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Vol. XVI  
1972

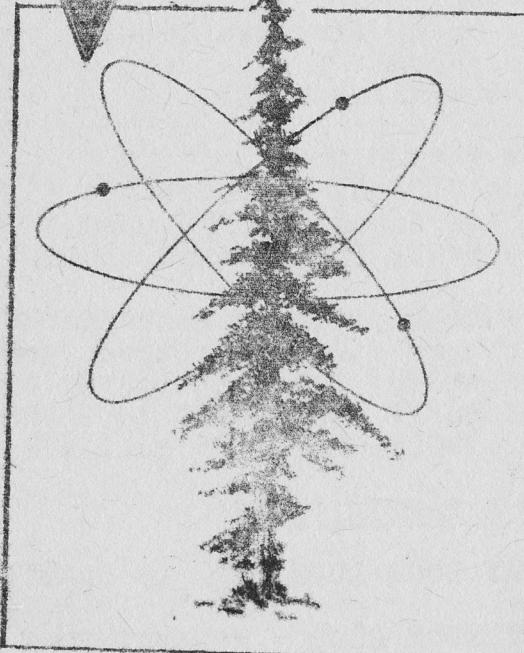
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## PALO ALTO AMATEUR RADIO ASSOCIATION, INC.

P. O. BOX 911  
MENLO PARK, CALIF. 94025  
A.R.S. W60TX U.S.A.

STATION W6GTX



AFFILIATED CLUB  
**MENLO PARK  
CIVIL DEFENSE  
RADIO CLUB**



Oct. 72

**ADMINISTRATIVE**

**2  
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President: Fred Canham, W6QWF  
Vice Pres: Andy Korsak, VE3FZK  
Treasurer: Vance Wardlow, W6FLE  
Secretary: Les Vickery, W6AKR

**APPOINTMENTS**

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Eqpt Cust'dn : Ed Fairbanks  
CCRC Represent: Fred Canham  
Refreshment & Raffle Comm  
Ed Fairbanks W6AIN  
Lee Zalaznik WB6BJB

Chairman: Fred Canham W6QWF  
Sect'y : Les Vickery W6AKR  
Member : Hal Moore W6DEF  
Member : Ed Fairbanks W6AIN  
Member : Gerry Laxson W6OPA  
Member : Bob Allen W6WQD  
Member : Andy Korsak VE3FZK  
Member : V. Wardlow W6FLE  
Telephone Comm  
Larry Rice W6IQT  
Andy Korsak VE3FZK  
Les Vickery W6AKR

**MENLO PARK C-D RADIO CLUB**

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Secty/Treas: Vance Wardlow W6FLE  
Property Custodian: Bob Allen W6WQD (Trustee K6YQT)  
Asst " " : Glen Baker W6UOK

RACES RADIO OFFICER: Bob Allen W6WQD

Managing Editor: Lee Zalaznik WB6BJB

Assistant Editors: Andy Korsak VE3FZK; Ed Fairbanks  
W6AIN; Les Vickery W6AKR; Gene Sussli WA6NVU (San  
Carlos Bugle); Eric Reese WB6KQX; Tom Ohlsson WB6KQZ.

**POLICY:** Membership includes subscription to PAARAGRAPHS.  
Annual dues \$4.00. Non-Subscribers will be dropped from  
mailing list as new names are added. Subscription \$1.00.  
For your APPLICATION FOR MEMBERSHIP send \$4.00 to PAARA,  
P.O. Box 911, Menlo Park, Ca. 94025. For info call 854 0803

**BECOME A PARTICIPATOR**

**GET INVOLVED**

**PAY YOUR DUES**

**DO SOMETHING**

support your club

SUPPORT YOUR CLUB

support your club

(See page 3 for future programs)

COMING EVENTS

-----October 6 Firday meeting to be held in the Menlo Park Recration Center in Menlo Park, Ca. The meeting will start at 7:30pm. The program is a lecture on integrated circuits.

-----October 11 Wednesday Board of Directors meeting of PAARA. To be held in the PAARA trailar at SRI in Menlo Park, Ca. All members are invited to attend.

-----October 13 Firday at the Ampex Cafeteria the Annual PAARA auction is to be hold. Everyone is well come to buy and sell there amateur radio gear. Each will have a choice of auctioning his material or he may set up his own table for selling his gear. Tables will be rented at a flat rate while auctioned material will be limited to a given number of lots. More information in this paper.

-----October 14 and 15 Saturday and Sunday. The ARRL Pacific Division Convention and Greater Bay Area Hamfest is to take place at the Royal Coach Motel 1770 South Bayshore Blvd. San Mateo, Ca. Big names will be here like A. Prose Walker W4BW Chief of the Amateur Division, FCC; Harry Dannals W2TUK President of ARRL. Big prize a SB-36 for a starter and many more. Big events a top list caliber of seminars. So Plan to be there. Pregistration closes October 7th is \$ 10 and after October 7th is \$12.00. Mail your registration to ARRL Pacific Division Covention and Greater Bay Area Hamfest, Box 751 San Mateo, Ca. 94401.

-----Novermber meeting, Bob Allen is to speak on Amateur Laser Communation. Andy Korsak is to give a demonstration of Amateur Television.

Lee Malaznik WB6BJB has a new QTH. The new assress is 2503 Santa Rita Rd. #39, Pleasanton, Ca. 94566. Phone 415-846-5401

SUPPORT YOUR CLUB

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SEPTEMBER MEETING

October 1972

A field trip by the San Carlos Amateur Radio Club to Stanford Linear Accelerator Center (SLAC). The group gathered in the auditorium of SLAC and saw a movie on the theory and operation of the machine. Then we took a bus to End Station "A" where the beam hits the target. The next stop was to one of the sections and saw the Klystron Gallery. The last stop on the trip was to the Master Control Room to see where the machine is operated. The trip was very interesting.

Board Meeting September 13, 1972

The meeting was called to order at 7:40 pm. by President Fred Canham W6QWF. Minutes of the previous board meeting were reviewed, and the Treasurer's report was given.

Three new applications for membership had been received.

Plans were made for the San Mateo Hamfest on October 14 & 15. High school students will be encouraged to attend, free registration or admission fees. PAARA will have a swap table.

Vance Wardlow suggested that PAARA be publicized to high school student groups interested in radio. Andy Korsak agreed to contact such groups when possible; Publicity flyers will be made up to hand out.

Preliminary plans were made for the PAARA Auction to be held on October 13th, expected to be at the Ampex Cafeteria. Fred Canham will contact Ampex. However, Fred will delegate more tasks to club members this year, due to his very limited available time. Various distributors will be contacted for door prizes donations, members may donate items to the club auction. The rules and procedures will be essentially the same as for the auction last year.

Andy Korsak reported on the TV color camera project, progress is being made. The next meeting will be a lecture on integrated circuits. not a movie as previously announced. There will be a meeting on December 1st, and the Christmas party later.

RUMMAGE SALE

FLEAMARKET

AUCTION

EVERYONE WELCOME

FIRDAY 13 October: Fleamarket, rummage sale, auction !!!  
Bring your unused gear-everyone welcome- buy what you need. Come to  
the Ampex Cafeteria on Bay Road in Redwood City between Woodside Road  
and Marsh Road. Raffle prizes every hour. Doughnuts and coffee  
served the whole time- 8pm. to Midnight.

Bring your gear to the parking lot (Do NOT bring it in), get your  
LOT NUMBERS from the Registration Desk. THEN bring your gear in.  
Open at 7 PM. to start setting up the tables.

HERE ARE THE RULES

1. Registration for Auction starts at 7pm. Tables for your own sales available at same time.
2. CHARGES: 10% of sale price of AUCTIONED items; (if you buy back your own item maximum fee is \$3.50), tables for personal \$3.50 each.
3. AUCTION material limited to 5 items (or Lots) each person.
4. Item (LOTS) numbers will be issued in sequence of registration.  
They will be auctioned in the same sequence.
5. OWNER must attach following information to each ITEM:
  - a. His name and call sign (if any);
  - b. Description of item; frequency; power required; ect.
  - c. Condition i.e. operating; needs work; incomplete;etc.
6. Donations accepted by PAARA. These will be auctioned to help defray expenses. ALL SUCH GREATLY APPRECIATED.
7. Auction and all sales STOP AT 12 MIDNIGHT. Owner must pick up any gear not sold. BUYERS must remove all gear. All unsold material must be removed promptly.

By Dennis WA6JVZ  
From THE CHEWED RAG

A few short months ago I was introduced to Radioteletype. My father, (Hal WA6CCM), had teletype equipment sitting in his shack for two or three years prior to my introduction to this mode of operation. They never seemed to draw my attention for more than five minutes at a time. Maybe this was due to the fact that I had just passed my General Class license, and was interested in getting on voice.

One afternoon dad asked if I would like to tag along with him on a mercy-mission to Lowells QTH (WA6CHF). Seems that Lowell had some problems with his RTTY gear and needed my father truck to haul something called a model 15 to the dumps. Well, I didn't have any big California DX on the 14avq at the time, so I figured that I might be of some help in solving Lowells problems. Dad and I arrived none too soon, as we found Lowell rummaging through his garage looking for a 20 pound sledge hammer. He said something about doing some hammer maintenance on his model 15. He finally sat down on his famous "metal chair" and began to pour out all his troubles.

Lowell and dad started talking about things such; as loop current, selector mags, mark, space, and shift. WOW!! I sure was lost, way out there in left field. I didn't know whether they were going to pump current through a Hula-Hoop or send a selection of magazines into space. Thought that they both had flipped. Needless to say, at this point I was very confused but it all sounded interesting and challenging. Well, I managed to struggle and bluff my way through the rest of the afternoon. My head was filled with questions about the mysterys of RTTY.

A few weeks later I acquired a model 15 teleprinter of my own. All those gears, cams, levers, springs, and do-dads sure looked impressive. At this point my XYL, Pam, her hands in antisipation of another week of visiting with the cat, dog, and the tv, while I made odd noise behind the shack door. I must say that she has been a very good sport about the whole thing. (a special thanks to you Pam). There that should get me another two weeks clemency so's I can build that ST-5.

( cont to Page 7)

(cont from Page 6)

Well, I went down to the local ham store and purchased two RTTY books with which to get started. These were: The New RTTY Handbook by Byron H. Kretzman W2JTP and RTTY from A to Z by Durward J. Tucker W5VU, both which are good sources of information for both beginner and advanced rittier. Finally the day arrived when I finished my converter, which was built from the 1969 Handbook. Well I put the juice to the thing and gave it the smoke test----no smoke---- so i was in business. After many hours of trying to get things hooked up and adjusted properly I was ready to unlease this terrible thing on the world of unsuspecting hams.

I jumped into the two meter teletype group and had loads of fun the first nite. Ever since then I've been regular on 145.26 MHz. Ther have been many hours of grand enjoyment sitting at the good old model 15 pounding the keys. There is a great bunch of guys in there on the two meter teletype, and if you have teletype gear break-in on us and say a few thousnd words !!!!!???

#### Elections For PAARA

The Novermber meeting will be for the election of officers for the Palo Alto Radio Association, Inc. A nominating committee will be appointed and will be asking people to become officers. If you would like to help with the administrative or Board of Directors workings of PAARA step forward and become a officer

#### A Filler

There are pitfalls beening a editor. So long as the editing consists of what to print, or not to print, there is no big problem. When the editor goes into an article and makes changes problems can arise. The article is published over the signature of the author who may fell that the changes that were made do not reflect his thinking. In some publications no editing is permitted without the author's approving the changes prior to the publication. (from The Chewed Rag)

CQ CQ CQ

I mean you, Whoever, whatever, wherever Be you president or sinner or saint From my mike in the kitchen I plead answer back Someone, somewhere, sometime.

# RED JOHNSON

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### PRECISION RESISTORS

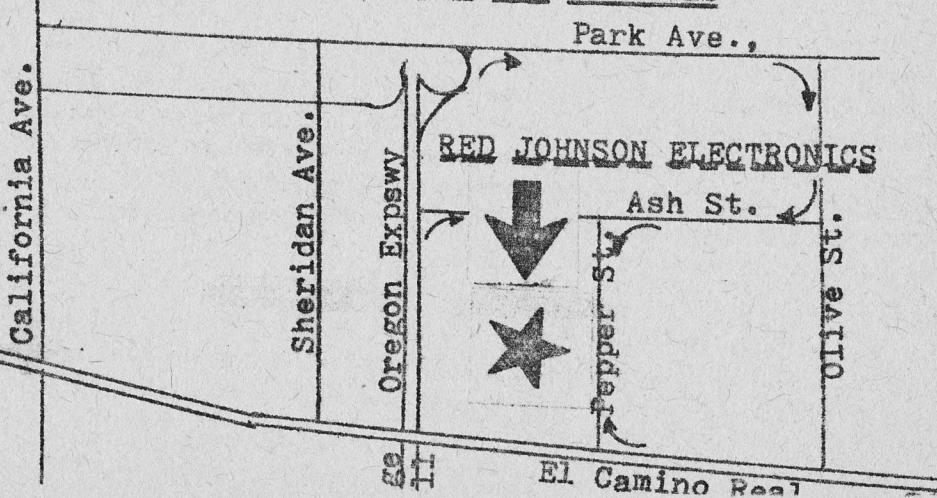
We have an extensive stock of very high precision resistors of various wattage and size. To meet your various requirements.

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For Sale Kenwood Twins, R-599, T-599, with macting speaker, Turner mic, manuals, all boxes. Innaculate, \$ 550 call Graig WB6DAI at 593-4444

Wanted Swan 270 good condition call Fred Canham 948-9238 (for a friend).

FREE ADS for members. Give me your SELL or WANTED ads for insertion in this paper. Call or write Lee Alaznik 2503 Santa Rita Rd. #39 Pleasanton, Ca. 94566 or call 415-846-5401

Clubs dues stay reasonable It's \$ 4.00 per year, and can be paid \$1.00 quarterly if you so desire. Mail your dues to PAARA Box 911, Menlo Park, Ca. 94025 or see Vance Wardlow at the meeting.

Non-members subsciptor to PAARAGraphs is only \$1.00 a year, and can start at any time. Mail your subscipton to PAARAGraphs write PAARA Box 911, Menlo Park, Ca. 94025.

The club has many activities beside meeting, and you are invited, may, unged, to join in. This paper reports on SET, Field Day, etc. In addition there are smaller activities you can enjoy. How about heading up a team (one or more) to patch the trailer. Then we can paint it.

Are you interested in overhauling the club small emergency power units, sorting out and marking the collection of antennas,etc.? These are one (or more) jobs. See Andy Korsak VE3FK call him at 854-2759

A Tube, a tube A little glass tube What makes innards pop?  
Is it magic or logic (whichever it is) Makes me look like a bood  
Compard to a tube.

RADIO THEORY FORMULAS

Paralell resistance

By Les Vickery

Nearly everyone is familiar with the formula for calculating the total of two paralell resistance:

$$R_t = \frac{R_1 \times R_2}{R_1 + R_2}$$

When  $R_1$  and  $R_2$  are known the solution is simple. Quite often a resistance is needed that is somewhere between the available resistors on hand, or a resistor has to be padded down to meet an exacting requirement.

A specified resistance  $R_t$  is needed. The nearest available resistor is considerably higher, it will be called  $R_1$ . All that is needed now is  $R_2$ . If you do not have a wide range decade resistance box, it could take a long time to find  $R_2$  by trials with an ohmmeter or a Wheatstone bridge.

So the above formula is solved for  $R_2$ . After a bit of algebraic juggling you come up with:

$$R_2 = \frac{R_t \times R_1}{R_1 - R_t} \quad \text{or} \quad R_2 = \frac{R_1 \times R_t}{R_1 - R_t}$$

For example: A resistance of 8K is needed, and the nearest higher available is 10K. What is  $R_2$ , the paralell padding resistance?

$$R_2 = \frac{8 \times 10}{10 - 8} = \frac{80}{2} = 40K$$

Proof:

$$R_t = \frac{10 \times 40}{10 + 40} = \frac{400}{50} = 8K$$

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OFFICIAL ARRL BULLETINS

#384 August 10

Attention of all amateurs is called to an FCC public notice dated August 4, 1972, warning amateurs against using their stations for improper handling of commercial traffic. This practice is increasing on vhf, especially via repeaters using quote auto patch unquote and is also present to some extent in hf phone patching practices. Any commerical use of an amateur station or repeater invololg pecuniary interst fo the user is potentially in violation of sections 97.3b, 97.f or 97.111 of the FCC regulations. Use of phone patches or other means of thrid party communications involing parties international is prohibited by international law expecept for waiver countries listed on page 87 of August 1972 CST. ARRL requestes all amateurs to avoid practices that could result in further restrictions in our regulations.

#386 August 17

The ARRL QSL Bureau aids delivery of QSL cards from other parts of the world to amateurs on Canada, the United States, its possessions, and Puerto Rico. Amateurs expecting QSL cards from DX stations should be sure to have stamped, self addressed envelopes, approximately four and quarter by nine and a half inches, on file with the appropriate call area QSL bureau. See page 85 of August CST for bureau addresses and further information.

LIQUID CRYSTALS

There's a "liquid Crystal" in your future. Also in the future of your chilidern. These crystals were aboard Apolla 14 and are now advertised at \$20 for a six digit display. Recent writeups about these "new" items have appeared in several publications and the reason it is interesting to amateurs is that these crystals have the ability to change color, can turn from a clear to frosty at a change in temeperature or by an electric current or even from a pollutant. There arr two main types of these crystals, cholesteric and nematic. The first changes colosr and the second kind will switchback and forth betteen opaque and transparent. As mentioned above, one will find liquid crystals in read outs and digital displays. They use virtually no power and are readable very easily. Uses also include auto dashboards, clocks and even meters that would have a liquid crystals line instead of a moving vane. Other uses almost surpass the imagination. (From CCRC Circle.

PACIFIC DIVISION BULLETIN AND CODE PRACTICE

The following are stations sending bulletins and code practice on a regular basis in the Pacific Division:

WA7BEU, Las Vegas, Nevada;

Wednesday evenings at 7:30 PM PST/PDST 3615 KHz RTTY 850 shift 60 speed.

W6ZF, Napa, California

First and Third Mondays each month at 9:00 PST/PDST CW 18 WPH 3540 KHz

W6ZRJ, Cupertino, California

Thursday evenings on times and frequencies as follows:

7:30 PM PST/PDST 3590 KHz and 7129 KHz CW 15 and 20 WPM

8:30 PM PST/PDST 3815 KHz SSB phone

9:00 PM PST/PDST 3615 KHz RTTY 850 shift 60 speed

W6QIE, South San Francisco, California

Tuesday through Sunday at 8:30 PM PST/PDST 3590 KHz 5-30 WPM  
Code Practice.

PACIFIC DIVISION DIRECTOR'S MEETING

The 1972 Pacific Division Director's Meeting will be held in San Jose during the first weekend in December. Details will be sent to all clubs in the Division. Affiliated clubs take part and have a vote in all matters discussed. Other clubs are invited to take part as participating observers. If your club does not receive notice of the Director's Meeting, please contact me and I will send your club secretary information on time and place for the meeting.

OSCAR, AMSAT AND THE ARRL

The ARRL Board established a new SPACE Communications Committee in January which includes representation from both OSCAR and AMSAT. We expect that in the next few months, the OSCAR Association will be active in a number of projects. If you are interested in Space and Satellite Communication, write to OSCAR, Foothill College, Los Altos, ca.

J & H  
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INTEGRATED CIRCUITS

TRANSISTORS - DIODES - TUBES - METERS - RESISTORS  
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AN UNUSUAL DISPLAY OF NEW  
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STORE HOURS

MONDAY THROUGH SATURDAY 10 AM to 6 PM

J&H OUTLET

SAN CARLOS, CA

PHONE: 591 7113

RACES

By Vance Wardlow W6FLE

Bob Allen, W6WQD, our RACES Radio Officer has submitted 5 names to the C-D Officer of Menlo Park for certifies passes to the City of Menlo Park Civil Defense Emergency Operating Center. That Center has recently been completely revised and brought up to Federal standards. All Police, Fire and Public Works communications systems now terminate there, thus providing assured emergency operation of those systems in case of disaster. A test of these facilities was held on Friday 22 September. All top officials were there and several simulated situations were set up and resolved. PAARA was represented by Bob Allen, W6WQD, RACES Radio Officer and Vance Wardlow, W6FLE, Asst. Radio Officer.

A space has been set aside and plans are progressing to provide for two emergency communications facilities to be manned by PAARA member in the event of an emergency. Bob Allen is working closely with Don Allen, the San Mateo County Communicatin Coordinator, to provide the most effective installation to assure optimum public service lay the local amateurs. As plans and installation progress regular test will be inaugurated and member provided training in effective public service communications.

MEMBER ACTIVIES

Tom Ohlsson, WB6KQJ, is very much involved in the overhaul and conversion of a Motorola wakie-talkie. Getting the power supply, crystals and various other requirements resolved is a real challenge. Tome is tackling it with a lot of enthusiasm and most certainly will resolve all problems.

Paul Mezzapelle, WA6NLJ, shone you have all talked with on the Moday Night Net, from Santa Rosa, is planning an around the world trip. First stop Christchurder, N.Z. From there in any way he can continue westward ! ! Good luck Paul, and tell all our foregin freinds "HELLO"

Dr. T.N. Tripp, K6EJL, has moved to San Diego. We do hope you find the warm weather enjoyable down that way, Doc. And we will look forward to a visit up this way once in a while. When you get on the air be sure to schedule us in. Lots of luck and Happy Fishing.

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TECHNICAL TOPICS de Andy VE3FZK/W6

2M METER PROJECT

This by now famous (or infamous) project is making great progress (as it has been for 2.5 years!) Before I go on with latest developments, allow me to review the basic purposes of this project, as originally set out. The idea was to come up with an easy to reproduce 2 meter AM/FM transceiver (we started before Commcraft came out with theirs) so that we could get all club members building one and on the air on 2 for the following purposes (i) regular net activity (ii) SET and other CD drills (iii) transmitter hunts and other "fun" events (iv) meeting change notification and other club information. The above means were thought to achieve the following ends: (a) foster club "rapport" and friendship among members beyond eyeball QSOs at meetings (b) prepare members for aid in case of a real emergency (c) help members develop experience in solid state circuit building.

In the event that I couldn't come up with a good design for a good AM/FM transceiver in a short time, I had a secondary ulterior motive for the project! As long as I keep yakking about it in this article, people are going to subscribe to PARAGRAPHS and/or join the club just to see if I ever make it, for various reasons:- Those who think I will succeed eventually want to keep up with the latest developments so they can build the transceiver. Those who think I will eventually give up want to be at the "boo session". One ham in the club just admitted over a beer that's why he joined the club.

1. Receiver Progress

John Ellison W6AOI reports great success with his 2M receiver design I wrote about last month. This is built around a CA3089 chip, as is the July QST FM receiver. He will possibly have it ready for demonstration at the Oct. meeting. It actually receives AM as well, with a certain modification, and has a tunable 1-st IF with Xtal controlled front end.

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Jack Priedigkeit **W6ZGN** of SRI got info from Spectrum Research Laboratory, Inc., P. O. Box 5824, Tucson, Arizona, 85703 on p.c. boards available for various QST projects. For example, the Sept. 72 FM transmitter board costs \$4.70 and the Aug. 72 receiver board costs \$5.45, and I have other prices if anyone is interested. Prices are lower for quantity orders.

## 2. Transmitter progress

I have been too busy with ATV to play too much with the W6HDO transmitter board I got working as an AM/FM tx. Bob Baum W6BFH is building a second prototype and he plans to come over to my garage to collect parts for loading it out of the club parts kitty. We have plenty of components including VHF transistors, up to 200 mw. out at 144, so if you are interested in our project we may have enough to fill up quite a few boards for free (except for Xtals and certain trimmers).

Vance Wardlow W6FLE ordered some of the 2M FM tx completed boards with 100 mw. output, Xtal, and xtal mike included, described in Sept. CQ p. 37. We will see how they work out. Vance may sell some to club members as he ordered a few to cut cost down.

## DX ANTENNAS

Milt Adams WB6KOR tells us he's is building the multi-radial super-Dx antenna by W2FMI in QST (June ? 72 and also in 71). Apparently, 120 radials are needed to make a vertical really work at low angles, but these can be of very fine wire since they split up the energy. Milt has only a few radials installed so far but already he noticed vast improvement over just 1 or 2.

Another good DX or local antenna is described in July CQ, switchable from 10 to 90 degree angles.

## DX TV ANTENNA

Steve Montoya WN6DQT is making progress with building the UHF "backfire" antenna I described last year's Nov.

issue of PAARAGRAPHS. By the way, I made a boo-boo in the drawing there, so here are the correct dimensions: the diameter of the large reflector disc is  $4\lambda$  wavelengths L, not  $2\lambda$ , and there are 9 directors spaced  $0.4\lambda$  apart except that the driven elt. is  $0.2\lambda$  from the first director and the reflector disc. This antenna has 23.5 db gain over isotropic and will pull in blacked out 49'er games from Fresno.

#### AMATEUR TV PROJECT

W6OTX/TV is still waiting for watchers. I have now discarded UHF converters for anyone interested in padding them down for watching W6OTX bulletins (and other interesting pictures, if you know what I mean). Bill Richerson W6VGR has a solid state camera he wants to trade for a vidicon for his camera of which I now have a good supply so the club will have a second camera for use by members. All interested persons contact me at SRI ext. 312853 or 854-2759. We now have one W6OTX watcher, Elmer Shapiro WA6MPC, who was having sync trouble last time but we will iron that out.

#### CLUB PARTS KITTY

The parts kitty just got appended by a vast amount of good parts from Dusty Doster K6MPN. Dusty also gave us an Eico scope and many other goodies for the coming auction. Any other donations will be appreciated. Also, anybody needing parts contact me.

#### PROJECT CONSTRUCTION TEAM

Eric Reese WB6KQX wants to set up a production line for building the clubs 2 meter transceiver, once a good prototype has been perfected. Presumably, he and a couple of other hams he has lined up will build (at a price, I guess) for anyone not wanting to build his own. Sounds like a great idea, Eric! All interested parties contact Eric at 366-9994 or myself.

#### AMATEUR SATELLITE GOING UP OCT. 16

Being secretary/treasurer of PROJECT OSCAR, Inc., I

Just got word that the delayed AMSAT OSCAR A\_O\_C Package will be launched on Oct. 16 from Vandenberg AFB, barring any last minute disasters. So get your 2 meter and ten meter gear ready ! Input is around 146 MHz on any mode but CW is recommended. About 85 W effective radiated power will be needed. This is the package that we helped test last September when it was flown to Palo Alto airport from Pasadena. That was the time Gene Sussli WA6NVU lost his car over a cliff on our expedition to the top of Mt. Hamilton so we could see how far out we could work the package as it flew here and back.

#### HAMFEST AND ARRL CONVENTION

Don't miss this great event at the Royal Coach Motel in San Mateo Oct. 14 and 15 PAARA'S TV station will participate in ATV demonstrations. I need operators to help me keep the TV station on the air. We'll need cameramen, set men and voice lick op's. The set men will have the privilege of interviewing pretty chicks for the audience at the watching end. Our W6OTX/6 tv "stuido" may be set up at the parking lot, or back at the SRI H, depending on how many hands we can get to move the equipment.

#### FOR SALE

Walnut veneer desk with shelf top wired for A.C. Desk 60" x 35", 6 drawers. Shelf 60" x 22" x 22" high. Excellent operating postion. \$ 20.00 Vance Wardlow, W6FLE, 854-0803.

#### FOR SALE

150 v. 10 amp. A.C. VA meter \$7.00 20 amp. 8 hour circuit timer (any mech. clock) \$5.00 Farmer Electric Scanner (electric Eye) relay model b3 new \$ 25.00 G.E. AC Load Visualiser (Power factor) to 600 v. at 50 Amps like new \$35.00 2 Chain Bumper Antenne Mounts \$5.00 each. I Field strength Meter \$5.00. 1 Q Beam Amico Movie light New \$10.00 9 6 meter crystals FT-243 holder \$.75 each 1 2meter crystals \$1.00 Contact Chas Caperter K6HPP 786 Collemea Apt. K Menlo Park , Ca. 325-4845

#### new REPEATER

Ma Bell's gang in San Francisco at the Pioneer Radio Club expect to have their new repeater, WB6FDT, on the air shortly after September 15 on 146.19 in and 146.79 out. (from CCRC circle)

19

# HALTEK ELECTRONICS

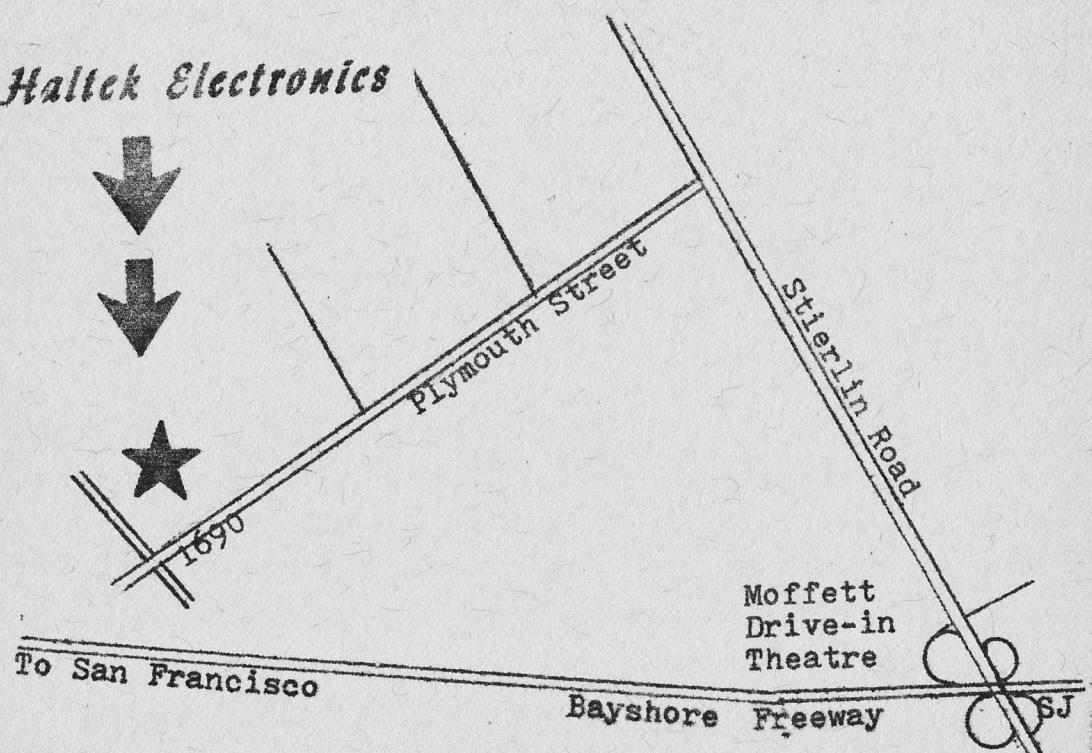
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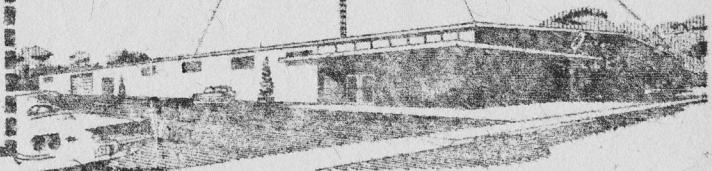


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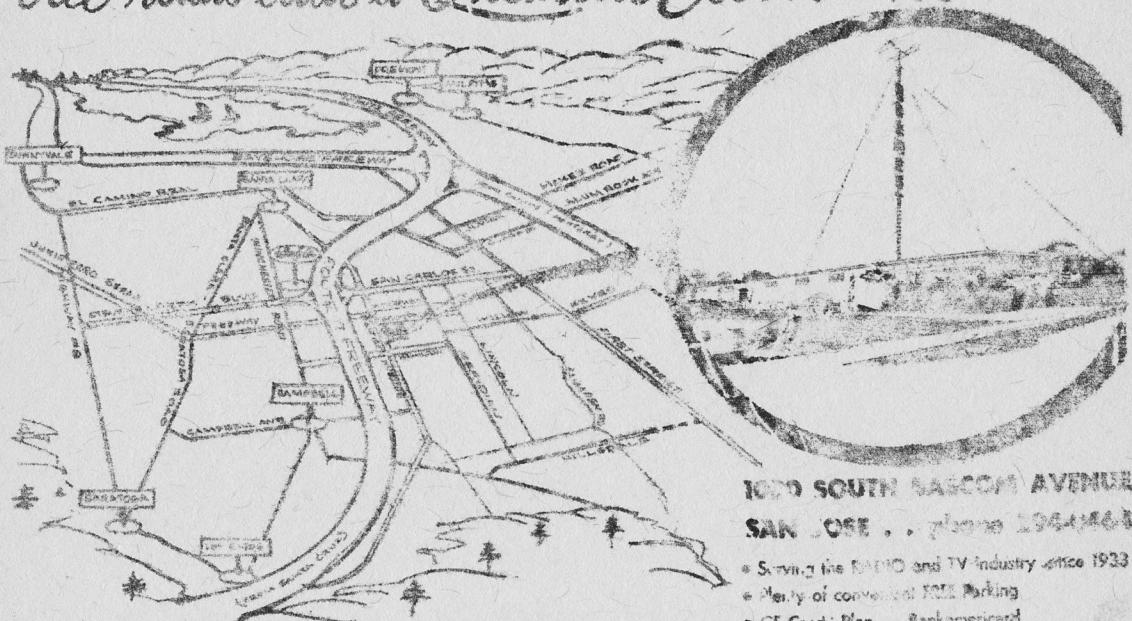
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