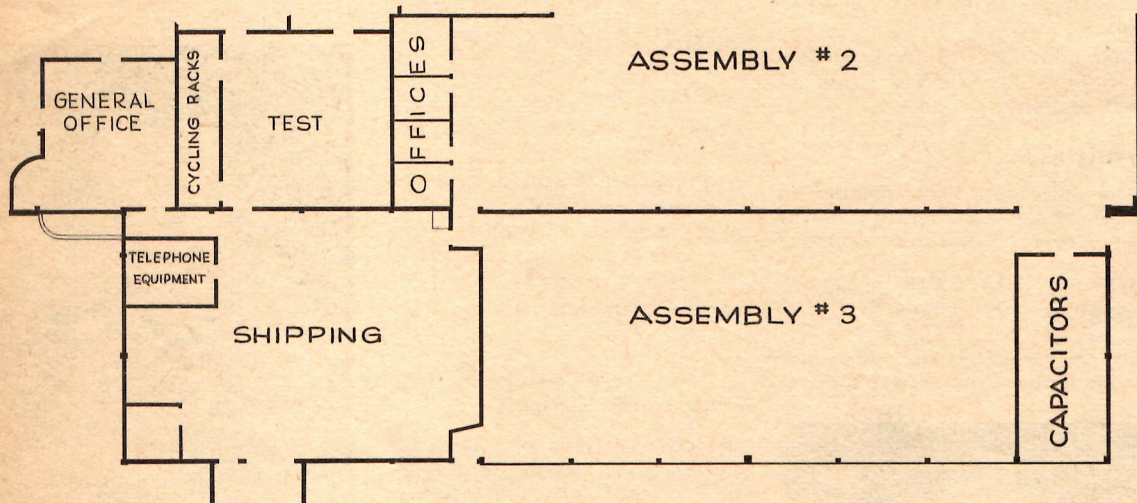


Assembly Shifts In New Addition



With the completing of Tek's new building to the main plant, production facilities will now be allowed a long needed expansion according to John Taylor, assembly department head, and much of the additional space will be allotted to Tek's new instruments.

Keeping up with the production schedule during the last four months has involved a six day week due to the limitation of space; the expansion may now eliminate the need for overtime and the flow of materials for Tek's assembly line will go from assembly 3 straight through the

plant to the final destination in shipping.

Production facilities in the new building will be mechanical assembly and accessories; in assembly two will be unit wiring, kit preparation and a training unit; in assembly three will be unit wiring, final assembly and inspection; then through the test department and out to shipping.

Capacitors have been moved from the engineering building into the addition. Biggest shift in the plant occurs in the cabling and accessor-

ies under Wendell Ferlin, and mechanical assembly under Harold Edmondson as they will move from assembly 2 to the new building.

Taking up capacitor's space in the engineering building is the print shop's bindery which contained only this notice on an empty room the last week of March, "Capacitor's and Resistors were evicted for 1955. Warning: Keep your rent paid."

Finishing touches on the new building include air conditioning which is yet to be installed but will be in the near future.

Tek's New Instrument Line Viewed By 40,000 At IRE

Heralding the biggest annual event to the electronics industry, the IRE show at the New York City armory with an attendance of over 40,000 on March 21-24, Tek's engineering department assembled the largest group of new instruments that we have ever shown in a two booth display.

For the past several months the entire engineering department has been burning the midnight oil to produce this group of new instruments which have never been shown before. First was the new 540 series oscilloscopes represented by the type 541 and the type 545 plus the 53K/54K Plug-in unit designed for use with the 541 and the 545.

Next came the type 532 oscilloscope, a new addition to the 530 series shown for the first time. Other additions to the 530 series are two plug-in units the 53E and the 53G.

The new type 360 indicator unit will permit customers to assemble a basic oscilloscope using units already available in the 160 series. The new 160A power supply was also on display.

In addition to the newly designed instruments the final version of the

type 310 scope, type 570 characteristic curve tracer and an improved version of type 524D designated type 524AD.

Helping to introduce Tek's new instruments from the Portland office were Howard Vollum, Dal Dallas, John Kobbe and Bob Poulin. On hand to answer questions from customers and prospects regarding the advance line of instruments was Tek's entire eastern division of engineers. This group is headed by Jack Cassidy from the New York office and includes Frank Thomas and Francis Frost; Vic Fricke, Boston; Scotty Pyle and Gordon Allison, Syracuse; John Mulvey, Philadelphia; and Leo Wulff, Baltimore.

Convention highlight for Tektronix was the banquet at the Waldorf Astoria on March 23 where Howard Vollum was awarded a Fellow in the IRE for his contributions in the field of electronics. This coveted honor has been given to only 500 in a membership of 30,000. Howard is the third Oregon man to become a Fellow; his distinguished companions are Professor Arthur L. Albert of Oregon State and Ralph W. Deardorff, Portland.

NW Management Conference Is Reviewed By Tek's Personnel

Heading up the 8th Northwest Management Conference as chairman, was Tek's Henry Haase (engineering) which was one of Portland's principal 1955 conferences held at the Multnomah Hotel on March 12 and attended by 27 members of our organization. Tek's members had this to say regarding the meeting.

Keynote Speaker

Keynoting the conferences was Cloyd S. Steinmetz, director of sales training for the Reynolds Metal Co. whose subject was "The Human Touch". Bill Lee (stock) felt that his greatest point was in his statement that the greatest hindrance of managerial effectiveness came about through prejudice against age, sex, color and the capacity and potential of people. Steinmetz went on to break down the human touch making each letter stand for the recognition that every person is different.

Impact of Science

The first of two panels took up the impact of modern science with Pat Dowling of the Stanford Research Institute leading off. According to Jack Day, the greatest importance was the depicted place of research in its application to people and consumer goods.

Les Stevens (accounting) said that Walter Meade, economics professor at Lewis and Clark went into economic definitions of "incremental costs" and "sunk costs" which Les felt were important but technical. Jack Henderson (field engineering) informs us that Sidney L. Lida, International Business Machines, predicted in one or two generations the automatic factory by a scientific method dubbed "operations research".

Motivation

The second panel was titled "Motivation" and the first speaker was Dr. Paul S. Wright, pastor of Portland's First Presbyterian Church. Harry Stewart (test) agreed with him when he said business should attempt to conduct itself in accordance with laws governing the universe. From Dr. James Conant, Portland psychologist at the Veteran's Administration came a unanimity of opinion of Bill McCord, Ken Walling and Dick Montag in the quote "Accident proneness is least where employee participation in management is greatest." Finishing up this panel was Wayne F. Strong, president of the Iron Fireman Mfg. Co. Dave Spinks (assem.) carried away the strongest impression in Strong's interpretation of bottom up management. It was his belief that management has an obligation to motivate but the effective leader, lead not drives.

Difference in Philosophy

Dinner speaker was Norman Allen, assistant to the president of Boeing, who spoke on "Executive and Management Development". Bob Fitzgerald, (purchasing) felt that his philosophy was the opposite of Tektronix. Allen emphasized a line organization, training men for position while at Tek management manifests itself; the job or group is built around the man versus the other theory of the man is built around the job. Allen strongly believed in picking a job, defining the area and allocating authority while at Tek there are no formal limitations, only in the person making judgments. Fitz's comment highlights the difference between a large corporation and a small family type organization like Tektronix.

Benson Aided By Tek

Aiding the Benson Tech Show on March 11 and 12 were Dick Rhieger and Rodger Jenkins (engineering) who were interviewed on radio station KBPS as a part of the promotion for this annual show.

In the broadcast Dick praised Benson for their technical training in engineering and social sciences and stated that graduates were a step ahead in their education due to this valuable training. Many Benson alumni are employed at Tektronix and due to their familiarity with tools need only to be instructed on Tek's particular methods — one-third of Tek's engineering department are Benson alumni.

Rodgers in a previous visit to Benson had discovered a great need for more modern equipment in the radio department. All excess surplus parts and components in Tek's engineering department have now been donated to Benson. In Rodgers's talk he stated that his Benson education in the radio station had been valuable for familiarization and in his preparation for the navy.

Interested alumni will approve the gift of a 512 by the Foundation to Benson for their physical science curriculum.

New Employees

Welcomed to crt are Barbara Schwerin, Eloise Helmer and Marian Peterson; joining test are Laurence Shelley and David Jurling; janitor on the day shift is Eskel Etling and Bill Rusca is responsible for swing shift; new faces in assembly are Bill Price and Evelyn Carter; advertising claims Sybil Meese; James Morrow, (no relation to Jim Morrow, engineering) draws purchasing; Lorena Miller goes to cables; Mary Lazarus is new in coils; Jackie Franck is introduced in ceramics and Elaine James goes to the front office.

Saving Slogans Hit Jackpot Winners Picked From 60 Entries

Winners in the Credit Union slogan contest were judged on March 25 by a committee consisting of Bill Webber, Darrol Pennington and Lew Witter. From an entry list of 60 slogans, the judges finally de-

cided that Nancy Goodman's entry of: "Save or Borrow For A Brighter Tomorrow", copped 1st prize. In 2nd place was Gene Brink with, "Where your savings earn more and your loan costs less."

Annual Meet Held By State Credit League

The Oregon Mutual Credit League held its annual meeting March 18 and 19th with most of Tek's credit union officers on hand for the educational conferences. Our credit union is a member of this state league which promotes credit unions through organization of new union and services to existing credit unions.

At the meeting Dick Schmidt was elected from District A (Oregon's northwest counties) to serve on the board of directors; at the board meeting Dick was elected to serve as secretary.

The two day meeting concluded with a banquet which featured E. B. MacNaughton, chairman of the board of directors of the First National Bank as the guest speaker. MacNaughton stated that he was in favor of credit unions as their service to members surpassed that of any bank. He emphasized the credit union principles of wise-borrowing when the need arises and stated his personal dislike for the installment buying campaign carried on by many of the downtown stores — here he feels that credit unions can do much in educating their members to be wary of such establishments. MacNaughton re-emphasized that the thrift and wise-borrowing features of the credit union make them an important part in the nation's economy. He is a member of the Oregonian Employees Federal Credit Union.



1st Prize

2nd Prize

In the Honorable mention category, six slogans were picked which included: "The Most For You With T. C. U.", by Neva Schmid; "Don't Wait For Tomorrow To Save Or To Borrow", by Scott Foster; "When Bills Are Due, See T. C. U.", by Kay Barker; "Save, Borrow, Lend or Spend, Money Ahead With This Friend", by Lurene Lange; "For Borrowing, For Lending, For Saving, For Spending", by Edna Horine, and "When Purses Deflate or Expand, Tektronix Credit Union's On Hand", which was submitted by Eileen Lundquist.

The most unique entry received, was one by Bob Livingston & Ernie Plapp, (10 words each) which went something like this:

"For any loan big or small,
See Loan Ranger, hear him squall,
I-O Silver!

No pay pronto,
me send Tonto."

Congratulations to all these people, and our thanks to all those participating to make this a good contest.

Tek Talk

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Congratulations!

Tek Talk salutes the members of Tektronix this month for their recognition by the community or the organizations that they represent and contribute to in performance, time and interest.

We particularly note:

Howard Vollum who received an award as a Fellow in the IRE on March 23 in New York City.

Henry Haase, general chairman and **Don Kepler**, program chairman for the Northwest Management Conference on March 12 in Portland.

Dick Schmidt for his election to the board of directors of District A of the Oregon Mutual Credit League and his subsequent election to the state organization as secretary for the coming year.

Rodgers Jenkins and **Dick Rhiger** who came to the support of Benson for their annual Tech show and gave radio speeches on their school's behalf.

To the entire engineering staff for meeting the deadline and getting the largest group of new instruments together that Tektronix has ever shown at the annual IRE show in New York City.

Company Creates New Tek Officer Foundation Aids Science At OSC

Tektronix, Inc., has created a new office, that of assistant secretary with Bunny Luken in the assigned post. The office was created due to the necessity of two signatures being required for most of the corporation business and with only three officers there are times when two of the three may not be here.

Bunny may sign documents for the secretary when he (Jack Murdock) isn't available. In his absence also, she may use the corporate seal on documents where it is required.

Tektronix is a corporation and as such a legal body in addition to being a group of people creating a product. As a legal body officers are required for legal purposes of executing documents like government bids and contracts, lease agreements, export-import papers and other legal red tape.

In order to forstall a stampede of people who want Bunny to sign checks, it should be mentioned that even though someone may prevail upon her to sign one, it would bounce as her duties do not include check signing.

Letter To The Ed:

I attend an art class at the Museum of Art on Tuesday nights. I had noticed a jolly old fellow who answered to the name of Livingston when the roll was called.

He is the Dr. Livingston who heads the neurology department at the Oregon medical school. This is the department to which Tektronix has granted money for research. They use many of our instruments and when Dr. Livingston and I discussed it, he informed me that, "they were the best."

He attends the museum class for relaxation and pleasure. His unusual personality and wit add much to the class.

Ida May Norby
(accessory group)

Tektronix Foundation's most recent gift was \$10,136.25 to Oregon State college representing one-half the cost of a mass spectrometer for useful research in the field of chemistry and physics. Jean Delord (engineering) assists us with this able definition of its work.

"A mass spectrograph is an instrument that allows very sensitive chemical analysis to be made. Its principle has some analogy with a cathode ray tube. If a beam of charged particles is subjected to electric fields and magnetic fields it is deflected in a manner that depends intimately on the mass of the particles. Therefore, ions of different masses are deflected in different ways. In a mass spectrograph, the beam is formed by positive ions extracted from the sample to be analyzed.

After deflection, they are allowed to fall on a photographic plate instead of a screen. The ions of the same mass, those corresponding to a single chemical element, form a definite spot in a definite place. By observation of these spots, an actual analysis of the chemical composition of the sample is obtained. This is a very sensitive method of analysis, since very few ions will make a spot on the photographic plate, whereas they could never be detected by chemical procedures only."

Oregon State's mass spectrometer will be manufactured by another electronic concern, Consolidated Engineering Co. of Los Angeles who along with Tektronix are members of the West Coast Electronic Manufacturing Association. The Foundation hopes that by reason of this gift more interest will be stimulated in the physics and chemistry curriculum at the state college.

Home Sweet Home!

Eileen Searle is entertaining a visiting parakeet. Cardtable sundeck complete with a modernistic cage (fashioned from wired clothes hangers) and supplied with food goodies. Eileen, a charming hostess, always, found her visitor in response to a rap on the window. The guest was welcomed and is now enjoying the comforts of home.

We Will Miss....

Lois Campbell (assembly) left Tektronix on March 25 to join her husband who is with United Airlines in San Francisco. Househunting is next on the agenda with her two small daughters, Lynn, 6 and Leslie, 4. An apartment base in Burlingame will be headquarters until moving day is possible.

Leaving for Corvallis is Doris Lewis (cables) who is joining her husband there in a new business venture.

Assembly gave a fond goodbye to Dolly Miller, Delores Beals and Pauline Jones.

Transfers....

Starting the field engineering front office's training program is Ken Keyser transferred from test.

Tek misses Eve Fitzgerald in field engineering who left in mid-March for the Eastern offices.

Eve will be schooled in a familiarization tour starting in Baltimore on



government contracts, bids and other information on field office procedures under Jean O'Brien. From there its to Bronxville, Chicago and on to Dayton which will be home for six months with Fred Hart as instructor. Eve will then be permanently located in Chicago. Good luck and don't forget the postcards!

Welcome Back....

After a long convalescence, Lou Ballinger (test) has received his doctor's permission to rejoin Tek's working force.

Charlene Goodman (assembly) is looking as good as ever in spite of a major operation and a short convalescence.

Welcomed back to stock in mid-March was Bill Sedig who had been missed for a month due to illness.

Shedding the responsibilities of keeping track of John Taylor, Bob Davis and John Matthews, Marybelle Rash who is the secretary for this able department took a week's vacation in Kalamath Falls.

Whizzing by assembly was Joan Cramer (construction) with the tartest comment of the day, "Marriage is just like a bath — after you get used to it, it isn't so hot."

To Whom It May Concern —

(Any resemblance to people living or dead is purely coincidental.)

Once upon a time, namely last month, there was a small Cub Scout (whom we shall call Randy Bowdernik) introducing his father (whom we shall call Ed Bowdernik). The occasion was a Blue and Gold dinner held each February, attended by fathers and sons, to celebrate the Anniversary of Boy Scouts. Cub Scout awards of Wolf, Bear, Lion and Webelo badges, the various ranks in Cubs, were given out. Little Randy got up when his turn came and said, quote: "My name is Randy Bowdernik. I am a Bear Cub Scout in Den 4. This is my dad and he

— THE BIN. —

must be a Cub Scout too, cuz my Mom says he is a Wolf". Unquote. Period. End.

Interesting Things People Do

Bob White, model shop, took commercial art all through high school. Les Keisling (and his wife) collaborate writing songs.

Henry Bahr writes poetry for Arnold Rantala's cars.

Bill Boom likes to repair clocks and watches.

Bill McCord raises breeding cattle. Chet Murphy's lovely oil paintings bring pleasure to many.

Mickey McKay makes 'different' jewelry.

Vern Bartlett arranges orchestrations, designs puppets, writes dialogue, remodels houses, plays piano, constructs barbecues, and handles our plastic department.

Derrol Pennington calls for square dances.

* * *

Happy House Warming

A group of Guys and Gals had a heart-warming house-warming for Laura Lusk of crt. They all went together and gave her a Bendix Clock-radio. That way she doesn't have to worry about being late for work, and what else fills a house more than music?

— — —

Regina Cosby (mech. assembly) was the recipient of a baby shower from all of her co-workers in assembly in mid-March. Are congratulations in order?

* * *

From banking to Tek's personnel office is Icel Schroeder — employees are urged to check with her about



insurance claims, bulletin board notices, record changes, rides and what have you! Icel is acting in a stenographic and clerical capacity allowing Irene and Blanche more time to screen and test new applicants.

— — —

They say competition is good for business. "Jay's Eat-Less Pills" has become competitive in opposition to Tek's other thriving business, "Brown's Eat-More Vitamins." The friendly rivalry is getting lots of interest and attention (best advertising is word of mouth, they say).

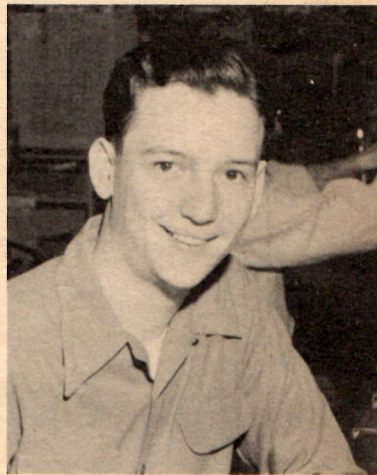
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Latest qualified aspirants for the ham radio circuit are Howard Gault (shop) and Jim Strickland (test) who have just completed their tests for licences.

— — —

Recent clipping from the Oregonian states that Pvt. Darlene Adams graduated from the teletypewriter operation course at the Southeastern Signal School, Camp Gordon, Ga. May we quote from the article — "during her training, Pvt. Adams received a technical education worth thousands of dollars." This Darlene did not state in her recent letter and Tek Talk suggests a barage of letters in the direction of her new Washington, D.C. address.

Starting with Scott Foster's arrival in purchasing it became mandatory for anyone having a birthday to have their wife make a cake for purchasing's consumption. Warren Trask was the birthday boy on March 22nd but his co-workers were unsure that 'he'd gotten the word.' Consequently the long awaited "lemon fluff" which is Mrs. Gene Cavanaugh's specialty came instead but so did Warren Trask bearing his birthday cake. (The first aid shelf was not called upon in spite of the double stuffing.)



George Scott
"For No Reason At All"

* * *

April Fool!

April Fool pranks arrived early in mechanical assembly as Molly Robins strolled in with a box of delectable chocolates which she generously passed around. (Solid rubber, they were but such a good imitation that everyone chewed and chewed and chewed.) Aino Kubarasepp chewed the longest as she couldn't figure out this particular brand of American chocolate and made Marty test them too!

Gerd Schwerin presented one to Betty Spohn who thought it was a special German type fondant and carefully saved it for a luncheon tidbit to divide with Betty Jones. Reggie Green took them in to assembly and the production-line finally ended on Bob Davis' desk.

— — —



Hoot Mon! That, lassies, is none other than our own Will Marsh wearing his new hat — a gift from Scotty Pyle.

* * *

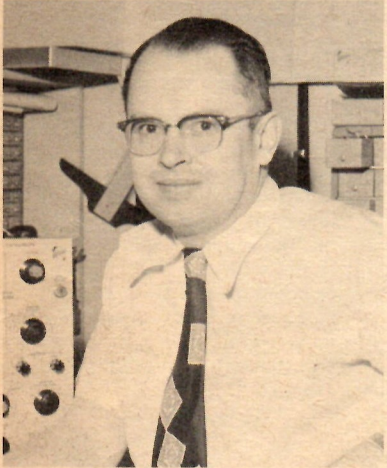
Geneva Kobbe and Ricky stayed with her parents in Kansas City while John was in New York for the IRE show. Afterwards she joined him for a partial tour of his three week canvas of eastern customers.

— — —

Matriculating in Tektronix were the following schools who toured the plant: March 15, the McMinnville high school seniors; March 24, thirty physics and science students from Stayton's high school; March 25, the graduating class of Multnomah College in radio; March 28, the business administration majors of Pacific University.

The Tektronix Movie Producer

Frank Hood's new 20 minute color and sound film of crt operation, which will be available soon for a plant showing, is under way. The complete manufacturing technique of a cathode-ray tube will be used.



The cast of course, is Tek's own; and the poise and aplomb with which they go about their acting chores is astounding. There isn't another

movie 'lot' with as much talent and looks as Tek.

Frank is systematically covering production from the 'idea' stage to finished product. Engineering know-how, Model Shop ingenuity, precision parts workmanship, chemical balances, patience and thoroughness of detail, all go into the perfection demanded of our tubes for precise performance of our scopes. These are portrayed successfully in Frank's documentary of crt, and everyone has entered into the spirit of it and truly given his or her 'all' towards this entertaining and informative film.

The film will be intended to be a semi-technical paper which can be presented in front of local and regional I. R. E. meetings, to Electrical Engineers or groups of the same type. It can be presented by any of our representatives in the U. S. or foreign distributors. Students and teachers interested may use it.

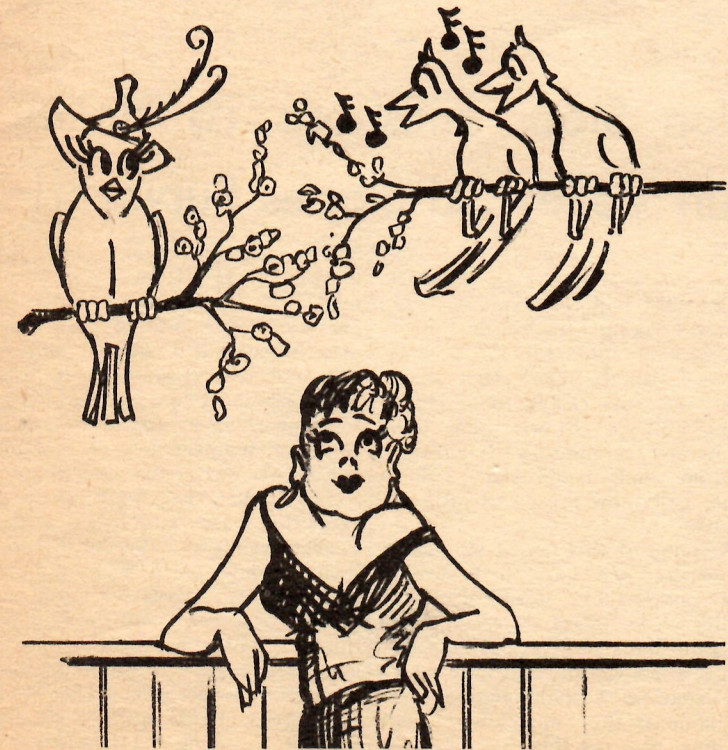
This is a spare time and 'on his own' project for Frank, but enthusiastically backed by everyone from all departments.

Tek's Junior Parade



The Tiny Tek's featured this month are: Upper left, Diana Lynne Littlefield age 4, and Douglas Littlefield, age 6, upper right; daughter and son of Cy Littlefield, (assembly). And at left is the Granddaughter of Beulah Veach, assembly; Debbie, age 14 months.

Out On A Limb With Rantala



This is a girl 'Boy-watcher' watching two boy 'Girl-watchers' watching a girl.

UF Committee Tells of Service

Part of the Tektronix United Fund Committee's program for this year is to inform our people of the services offered them by the United Fund according to George Roussos (drafting) and one of Tek's UF committee.

Many people do not realize that the fund office provides an information service. "Where can I find day-time care for my children while I am working? Is polio in the UF? How do I locate the hearing society?" These are typical of the hundreds of inquiries that come to the UF's information and referral service.

Answering them requires a knowledge of not only the 67 agencies of the United Fund, but also of agencies supported by tax funds. "We don't have an answer for every situation," says Miss Eleanor Herwin who is in charge of this service. "Sometimes the kind of help needed is just not available, and that is one of the hardest things to tell people who are in trouble," she added. Usually, however, the person making the inquiry is immediately referred to the agency best equipped to help him.

So if you need information on a needed service in Multnomah county, Washington county or Oregon, use your United Fund information and referral service. They will be glad to assist you in whatever way possible.

Science Show Given Tek Boost

Tuesday, March 22, Tektronix played host at a luncheon at Portland State along with Hyster and the Iron Firemen Mfg. Co. to the Portland business community in order to acquaint them with the annual Northwest Science Exposition.

This annual affair is the individual and independent work of grade and high school children in science projects. Tek hoped that the luncheon encouraged all of the business leaders of the community to go on and visit the science exhibits in the Portland State college gym which were the entries in the Multnomah county area contest. The area winners then take their exhibits to the state contest held in May in Corvallis.

Toastmaster at the luncheon was Eugene Caldwell. Featured speakers were Don Stotler, science supervisor for the Portland public schools, Dr. Sam Diack, president of Portland State College; and the major talk was given by Dr. Weldon B. (Hoot) Gibson, director of economic research for the Stanford Research Institute.

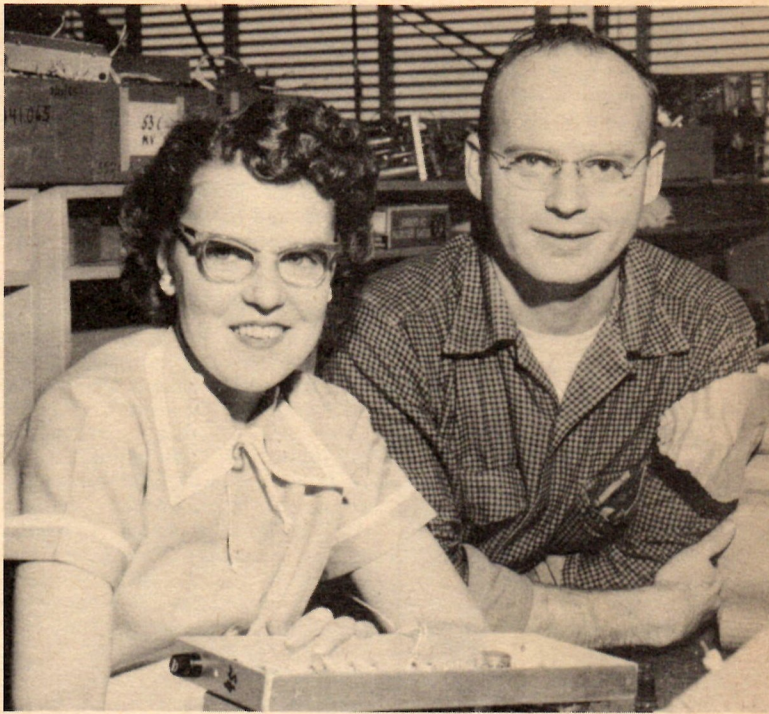
Book Review

The Girl Watcher's Guide. By Don Sauers. Harper Bros. Starting with a lofty phrase from Plato regarding a beautiful soul harmonizing with a beautiful form, this guide provides a real service to the altruist in search of spring and the hedonist creed. In fact the sap is guaranteed to start its annual flow after the coagulation of winter. Girl watching is professed to be an art without age limit; it provides the technique of recognition, the standards and prescribed exercises. (Unlike rhumba wherein the shoulders never move, girl watching is adamant in its statement that the head must be immobile—the eyes are something else again.)

Specific types are noted which again vary from the beachbomb to the pubthrush and appropriate passages are given to the ranchwrecker and the bossducker. A scholarly treatise which would appeal to the distinguished connoisseurs of indoor and outdoor sports.

For \$1.00 at J.K. Gill's you too can learn why Girl Watchers outnumber Bird Watchers 23.7 to 1.

Tek's Scoop On A 'Scope



GERRY & GINNY KRAXBERGER

They need no introduction — Ginny says that her mother-in-law stated Gerry's first question was, "Did Benjamin Franklin invent 'tricity?'" and Gerry said that he had been interested in electronics as a hobby since I've been knee high to a "hopgrass".

Gerry and Ginny are Oregon products from the Canby area where they both attended Molalla high school. Gerry served in the navy during the war as a radio operator and then a technician. On his release in 1945, the Kraxbergers were married. Gerry then went on to Oregon State for three years of electrical engineering. From there they went to Canby where Gerry operated a radio repair shop in Canby and managed the local theater — Gerry in projection and Ginny, in the box office.

Customer Ted Goodfellow wandered into the radio repair shop one day for some parts and Tektronix came up. Gerry discovered that Tek made something more than just an ordinary scope (you, bet) and came to Tek as an employee soon after. He served his apprenticeship in assembly and has been in test for the last 3 and a half years. Ginny has also worked for Tek for several years.

Gerry's hobbie is electronics—during his first year he built a 511 scope for his use at home. All of the physical sciences—astronomy, phlsics, chemistry—anything that has to do with making measurements is his forte. In addition he has been a ham operator since 1945 and has his own station. Gerry is an avid skater and is seeking to revive Tek's skating club of last year for monthly parties.

Ginny in addition to her job manages their home which is a small acreage on Walker Road inhabited

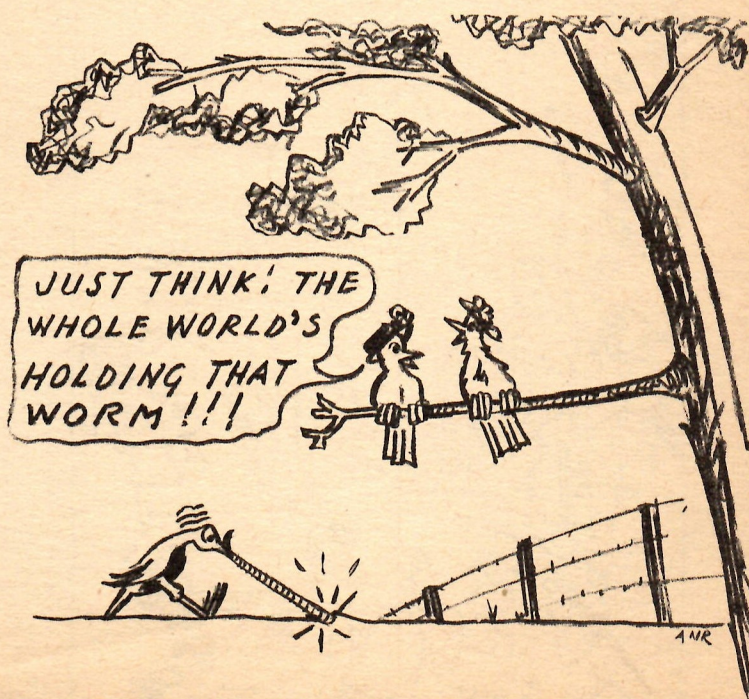
by two Manx cats, Cubby and Sandy and one small fox terrier, Dena, who does a variety of tricks and is the boss for the menage—needless to say the cats are tolerated but protected from stray dogs. The Kraxbergers near neighbors are Dale Holliday and Al Spiegel.

Sewing is Ginny's main hobby and she makes most of her clothes, dabbles in figure painting and is an enthusiastic member of Tek's flying club along with Gerry. March 19 found them logging a trip to Seattle and back in the club's plane.

Spring also finds the Kraxberger's examining the camping equipment as they are both avid lake fishermen—their favorite spot is Crane Prairie near Bend.

Home was never like the Kraxbergers....focal point is the hobby workshop which contains the original crystal set, an amateur station, (transmitter and receiver), the 511 scope, antennas all over the house, audio cables strung from here to there so that you can have music wherever and when, meters, TV downstairs to the upstairs over the monitor system and then a pile of "junk" to play with. And now, Gerry has decided to become a skin-diver but is investigating the possibilities of constructing his own aqua lung apparatus—Ginny states that she has a firm promise that if this comes about, he'll try it out in a swimming pool first!

Other than that, we have discovered that new developments in plastics are important and that in the field of music, a catholic taste is apparent—here it's up with everything that's down and down with everything that's up. They are great people the Kraxbergers, which all of you have undoubtedly discovered.



Basic Electronics III: Sweep Shenanigans

Having acquainted ourselves with the quirks of character of Spinning Eddie Electron, and following him through one section of the oscilloscope power supply, let's watch his shenanigans in the sweep generator, and see what we can learn. We find him leaving —150 volt supply line to enter a resistor which is shaped like a tire with a section cut out, because the other end is connected to "ground", i.e., the chassis, and that's "high" potential to Eddie. But part way through his journey, he overtakes a metal tongue which, projecting radially from the center of the "tire", is rubbing along the resistor. (This tire-shaped resistor with the moving contact is a "potentiometer", called a "pot" for short. In this case, it is the "stability" pot of the multivibrator. Patience, patience; we'll straighten this mess out in a moment!)

Lady Positrons

Eddie hops onto this moving contact (you see, the test man is adjusting the sweep circuit to a condition just short of "free-running", wherein the sweep lies quiescent, like a rifle cartridge, waiting for a trigger pulse to come along and "fire" it.), passes through another resistor, past a side-connection from which other electrons are emerging, and onto one plate of a "coupling" capacitor. Here he finds himself thoroughly frustrated, for just a few ten-thousandths of an inch away are swarms of lady positrons just waiting with open arms. But can Eddie reach them? Ha! Some dirty skunk has slipped a thin sheet of insulator in his path, and while the positrons can feel Eddie's electric field right through this insulator, he cannot pass himself. He must sit there and grind his teeth while the pulse he started on the other side of the capacitor, runs down a wire from the capacitor to a "grid". That's a capacitor for you: it will stop direct current cold, but allow changes of current to pass.

Super-Sweep

Eddie's recent action has initiated a "flip" in a circuit which serves to trigger and limit the sweep-generator by an "ON-OFF" valve-like action. This is called a "multivibrator", or "flip-flop" circuit. Let's kill two circuits with one explanation. In an amplifier, the first tube takes a very small signal and makes a big one out of it, then passes it on to the second tube where it is made still bigger. We could say that the first tube "drives" the second one. Now, in a multivibrator, the two tubes drive each other! This situa-

tion in human relations leads to mayhem, the booby-hatch, and the divorce courts; but at Tektronix, it leads to square-wave generators, time-markers, calibrator-circuits, and sweeps. And what sweeps! What happens next to Eddie may take place in split-millionths of a second, and is the spark-plug for the super-sweep performance for which Tektronix scopes are famous.

The Flip-Flop Circuit

When two tubes drive each other, first one has the upper hand, and then the other. Like a teeter-totter, there are no stable in-between points. Either the first tube is cut off and the other fully conducting, or vice versa. How come? Well, these tubes are a little more complicated than the rectifier tube which Eddie first passed through. These tubes have "grids" in them, which, in effect, convert them from "flap-valves" to current-metering devices subject to very delicate control. The grid, inserted between cathode and plate, can control the plate current with very small changes in charge. (I might mention before going on, that some tubes have five of these grids between plate and cathode. These are for special applications, of course, and while these additional grids contribute to improved performance, a discussion of them here would just clutter the scenery.) In our flip-flop circuit, the plate of each tube is coupled to the grid of the other, and by a proper juggling of voltage, resistor and capacitor values, we can make the circuit flip-flop continuously (i. e., free-run) at any reasonable frequency, flip when triggered and flop later on its own, or flip and stay flipped until triggered again. Let's follow Eddie through this flipping action.

Pulse Reading

A triggering pulse of electrons is appearing on the other plate of Eddie's capacitor, taking over all the spare lady positrons and then some. Eddie, impelled by the strong electric field thus formed, departs in a hurry to the side-wire we mentioned, and up this wire onto the grid of one of the multivibrator tubes. His arrival causes a sharp decrease in plate current in the tube, allowing the plate to swing more positive, driving the other tube toward saturation (i. e., lowest possible plate voltage) and thus accelerating the rate of cut-off in Eddie's tube. The result is a very sharp-edged (rise-time—0.000,000,02 second!) voltage pulse, which is delivered to the grid of the sweep run-up tube. Here we go

again.

Saw Circuit

If the pictures our oscilloscope draws are to be true ones, we need some way of moving the bright spot uniformly across the screen from left to right. We then want it to snap back and start again at just the right time. For this we need a voltage wave shaped like a saw-tooth—a rip-saw tooth. The circuit which does this is like a small air-tank connected to a suction line through a long, thin pipe (remember the long, thin straw?), and having a large valve leading to the open air. As long as the valve is open, the pressure in the tank is the same as outside.

Incapacitated

Now, if we close the valve sharply, the pressure in the tank will decrease slowly and uniformly, for a while at least. If we leave the valve closed too long, the change soon becomes non-uniform. In our sweep run-up circuit, the tank is a capacitor, the suction line is the +225 volt supply, the long, thin pipe is a resistor, and the large valve is the run-up tube in a 'saturated' state, i. e., carrying all the current it can. Now along comes the sharp pulse from our flip-flop circuit and drives the run-up grid way negative, cutting the tube off. This has the same effect as closing the valve on the tank: The +225 draws electrons off the capacitor, and the voltage at the plate of the run-up tube increases uniformly for a short time. Then the flip-flop flops by itself, and the run-up tube is suddenly fully-conducting. This resets the plate voltage to its starting value in gig time, by restoring electrons to the capacitor.

Back to Voltage

This "flopping" stage drives Eddie off the grid of his tube, and he makes his way through a resistor to the +225 volt supply. The time between flip and flop is determined simply by allowing a charge to leak off of a coupling capacitor through a resistor. Now, I don't want you to get the impression that a sweep circuit is simple. We use other ways of generating saw-teeth besides the one just outlined, and some of them require as many tubes as a TV set. **Editor's Note:** In the next and concluding chapter of Eddie's adventures, we'll have something to say about the vertical amplifier, and watch Eddie get shot out of a cannon.

League Gives Tek Second Place In Tourney Play-Off

Tektronix finished their initial year in the Industrial basketball league in second place to Alcoa in the finals on March 3. Closely fought from the beginning, Tek won the first half of the series and Alcoa the second. The championship depended on a three game series. Scores were as follows: first, Alcoa, 50 to Tek's 48; second, a 57-57 tie; and third, Alcoa, 55 to Tek's 46. For a job well done, bouquets go to the following players who finished the season for Tektronix: Milo Elkins, Bill McCord Jr., Clint Parmley, Harry Reischel, Ole Adamson, Burt Avery, Dick Place, Jim Peabody, Al Foleen and Corkey Hymes. Coaching came from Bill McCord whose only comment was that everyone interested in basketball is to come out at the beginning of the season next year. (This man is after a cup!)

Credit Union: Questions & Answers

- 1. Must I own shares before I can borrow?**
Members must own at least one share before a loan application can be considered. It is desirable for a member to make small regular savings while repaying a loan. One fully paid share of \$5.00 in addition to the entrance fee of \$ 0.25 is all that may be required of any person. Members of family of employees who are members may borrow any amount of money up to the amount of shares deposited.
- 2. How is a loan made and how long does it take?**
Loan applications are secured from the credit union office. Application forms must be filled out in full in order to be considered for a loan. Purpose of the loan must be stated if the

- amount is over \$400. Funds requested are made immediately available upon approval of the written application. Meeting for approving loans are held once a week and on special occasions they will hold a special meeting for quick loans.
- 3. Upon what terms are loans made and what are the interest rates?**
A borrower is expected to make repayment each pay day. Terms may be arranged to meet the borrower's ability to repay. Interest of 1 per cent per month on the unpaid balance is collected with the regular principal repayment and no fees may be charged incident to making the loan. The board of directors set the rate of interest to be charged.



Barbara Lee at the Ken Wallings', who arrived on January 26th, and got her name in print first thing. Margaret Jean who moved in with the Gene Singles, engineering, on February fifth, and is 'engineering' things around the house already.

Fay Riaz' gal Holiday, who started planning her first Easter outfit on January 26th. Michael Vaughn Weidel has dad working all shifts.

If you see Tress Van Diest and Vivian Brown in deep consultation, you can bet it's about newly arrived Michael, born to Fay and Rennie Brown on February 16th. After all, the psychologists say it's alright if Grandmothers 'spoil' their grandchildren. Well, anyway,—some.

Passing out cigars is Joe Ferris (transformers) with the arrival of daughter, Julie Ann on March 16.

Congratulations to the Lou Bride (crt) family on the arrival of their first-born—a daughter, Cecilia on March 9.

Chalking up the scales at 8 lbs., was Jay Robert Jackson born on March 2 to the Bob Jackson (finals) family.

Welcome to Nancy Jean Froeschle on March 7 to the Ed Froeschle's.

It's a boy to the Ken Keyser's (test) on March 2 as Clifford Paul checked in at 8 lbs. 4½ oz.

Editor's Note: Tek Talk regrets that because of the lack of adequate space and time, the Tiny Tek column was omitted in the March issue. So we are sorry that some of the entries in this issue, date back more than a month.

Bachelor Bedlam Surprises Groom

Announcing to all who would listen (and who didn't) at Mrs. Brown's coffee stand, bachelor Hawkin Au proudly announced that as of February 30 he was taking the fatal step.

All those who did not check a calender promptly got even with Hawk and on February 25 reversed the procedure by giving him a shower. A cardboard cake with the appropriate bride and groom served for the centerpiece; Mrs. Brown in lieu of china and silver made a fantastic display of paper plates and plastic ware; Em Langdon came through with a baby book; Alvina Fry and Delores Smalley in Hawk's department presented him with a scrapbook and clippings; and the rolling pin, aprons, glasses and a vase were not identified but Marybelle Rash, Jane Fitzgerald, Barbara Lawson, Blanche Cook and Irene Garvey were among those present.

U.S. Citizens Take First Step

Congratulations were in order on March 17 as Mart Kubarsepp, stock, and his wife, Aino, assembly, received their first citizenship papers. The event was officially witnessed by Kenny Jacobsen and Bill Lee. Mart and Aino have now been in the United States for 5 years from their native Estonia and have only one step more to become full-fledged American citizens.

It Could Happen In Ceramics



Non Stop: Hillsboro To Hailey Sun Valley Ski Slopes Surveyed

One way to get flying experience is to go along with Jack Murdock, Don Ellis and Hawkin Au. On March 6, along with Swede Ralston the quartet took off for a long-awaited trip to Sun Valley, Idaho. Non-stop from Hillsboro to Hailey (Sun Valley's airport) took three hours and 15 minutes flying time. Terrain and landmarks with a blanket of snow presented little difficulty. Arriving at this famed ski resort, they stayed in a chalet the first night—a comfortable dormitory, Sun Valley style. Next experience was food for famished flyers at the Challenger Inn's Continental Cafe which is a cafeteria. Accommodations were available at the Sun Valley Lodge the next day and this they liked the best. Don and Swede explored the

countryside but Hawk and Jack tried out their skis on Dollar Mountain. The skiers were most impressed by the outdoor pool which was heated to a 98 degree temperature and was guaranteed to erase any stiffness. The pool was possible for sunbathing by day in spite of an 18 degree temperature—all you need is a corner out of the wind. Sun Valley has been short of snow this season so it was not quite as picturesque as expected although many people were there for the winter sports. Greatest story was making of a movie and the importation of 6 tons of artificial snow (this had been bogged down in a snow-storm somewhere else and had to be extricated). Perhaps this is the reason for the song "It Happened at Sun Valley". * * *