



PAARAgraphs

Celebrating 60 years as a *real* ham radio club—Since 1937

Newsletter for the **Palo Alto Amateur Radio Association, Inc.**



CALENDAR

1997 PAARA Dues,

Mail \$12 check, with Call, to PAARA or give to:
Doug Schliebus -W6HXL, Treas.

June 6, PAARA Meeting, 7:30

Menlo Park Recreation Center
700 Alma Street, Menlo Park 7:30-9:30 PM

June 7, PAARA Picnic

contact Vic Black (AB6SO)

June 11, PAARA Board Meeting, 7:30

Red Cross Blvd. 400 Mitchell Ln., Palo Alto

June 28-29 Field Day

Help always needed, contact Gerry (WA6LNV)

July 11, PAARA Meeting, 7:30

July 16, PAARA Board Meeting, 7:30



Program

June 6, 1997

7:30 P.M.

Speaker:

David Waitt (KF6COV)
will present the

Metricom Ricochet Data Personal Communications System

PAARA Radio NET every Monday evening, at 8:30pm,
on the 145.230-600 repeater MHz, PL tone off. •



PRESIDENT'S PONDERINGS

de VIC BLACK, AB6SO

6 Meter Tip

Six meter band activity is on the rise, especially with the introduction of modern synthesized HF which include 6 and 2 meter all mode functions. The band isn't open every day, though, so it's frustrating to hear about a 6 meter sporadic E opening a day after everyone else has worked the rare grids. A programmable scanner can alert you to openings by listening for beacons, but they're mostly low power and there aren't a lot of them. Maybe there's a better way. Here's how it works:

Program a scanner for every 6 meter FM repeater frequency you can find. The ARRL Repeater Directory is a good reference. Set the scanner squelch at threshold. When an opening occurs, the squelch will break to alert you and indicate what part of the country it's good for. Since repeaters use vertical antennas and SSB operators use horizontal antennas, and this can cause up to 20 dB attenuation in receiving, you'll want to use a separate omni directional vertical scanner antenna if you'll be transmitting on SSB.

This scheme works well because there is generally more activity on local repeaters than on beacons or the SSB calling frequency. Repeater users engaged in local QSO's may not be aware of an opening. Repeaters use high power with gain antennas to put out strong signals and they ID every ten minutes. Hams monitoring only the SSB calling frequency may miss out because most will not be transmitting so there may not be anything for them to hear.

If you won't be near the scanner, try a cheap baby room monitor on the unlicensed 49 MHz band (same frequencies as older portable telephones). Check garage sales for one with a battery operated remote. Put the base unit next to the

(Continued on page 44)Ponderings

Miscellaneous Dates

Flea Market at Foothill

- Mar 8 West Valley Amateur Radio Association (WVARA)
 Apr 12 Palo Alto Chapter, American Red Cross
 May 10 Palo Alto Amateur Radio Association (PAARA)
 Jun 14 San Jose Chapter, American Red Cross
 Jul 12 Santa Clara County Amateur Radio Association (SCCARA)
 Aug 9 South Peninsula Emergency Communication System (SPECS)
 Sep 13 Electronics Museum Amateur Radio Club (EMARC)
 Oct 11 Silicon Valley Emergency Communications System (SVECS)

PAARA Palo Alto Amateur Radio Association

meets 1st Friday 7:30 each month, Net 145.230 each Monday 8:30,
 contact: Vic Black, Jr. AB6SO, (415)366-0636.

PAARA Auction, 2nd Saturday of May

contact Jerry Tucker, WA6LNV 415-961-3266

EMARC Electronics Museum Amateur Radio Club

Meets 4th Friday 7:30 each month,
 contact Sheldon Edelman 415-858-2176, Edelman@richochet.net

NCDXC Northern California DX Club

Meets 2nd Friday each month, repeater for member info 147.360, each
 Thursday 8:00PM, contact Bob Mammarella KB6FEC 408 729 1544.

NorCalQRP Northern California QRP Club

Meets 1st Sunday each month, contact Jim Cates 3241 Eastwood Rd.,
 Sacramento, CA 95821.

Perham Foundation, contact Jerry Tucker WA6LNV 415-961-3266

SPECS Southern Peninsula Emergency Communication System

Meets each Monday 8:00PM on Net 145.27, 224.36, 440.80 MHz
 contact Mike Hastings KB6LCI, 408-243-6745 or 408-249-6909.

SCARES South County Amateur Radio Emergency Service

Meets 3rd Thursday 7:30 each month, San Carlos City Hall.
 Net is on 144.45 & 444.50 (PL-100) 7:30 Monday evenings.
 contact Dick Collins K6ANN 415-593-8952

SCCARA Santa Clara County Amateur Radio Association

Operates W6UU repeater 146.385+ Nets: 2m, W6UU, 7:30 Mon; 10m,
 28.385, 8:00 Thur. Meets 2nd Mon each month. Contact Jack R

SVECS Silicon Valley Emergency Communications

Operates WB6ADZ repeater (146.115 MHz+)
 contact Lou Stierer WA6QYS 408 241 7999

WVARA West Valley Amateur Radio Association

operates W6PIY repeater 147.39+, 223.96, 441.875, 1286.2
 Meets 3rd Wed every month. Contact Glen Lokke Jr. KE6NBO
 at 408 971 8626, or glokke@pacbell.net

Disaster Services, PALO ALTO CHAPTER, American Red Cross

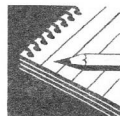
Meets 3rd Wed. each month 7:30PM, HF, packet, BBS, ATV, OSCAR
 Gateway, NASA satellite, Contact Alan Ball 415-688-0423.

SAN JOSE CHAPTER, American Red Cross

contact Scott Hensley KB6UOO, 408 249 7093, fsh@richochet.net

VE Exams, 3rd Saturday each month, 11AM

American Legion Hall, 651 El Camino Real, R.C.



The Board Minutes

Dave Bailey (WS6W), Secretary

May 7, 1997, 7:30 PM PAARA Board Meeting

Present:

Vic Black (AB6SO)*, Pres	Dave Mecham (W6EMD), VPres
Dave Bailey (WS6W), Sec.	Doug Schliebus (W6HXL), Treas
Steve Stuntz (K6FS)*	Fred Canham (K6YT)*
Charles Grandjean (WD6FAF)*	Bill Rausch (AA6PA)
Ron Panton (W6VG)	Wally Porter (K6URO)

*Board Member

The meeting was called to order by Vic (AB6SO). The May 2 PAARA meeting minutes were read by Dave (WS6W) and approved by the Board. Doug (W6HXL) gave tire treasurer's report. We now have a total of \$23,872 a the bank (Checking and money-market). Wally (K6URO) gave the PAARAgaphs editor's report and mentioned that Larry Bolster's (N6PPO) PAARAgaphs was returned.

Old Business:

1. The PAARA Foothill Flea Market will be held Saturday, May 10. The Board reviewed the sign-up list. Charlie (WD6FAF) sill pick up the donuts, and Paul (N6FEG) will bring the tables. Doug (W6HXL) showed the certificate of liability insurance verifying that we are covered for the event

New Business:

1. The PAARA summer picnic is scheduled for Saturday, June 7, at the QTH of Ron (W6VG) and Helga Panton. The Board reviewed the budget for the picnic, including the possibility of a Hobee's or Trader Joe's gift certificate for raffle prizes. Steve (K6FS) moved that \$100 be budgeted for the food and \$300 be budgeted for the raffle prizes for a total of \$400. The motion was approved by the Board.

2. Field Day is scheduled for June 28-29, not June 21-22 as was originally thought. A letter by Jim Muiter states that clubs with at least one transmitter operating (Class A) in Santa Clara and San Mateo Counties can compete for a Field Day plaque. This letter also has an equation for calculating Field Day score.

Other Business:

1. Dave (WS6W) mentioned that an Amateur Radio class in the near future would be a good idea. The Board decided that sometime next fall would be a good time for this.

The meeting was adjourned.

Submitted by Dave Bailey (WS6W)

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PAARA 7:30 June 6

Palo Alto Amateur Radio Association, Inc.
PO Box 911
Menlo Park, CA 94026

President.....Vic Black, Jr., AB6SO.....(415) 366-0636
 Vice President.....Dave Meacham, W6EMD.....(415) 369 2633
 Secretary.....Dave Bailey, WS6W.....(408) 730-5215
 Treasurer.....Doug Schliebus, W6HXL.....(415) 851 0727
 Trustee/Property/Badges..Fred Canham, K6YT(415) 948-9238
 ARES Officer.....Lily Anne Hillis, N6PGM(415) 325-5484
 Club Historian.....Steve Stuntz, K6FS.....(415) 322-4952
 Advertising.....Bob Korte, KD6KYT.....(415) 595 1842

Board of Directors

John Buonocore, KD6ZL (415) 366 1658 '97
 Fred Canham, K6YT (415) 948 9238 '97
 Charles Grandjean, WD6FAF '98
 Steve Stuntz, K6FS (415) 322 4952 '97

(see "Calendar" for Board meeting times, visitors welcome)

PAARAgaphs Staff

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PAARA Meeting Minutes

May 2, 1997

submitted by:

Dave Bailey(WS6W), Secretary

President Vic Black (AB6SO), called the meeting to order, and the introductions were done. Ronald (KF6GHQ), Frank (KE6WXX), Ian (AF6K), Claire (N6UQA), and Sam (KF6ML). There were no upgrades or new callsigns.

Announcements .

1. Vic (AB6SO), asked for new e-mail addresses or changes. Mail bounced for Bob Freibertshauser (W6YMR) (who moved to Grass Valley), Bill Rausch (AA6PA), Ray Allus-triarti (W6JOVX), Larry Bolster (N6PPO), Henry Jacobs (AJ6Q), and Terry Conboy (N6RY). Vic (AB6SO), received greetings from Steve Barnett (KD6CNU), the Coulterville Kid, on April 30.
2. The Livermore Swap Meet is scheduled for Sunday, May 4, from 7 a.m. until about 11 a.m. in the parking lot at Las Positas College in Livermore.
3. The PAARA Board meets at 730 p.m. next Wednesday, May 7, in the Palo Alto Red Cross Building, 400 Mitchell Lane, Palo Alto (near the Cal Train station in downtown Palo

Alto). Visitors are welcome.

4. VEC License exams will be held Saturday, May 17, at 11:00 a.m.
5. Next month's Livermore Swap Meet will be held Sunday, June 1, from 7.00 - 11:00 a.m.
6. Club badges are \$4.25 now. See Fred Canham (K6YT), if you want one.
7. For the June meeting, David Waitt (KF6COV), will present the Metricom Ricochet Data Personal Communications System. This is a frequency hopping spread spectrum system similar to the cellular telephone system and operates in the 900 MHz shared ham band. It allows internet access while portable or mobile. This will be a discussion, not a sales pitch. Vic (AB6SO), is also trying to recruit someone to talk about how to convert the surplus 900 MHz for FM use on the ham bands.

Our Program speakers, George Hopkins (K6GL), John Dukes (KE6UIA), and Stew Muther (WF6R), then demonstrated Amateur TV through the Black Mountain ATV repeater (W6YX).

Continuing Business:

1. The Foothill Swap Meet is scheduled for Saturday, May 10, from dawn until about noon in the lower parking lot of Foothill College in Los Altos Hills. Be sure to take along 8 quarters for the parking ticket vending machines. Parking went up to \$2 starting April 1. Volunteers are needed for this event. Volunteers will be called after the board meeting.
2. Steve (K6FS), said that the Menlo School will have an orientation for 9th grade students on Saturday, May 10, from 11:00 a.m. until 1:00 p.m. The head of the science department, wants to set up a ham radio display. He will need no more than two people, 1 male and 1 female, to demonstrate ham radio (HF mobile) in the school. Tom Scherf (K6JBR), and Dan Curry (WB6STW), want to participate. An elaborate technical display is not required.
3. Steve (K6FS), also mentioned that the California National Guard will have open-houses in June and July. The one in July will commemorate the 50th anniversary of the organization of the U. S. Air Force. The one in June will be smaller-scale for people in the local area. It would be a good idea for PAARA to get involved in these activities.

New Business:

1. The PAARA picnic will be held on Saturday, June 7.
 2. The PAARA ARRL Field Day will be held on Saturday and Sunday, June 28 and 29.
- Volunteer sign-up sheets for both these events were circulated.

(Continued on page 45) Meeting



PAARA PRIDE
 wear your
PAARA Badge

to
 meetings, picnics, field days, winter parties, ham fests,
 flea markets, Pacificons...
 (if you need one, contact Fred, K6YT)

Join Us At The Next PAARA Meeting
 June 6, 1997

(Continued from page 41) Ponderings

scanner and carry the remote. When the scanner squelch breaks, the room monitor will alert you by way of the remote wherever you are in the house. I call this "high tech trickle down", hi, hi!

Thanks to **Dave Meacham W6EMD** and **Ron Carmichael KD6RFI** for a web site with six meter news and MORE. Try the home page for "Internet Six News" at <http://user.itl.net/~equinox/50dx.html>. Billed as "the only on-line Six Meter Magazine", its beacon list is called "the most comprehensive 50 MHz beacon list ever" with worldwide links touted as "everything about ham radio on the Net". Are these superlatives just hyperbole or are they for real? I'm inclined to believe them.

Samples from this amazing web site are the beacon list (updated daily), 50 MHz DX cluster, QSL routes, a photo gallery of DX operators and DXpeditions, and lots of propagation and weather info. There are separate hot buttons for each propagation index (solar flux, K & A indices, etc.). My favorite is the heliostat photo of the solar disk with sun spots (YES! There are some!).

There's much more than 50 MHz news with links to VHF, UHF, and SHF, clusters for HF, 144 and 440 MHz, as well as 1.2 and 10 GHz. RSGB has entries on UK microwave and UHF activity. I found "how to" articles on VHF antennas and worldwide club info including SMIRK (Six Meters International Radio Klub) as well as QRP clubs.

This site has some of the most comprehensive propagation info available. There are hourly and daily magnetometer reports. The last 25 WWV propagation reports are listed for solar flux, A index, K index, solar terrestrial conditions and geomagnetic disturbances. A helium solar disk photo is provided by Holloman AFB, NM. Kitt Peak, AZ contributes a solar magnetogram. There are even photos of the 1994 total solar eclipse.

Earth-moon-earth (EME), Islands on the Air (IOTA), slow scan TV (SSTV), Amateur TV (ATV), packet, beacon and satellite news and short wave listening (SWL) are all represented. There's still more, but you get the idea. Give this web site a try. You won't be disappointed!

New Callsigns

Rich Mc Allister (ex-KO6CL) is now **K6RFM**. Rich picked his initials for his new vanity callsign. Craig Smith (ex-N6ITW) is now known as **W6WL**. Craig reports that the callsign was originally issued in 1914 and has been held by six individuals. None was a DX-er, though, so there won't be confusion when Craig works DX. Don Nelson, (ex-KE6DVP), is now **K6DPW** after upgrading to Amateur Extra Class. Gil Lane (ex-KJ6TF) reverted to his original callsign, **K6JKG**, first issued in 1955. ☺☺☺



PROGRAM NOTES:

PAARA Program,
 May 2, 1997

— Steve Stuntz, K6FS

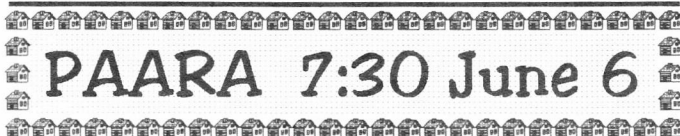
Another outstanding evening, attended by an overflowing roomful of the faithful - including **Sam, KF6ML**, our distinguished regular QRP visitor from Los Angeles. He showed-and-told about his latest achievement - a compact 40 and 30-metre micro-mini CW transceiver, gelcell power-source, storage for phones, 40-metre dipole, and compact keyer, completely self-contained in a two-part, book-sized carry case, crafted in his usual meticulous style. Sam will be taking it to the Dayton Hamfest for entry in the home-brew equipment contest. No matter what prizes it may win, PAARA can bask in the reflected glory of recognition for Sam's accomplishments and continuing enthusiasm for PAARA!

Main event was a dramatic demonstration of amateur fast-scan television, presented by **George Hopkins, K6GL**, **John Dukes, KE6UI**, and **Steve Muther, WF6R**, all members of the **Stanford Amateur Radio Club, W6YX**. In order to use the fading evening daylight, speakers and audience adjourned to the outdoor patio adjoining the meeting room. This afforded a direct line-of-sight path to the **W6YX ATV** repeater on Black Mountain, and opportunity for several live audio-visual exchanges with other stations, through the repeater and back to Menlo Park, where PAARA's own 20-inch monitor, tuned to TV channel 19 and driven by our guests' portable down-converter/receiver, displayed both transmitted and received signals. As light faded, the demonstration ended and the gang moved back into the meeting room for a few minutes of coffee and eyeball QSO's, preparing for the formal program.

George Hopkins (K6GL), then described the technology supporting what had just been demonstrated, from the start of his own experience in ATV (via relentless scrounging and horse-trading). He emphasized the need for a straight, unimpeded view of the repeater situated at 2300 feet above sea level, on Black Mountain, to permit video access via the 2.4 GHz uplink and 1.2 GHz downlink frequencies (audio is carried on the W6YX 2-metre repeater, 145.51 MHz, PL 88.5). He strongly recommended working through well-situated repeaters as a means of extending range, noting that direct point-to-point ATV in the gigahertz range usually requires considerable power and carefully-aimed directional antennas.

An incidental point was raised regarding equipment compatibility: since video is transmitted in conventional NTSC format, available consumer-grade cameras and ordinary TV

(Continued on page 47) Program Notes



(Continued from page 43) Meeting

Operating News.

1. **Dan (WB6STW)**, mentioned that 12 meters was open 2 weeks ago. He was able to work Quebec, Canada on 24.950 MHz. Dan also talked to Vermont on 20 meters vertical-to-vertical at 7 p.m., Pacific Daylight Time.

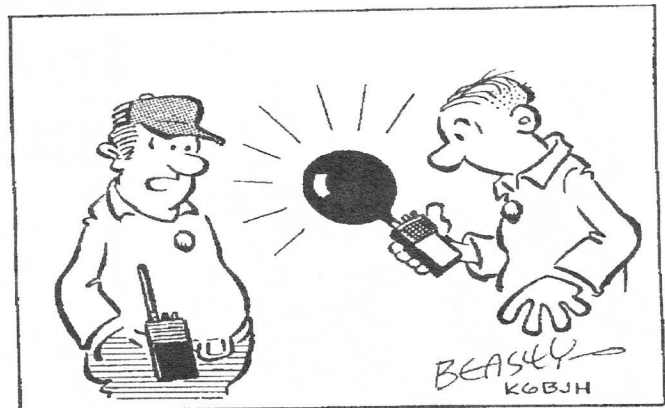
2. **Vic (AB6SO)**, said that there was sporadic E on 10 meters and that the bottom of the last sunspot cycle was May of last year and that the "moving average" is increasing. Vic also worked QRP in the field for 6 hours in a weird location - the San Andreas Fault Zone.

Show and Tell:

1. **Sam (KF6ML)**, showed the KF6ML 1997 Dayton Special, a. k. a. Sam's Accessory Box. It contains a 30 meter dipole with a 40 meter extension, a 12 V 2A battery, voltage indicator, tuner, SWR bridge, keyer, and a dual-band 38 Special.

2. **Andy (VE3FZK)**, showed a device he uses to catch CB jammers. It has three antennas, a WW II meter, and a strong-signal near-field detector.

After the break, **George (K6GL)**, and **John (KE6UIA)**, spoke about amateur television. **George, John,** and **Steve** (who had to leave earlier) are involved with the **Stanford University Amateur Radio Club** and the **South Bay Amateur Television Group**. Amateur TV signals for the Black Mountain repeater are generally about 1 watt. **George** and **John** spoke about the equipment they use and how much it costs. After they were finished speaking, the meeting was adjourned. ☺☺☺



I THINK THAT'S CAUSED FROM TOO MUCH HOT AIR!
WORLD RADIO

Menlo School Amateur Radio Club

—**Robin McGlohn**, physics instructor

Two members of the Palo Alto ARA volunteered their Saturday on May 10th for New Students' Club Day at Menlo School in Atherton. **Tom Scherf (K6JBR)** and **Dan Curry (WB6STW)** set up their rigs to help the incoming 9th grade students see for themselves what amateur radio is all about. Tom set up his 2 meter equipment at Menlo's Amateur Radio Club table while Dan drove his truck right into the quad next to Tom. They both were on the air, Tom to Southern California and Dan to Wyoming while the students stopped by and listened in.

The Amateur Radio Club sponsor, **Robin McGlohn**, a physics teacher at Menlo, had contacted **Steve Stuntz** earlier for help (thanks to referral by **Brad Wyatt, K6WR**, Director, ARRL Pacific Division) and Tom and Dan responded. As a result, the soon-to-be freshmen had a first-hand look at what being a ham radio operator means. Eight of the students signed up for next year, so there will be a good contingent working on their initial licenses and helping to get Menlo's Amateur Radio Station set up and working next year.

Robin is very enthusiastic about getting high school students involved in ham radio. He is planing to contact all the local high school science departments to notify interested students about both Menlo's Club and the PAARA and what the schools might do to get their own amateur radio clubs going. ☺☺☺

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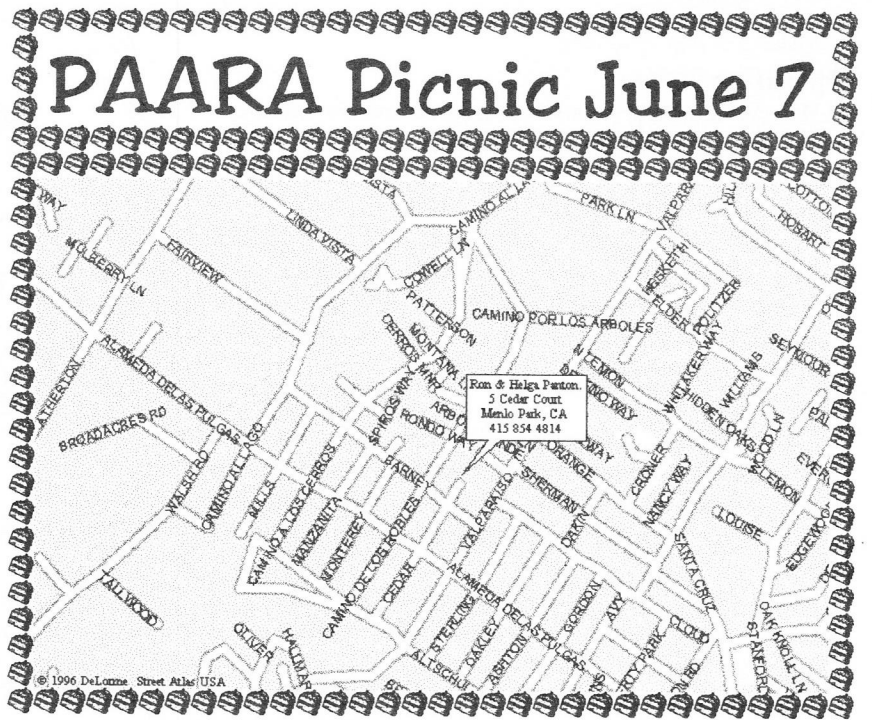
PAARAgaphs Ad Rates

PAARAgaphs accepts paid advertisements from non-members.
(short personal ads remain free for members in good standing).
All ad rates listed are per issue only.

1. Not for profit ads by association members for ham-related items and wants. No cost for business card size ads (additional space at \$2.50 per business card size).
2. For Profit organizations and/or individuals: \$5-business card size, \$25-half page, \$50 full page or back cover.

These fees may be reduced or waived in exchange for a valuable consideration that is given to the Association or its general membership. Such consideration must be in addition to any existing arrangements with the association.

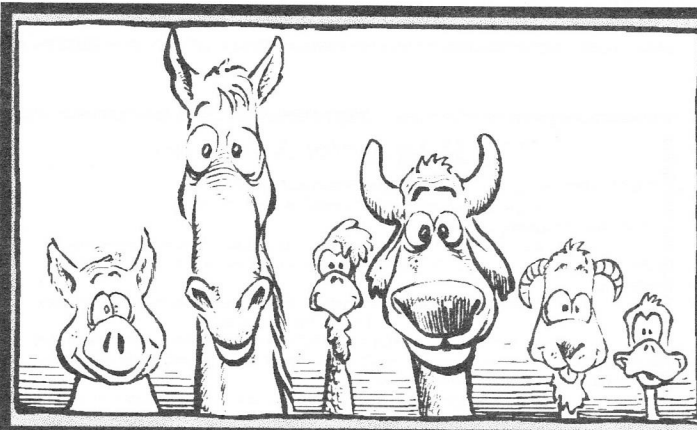
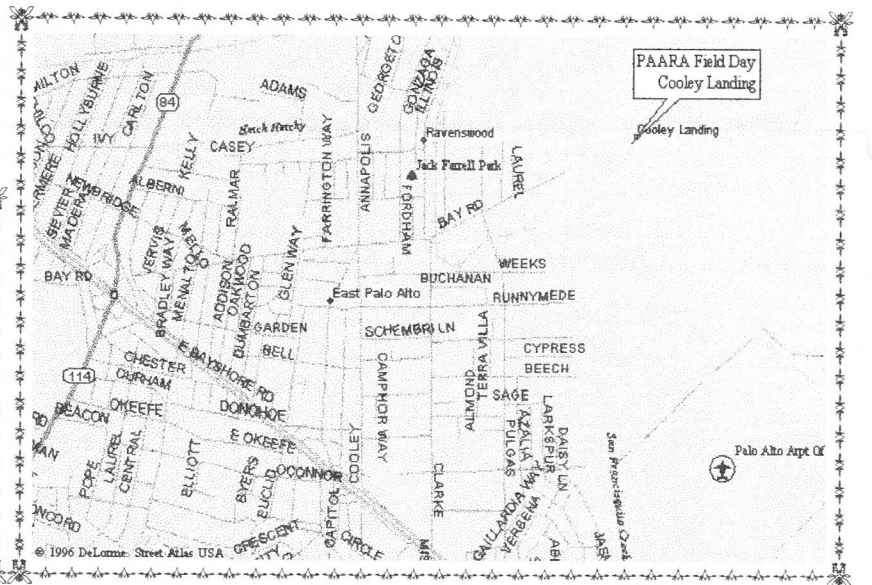
The PAARAgaphs editors reserve the right to reject any ad deemed to be not in the best interest of the Association. All fees are for "scanner-ready" copy or text-only ads.



The PAARA Annual Spring Picnic
Saturday, June 7
 at **Ron (W6VG) & Helga Panton's** house
 5 Cedar Court, Menlo Park
 11 AM to 3 PM.
 The club will supply
 Coffee, Beer, Cold Drinks Charcoal, and a Cold Cut plate
 Bring your own bar-b-que goods
 and
 something to share (optional)
 We will have **door prizes** extraordinaire

Field Day June 28-29

Help out on
Friday, Saturday or Sunday
 contact
Gerry (WA6LNV) or Fred (K6YT)



Join us for pre-meeting eyeball QSO June 6th gab & gobble

6 pm— at **Su Hong Restaurant**
 1039 El Camino Real, Menlo Park
 —across from Kepler's Book Store—

(Continued from page 44) Program Notes

sets serve very well as input and output transducers (the camera used during the outdoor demonstration was a flea-market-acquired camcorder whose recording function had broken down, but whose video circuitry still functioned OK).

Living in an antenna-restricted location (i.e., no visible RF structures permitted), George observed that with modest power, a salvaged cable-service type dish antenna pointed at Black Mountain, he operates successfully from inside his garage; evidently UHF can pass through wooden doors no-strain-no-pain,

It was emphasized that getting on the air with ATV need not involve heavy investment; scrounging, intensive flea-marketing, and word-of-mouth (via repeater - what else?) can lead to acquisition of all that's needed. Regarding antennas, it was noted that a wide variety is employed: multi-element Yagi's, "loop" Yagi's, even rhombics. For video input, the family camcorder works well, as mentioned before, as will the AV output of a VCR. Major expense-source is the uplink transmitter; responding to a question about home-brewing (from VE3FZK - who else?) George spoke highly of a popular ready-built rig manufac-

tured by RF Technology, a small engineering firm near Chicago, and also mentioned a supplier of kit-form rigs.

John Dukes, KE6UI, then picked up the narrative with personal reminiscences about his own introduction to ATV, from the standpoint of a photographer with longstanding

interest in 3-D imagery. His approach is to position small mirrors at each side of the camera-lens, yielding a right-left reversed video double image which can be perceived as 3-D by a viewer "with eyes crossed"(!).

George returned to the podium with some advice about down-converters (necessary to bring the ATV UHF signals into the frequency-range of conventional TV receivers). Evidently

the availability of ready-made units has been a problem; one source has been a manufacturer of down-converters for Muzak, adaptable to amateur radio application: **Pacific Monolithics**, of Sunnyvale, which of course has discontinued the particular line on which George, John and their ATV colleagues depended (but were able to wheedle enough to satisfy immediate needs). It was also mentioned that many ATV enthusiasts had picked up - and adapted - HBO down-converters, and even some of the "bootleg" substitutes that crop up at swap-meats and flea-markets.

The program concluded with enthusiastic applause for a great show well-presented, by a team who obviously are convinced this is one wave of future amateur radio activity already gaining momentum. "Picture-phone" anyone? Prediction: it's going to come back via computer and wireless telephone technology, having been tried and abandoned back in the dear dead days of the landline telephone

PS: the Stanford team distributed copies (as far as their limited supply would allow) of an excellent illustrated paper describing ATV in general, and their own system in particular. If there's enough PAARA interest, excerpts might be reprinted in future PAARAgaphs. How's about it, gang?©©©

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Daily Palo Alto Times February 15, 1937

(Page 2)

"Radio Association Elects - Ted Peixotto is the president of the newly organized Palo Alto Radio Association, members announced today. Other officers are Charles Camp, vice-president; and L. M. Van Eaton, secretary-treasure. The association is composed of local amateur radio operators."



PAARA
MONDAY NIGHT NET
8:30 PM
145.230-600 MHz repeater
PL tone off
Latest news between monthly issues of
PAARAgaph

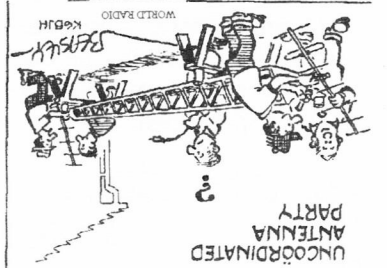
PAARA-Palo Alto Amateur Radio Association-P.O. Box 911, Menlo Park, California 94026-0911

Club meetings are on the first Friday of each month, 7:30pm at the Menlo Park Recreation Center, 700 Alma Street, Menlo Park, CA. • Radio NET every Monday evening, at 8:30pm, on the 145.230-600 MHz repeater, PL tone off. • Membership in PAARA is \$12.00 per calendar year which includes a subscription to PAARAgaphs. • Make payment to the Palo Alto Amateur Radio Association.

June 1997

Palo Alto Amateur Radio Association, Inc.
PARAgraphs Newsletter
P.O. Box 911
Menlo Park, California 94026

Celebrating 60 years as a real
ham radio club since 1937



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Andy Korsak VE3FZK 97
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