Every registered voter has the opportunity to practice his citizenship rights to the fullest by being well informed before he decides how his vote is cast.





HERE ARE Warren Trask (Production Planning), Lee Mason (Plastics) and a trophy they helped win at a recent bonspiel on the Seattle curling sheet. If you think that's easy to do, try it once. Just finding a bonspiel is hard enough.

They're half of a rink that also includes John Mason (Shop) and Glen Mason of Vancouver, B.C.

Warren's on the left, and Lee's on the right. The trophy's in the middle.



CURLING IS an old Scottish sort of athletics played on ice (curling sheet) by four-man teams (rink) who dress warm and slide rocks around. A tournament is called a bonspiel.

You curl by scooting the 40-pound granite stone along the sheet toward the target (house). The captain (skip) stands at the other end and bosses things, while your two rinkmates prance along in front of the stone and sweep the ice with brooms (brooms) so the rock won't hit a wee bump and run amok.

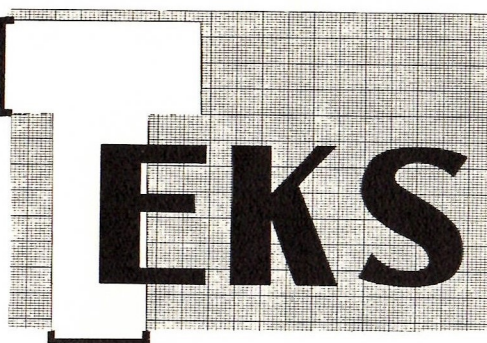
The whole enterprise is kind of like shuffleboard, except your feet get colder.

All credit to these fellows, who brought new glory to Tek with stone and broom. It was their third bonspiel, and their first championship.

BERNIE MAREK (Manuals) submits some interesting stuff figured out by Milt Smith:

"It's been calculated that, according to the fastest sweep rate on the 519 oscilloscope, the spot formed by the electron beam travels 11,200,000 miles per hour across the CRT screen—a speed approximately equal to 3100 miles per second.

"The distance that the spot moves across the screen is 6 centimeters or  $2\frac{3}{8}$  inches. When the spot



moves this distance, light has traveled 12 feet.

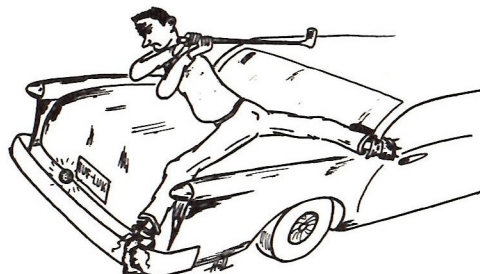
"The velocity of the electron beam traveling from the cathode of the CRT to the screen is 1800 miles per second or 6,480,000 miles per hour."

MAKES A FELLER feel right poky, it does, as he shuffles about his work.

JIM ZIKA (Production Planning), golfing at Vernonia in March, overdrove the green on the last hole, on into the parking lot. Trying to knock the ball back on course, he hit a car and the ball rolled down into the rear bumper trough.

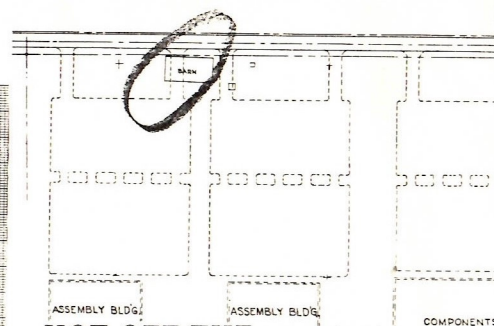
As he went through the gymnastics necessary to hit it out of its roosting place, it gave Tek cartoons a field day.

They've sent in many versions, of which these are two. One's by Barbara Coffelt of Manuals, and the other's by Al Hill of Militarized Products.



Other conflicting reports are going around, among them that how he really hit it out was by wielding his club like a pool cue.

At any rate, it makes one of the goofier stories of the year.



HOT OFF THE press is the new development plan for Tek Beaverton property, which shows all the present buildings and some others (in dotted lines) which are yet to come.

Least Tektronish of all is a building in the upper left (technically speaking, the northwest corner) labeled "Barn."

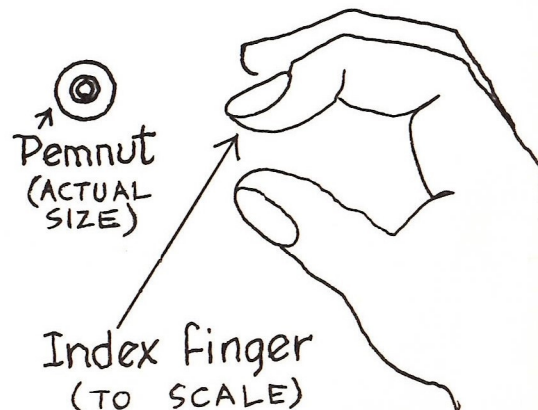
Maybe somebody better explain a barn's function in the scheme of things at Tek, before the rumor gets going that it must have something to do with our Guernsey operation.

BACK IN December, Howard McPherson (Production Engineering) was fixing a pemnut feeder when he trod by mistake on the foot switch and the machine crunched his index finger. The plant nurse gave him first aid and Howard, figuring the finger was only middling squished, nursed it until it got better.

But in mid-March his finger looked lumpier than most, so he went to a doctor, who trundled out the X-ray and found, down under the skin, an aluminum pemnut ( $\frac{3}{8}$  inch in diameter and  $\frac{1}{8}$  inch thick). So, off to the old operating table.

And so, folks, that's how we recovered a lost pemnut. Like Howard, let's all fight against waste. It's the Tek way.

THE ABOVE news comes from our Small Tool Jigs and Fixtures reporter, who encloses an actual pemnut to show us what one looks like—so we won't think a pemnut is something you would eat salted.





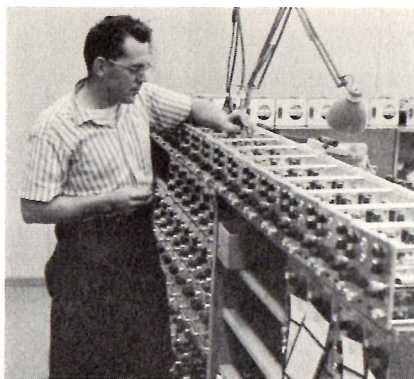
# TUBING at TEK

BY BILL MEYER  
(Final Swing)

The other day when I took a scope back to Tubing, I paused and watched the tubers at work. They seemed at first just to be taking tubes out of the ready trays and sticking them in their sockets. A closer look revealed there were several different types of tubes that must be inserted into their proper sockets for the scope to function as it should.

The tube controls the flow of electrons somewhat as a valve controls the flow of water—hence the letter V placed before its number.

I asked how long it took to tube the 535A I just brought, and they said from six to eight minutes. This scope has 58 tubes plus one CRT, so you can see there is an enormous amount of tubes passing through here in just one day. To list and describe them would take a long while, so we'll use the most common one, the duo-triode 6DJ8, as an example. We use about 35,000 of them a month—or around 1500 daily.



GENE PECK (Final) tubing part of the daily plug-in production.

Where are they procured? How are they received? How many are kept on hand? What processes do they go through before they are placed in the scopes? What's the cost? What's done with the rejects? Why don't we make them, as we make most of our CRTs?

Most of the tubes are purchased from nine different companies: Telefunken of West Germany; Amperex of Holland and England, and RCA, Sylvania, Westinghouse, GE, CBS, Tung-Sol and DuMont, all of the US. We acquire them from so many makers not so much to meet high standards as to meet our great demand. We buy tubes on the rotation plan to prevent any shortage in our stock.

Railway Express is the normal carrier, but if a shortage is forecast and more speed is needed, they are flown here. To prevent a future short supply we now keep a two to four-month supply on hand at the warehouse.

#### Each Tube Readied

When we receive the tubes, they're not just stacked there and forgotten. As each one is just a little different, they're prepared for the circuit in which they will work. This is the job of component test.

Although they don't check all tubes—this isn't needed—they do process an average of 8000 a week.

In this area the tubes are first plugged into Tek-made warmers, which heat them to operating temperature. Then they're placed in racks to age for 24 to 100 hours, after which they get the microphonic test, a simple but important operation consisting of putting the tube under vibration to be sure no loose parts will interfere with operation.

After microphonics they're matched for cathode current and grid bias. At this point, most of the rejects are found. The reject rate here is about 30 per cent. However, this is not a complete loss, since many of them can be used in less critical circuits.

When the tubes have been cooked and bounced they are sent back to the warehouse, where they're divided into kits and sent back to Final Allotment Stock. There they're checked and moved out daily to the Tubing ready trays.



GLENORE CARRIER (Pre-Pack) boxing rejects for their return to the manufacturer.

The tubers sit between the racks of ready trays with a rotating table on which to put their scope. It's interesting to watch them at work as they place the scope on the table, reach over for a handful of tubes and start in.

They insert the tubes in the sockets facing them, spin the scope, fill the holes on that side, flip it over and repeat the process—and in very little time they've inserted from two to 105 tubes, depending on the instrument.

The scopes then are sent to test, where a few defective or damaged tubes may be found and removed.

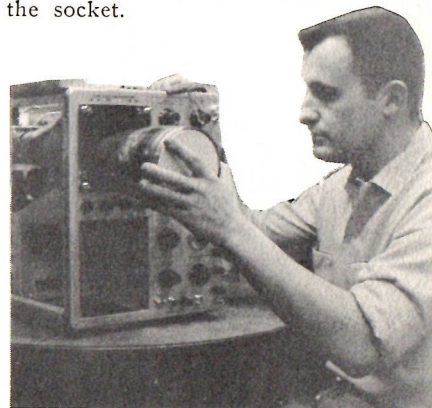
Rejects then are sent back to pre-pack in the warehouse, where they're sorted as to type, manufacturer and warranty date, to be sent back to the company as credit on new tubes.

#### Many Tubes Returned

Our standards are strict, so we send back some 10,000 a month. They require about 24 hours a week to sort.

It's been found better business to buy most of the tubes than make them ourselves as we do CRTs. The companies we purchase from are already set up, and the cost is less than if Tek were to manufacture them.

The cost of these little gems runs from 44 cents to \$22.59. Tek spends over a million dollars a year, for them and for the many handling and testing processes which precede putting the right tube in the socket.



WARREN WOODRUFF (Final) inserting a Tek-made CRT. (Photos by Bill Meyer)

Tektronix, Inc.  
P. O. Box 831  
Portland 7, Oregon

Kernit Fleck  
156 Maiden Rd.  
Mattysdale  
Syracuse 11, N. Y.

BULK RATE  
U. S. POSTAGE  
PAID  
Beaverton, Oregon  
Permit No. 1