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GRAPHS



PALO ALTO
AMATEUR
RADIO ASSN.

MENLO PARK C.D. RADIO CLUB, K6YQT

JULY 1977

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VOLUME 21 NUMBER 6

PAAPAGraphs is the OFFICIAL ORGAN of the PALO ALTO AMATEUR RADIO ASSN.
and the MENLO PARK CIVIL DEFENSE RADIO CLUB.

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PAABA POLICIES

Membership in PAARA is a paltry \$4 per calendar year, a sum that includes monthly receipt of this journal. Subscriptions alone may be had for \$1, which almost pays for the postage. Cash, check, or gold bullion may be sent to the club at....

PAARA P. O. Box 911 Menlo Park, CA 94025

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Contributions after July 1st to 1231 Crestview Dr., San Carlos CA 94070

THE JULY MEETING WILL TAKE PLACE ON THE SECOND FRIDAY OF JULY, to avoid conflict with the three day holiday preceding. The date is July 8th, and the time is 7:30 as usual. Be at the Menlo Park Recreation Center for a fine talk on

A-N-T-E-N-N-A-S to be given by Frank Glass, K6RO. Since this subject interests so many of you, it should be a good opportunity to acquire some new ideas and perhaps brush up on a few forgotten fundamentals.

You will certainly be fully delighted by the normal fine happenings which include QSO's in the 500 nanometer band and the world's greatest junk food goodies. And best of all, the one and only PAARA raffle.

THE BOARD OF DIRECTORS WILL MEET ON WEDNESDAY, JULY THE 13th
at the forlorn PAARA trailer at SRI. Be there to plot
the course of PAARA for the next six months. Meeting
time is 7:30 PM.

Last month's meeting, held at the abode of W6YPM and his lovely XYL, Marie, was an enjoyable event, with guided tours of one of the world's finest collections of antique radio equipment, and one of the nicest dinners imaginable. Our thanks to the Rasmussens. (There are some advantages to serving as a PAARA officer!)

THE INCOMPARABLE PAARA NETS are held weekly at various times.

TWO METERS

AM at 2015 PDT on 145.24 MHz on Mondays

FM at 2030 PDT on 147.45 MHz on Mondays.

HF PAARA Intercontinental Communications System

USB at 0900 PDT on Saturday on 21.393 MHz or on 14.245 MHz if poor propagation prevails.

AMID MUCH TEARING OF HAIR AND SPENDING OF MONEY, your executing editor moves to a new residence. So don't dare send any more epic articles for publication to anything but the new address on the facing page. OSL, OM?

STARGAZINGS from Hal Moore W6WDF

(Editor's note: Hal is no stranger to the pages of PAARAGraphs, having served for some years as EC for the Palo Alto/Menlo Park Area and also as Secretary for PAARA. Hal even was stouthearted enough to publish this intrepid journal one month when we were in dire straits. Herewith is a dissertation on celestial subjects from Hal to expand your horizons...)

It is a thrilling sight, on a clear night in the South Pacific, the New Hebrides, for instance, which is two degrees south of the equator, to look north and on the horizon see the Big Dipper and then to look south and on the horizon see the Southern Cross.

The stars are brighter here in the Sierra Nevada Foothills. The greater altitude brings us closer to the stars. Maybe they appear brighter because there is less smog here as compared to that in the San Francisco Bay Area.

Several of the constellations that appear to us on clear nights are the Big Dipper (Ursa Major), the Little Dipper (Ursa Minor), the lady in the chair (Cassiopeia), and the seven little sisters (Pleiades). From the "pan" part of the Big Dipper it is possible to locate the North Star.

There have been articles in various publications that are interesting. They go into great detail using terms that are not familiar to everyone. For instance, "quasar", "pulsar", "light year", "doppler shift", "the big bang theory", "black hole", "white dwarf", "cosmological", and "astrophysicist". Publications explaining these terms go into much detail: Time Magazine- "Stars Where Life Begins"; National Geographic- "The Incredible Universe"; The Lutheran Journal- "How Far is Up"; The Smithsonian- "Wisemen from the South Peer toward What May Be The Limits of the Universe"; The New York Times- "The Black Hole Mystery and How Many Galaxies are in the Universe"; and The Reader's Digest- "Visitors and Invaders From Space".

From the National Geographic: How does one comprehend the incredible size of this galaxy-filled universe? Space is measured by a unit called a light year, the distance light travels in one year at the rate of 186,282 miles a second or about 6 trillion miles. Imagine that the thickness of this page represents the distance from the earth to the sun. Then the distance to the nearest star (4.5 light years) is a 71 foot high pile of paper. The diameter of our own galaxy is a 310 mile stack (100000 light years). The edge of the known universe is not reached until the pile of paper is 31 million miles high.

Stargazing continued...

From the Foundation of Science library- "The Mystery of the Heavens": There are a great many possible theories of the formation of the universe. It is impossible from the observational facts available to decide on any one of them. The difficulty is that we cannot see far enough back in the space of time. Light from the distant galaxies takes time from them to earth.

Stars are nuclear furnaces, explosively giving off gases and light in huge quantities. It is difficult to comprehend the fact that nuclear reactions can continue for billions of years. Yet all of the evidence indicates that is the case, at least for certain stars. Stars are born of dust and gases that collect in outer space. Influenced by its own gravity, the mass contracts and begins to radiate heat and light.

Our own sun, astronomers believe, about five billion years ago, was the spawn of a giant swirling nebula of gas and dust. As the particles coalesced, gravitation pulled them swiftly together and they heated up. Within a few million years, a short time in cosmic terms, the new body developed within its deep interior a temperature of millions of degrees, enough to ignite the processes of nuclear fusion. Hydrogen atoms fused to form helium atoms, giving off energy in the process, and the sun began to shine. Our star has changed little since then and likely will change little for the next five billion years.

A galaxy is a collection of stars, dust, and unattached hydrogen atoms. Average galaxies consist of about ten thousand million stars. So naturally there are a great many more individual stars than galaxies in the universe. However, when photographed, there appear to be far more galaxies than stars. The reason for this is that individual stars forming a galaxy are widely spaced in relation to their size, while whole galaxies are packed comparatively close together. The average star is about four light years from its nearest neighbor, about ten million times the star's diameter. The average spacing between galaxies is only about a hundred times the galaxy's diameter. All galaxies and stars are condensed from matter which was originally scattered in space.

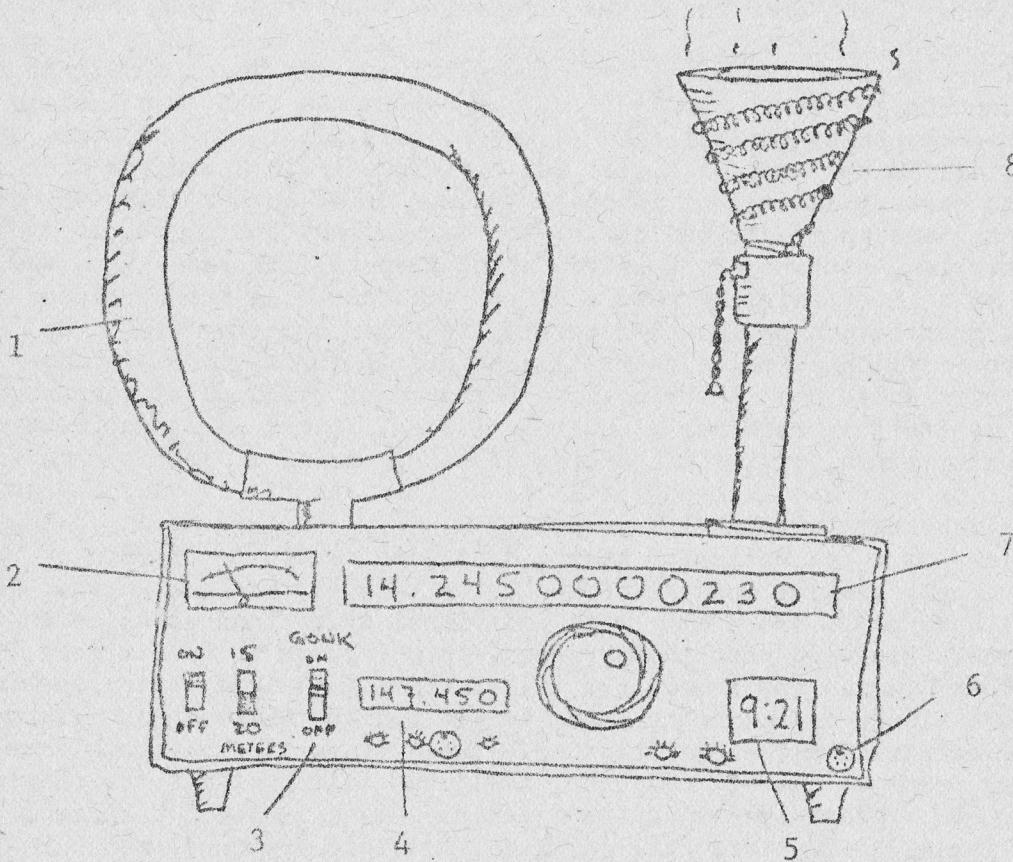
According to one theory of the origin of the universe, we have the "Big Bang". All matter was originally concentrated together in a primaevial atom a hundred million miles in diameter. Between ten and twenty thousand million years ago the atom exploded and the universe started its balloon-like expansion.

The quasar is one of the most mystifying objects in the universe. In the early years of radio astronomy, after World War II, observers

... telescoped over to page 8...

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4. Built-in 2 meter FM transceiver used for discussion of East-Coast Correspondent's monologue amongst West-coasters.
5. Ten-minute phone patch timer for those ever-enlightening conversations.
6. Mike jack accepts no evil-sounding speech processors.
7. Twelve digit readout for accuracy of 0.0001 Hz; helps satisfy rigid technical requirements of certain over-engineered members. Phase-locked to WWVL at 60 KHz. Not available with more than one (1) decimal point, despite popular practice among certain Oriental radio manufacturers who mix MHz, KHz, Hz, etc. on same display.
8. "Ionospheric heater" used to open the 15 Meter band when conditions warrant. Also doubles as a handwarmer for frozen East-coast operators.

Other Features

- Exclusive ultra-automatic gain control allows receiver to run wide open for K6FS.
- Transceiver especially fond of Drake and Yaesu gear.
- 15/20 meter portion automatically disabled during select summer months.

Cosmic QRM continued... from page 5

discovered many celestial objects that emitted radio waves but were apparently invisible in ordinary light. Eventually some of these were found to coincide with nebulae (gas and dust clouds between the stars), with remnants of super-novae (exploding stars), or with galaxies. But until 1960 nothing as small as a star (outside our own solar system) was known to be a radio source. Other sources were identified with optical objects of the same kind. They were named "quasistellar radio sources" or quasars for short. Nobody had the slightest idea what they were.

Ordinarily, spectral patterns are well understood as fingerprints for identifying chemical elements of the stars. One set of lines are easily recognizable at certain wavelengths as indicating emissions from excited hydrogen atoms. Another pattern signifies calcium atoms, etc. In 1963, from the California Institute of Technology in Pasadena, while studying the spectrum of a newly discovered quasar, these emissions were not familiar. The familiar pattern was there, but not in the expected place. It was shifted far down toward the red or longer wavelength end of the spectrum.

A red shift, as astronomers know, means the object is moving away from the observer. It is the same phenomenon known as the "Doppler effect". That makes the sound of a train whistle fall off in pitch as the train passes and rushes away.

Some astronomers regard quasars as signposts which mark the outer limits of creation. The most distant quasars are the most distant objects ever discerned and their light comes to us as much as 15 billion years ago, two or three billion years after the time we assume that the "Big Bang" took place.

According to well developed theories of stellar evolution, the sun will begin to swell and redden. Eventually a bloated red sun will loom across 25 percent of the sky. It will have expanded a hundred times in diameter and increased a thousand times in brightness. Its hot breath may have melted the inner planets and the earth will be reduced to a desolate rock, baked at temperatures that would melt lead, its oceans completely boiled away. For a hundred million years more, the swollen sun will continue to deplete its nuclear fuel. Once the enormous outer envelope has dissipated, only a tiny core will remain. That is called a white dwarf. Such stars may now make up 10 percent of the stars in our galaxy.

...stay tuned next month for more messages from the skies...

LATEST DOPE ON PREPARATIONS FOR WARC '79 ... via K6FS

That's the World Administrative Radio Conference, friends. A letter from ARRL President Harry Dannals reports latest FCC proposals for spectrum allocations for all services, over the range 160 kHz to 72 GHz, with following recommendations re: HF amateur bands, ITU R. 2.

160m: 1800-1900 amateur exclusively; 1900-2000 amateur, shared with mobile, radionavigation and radiolocation.

80m : 3500-3900 amateur exclusively; 3900-4000 amateur shared with fixed and mobile services. (In ITU Region 3, 3900-4000 is proposed to be shared among aeromobile, broadcasting and fixed services.)

40m : 6950-7250 amateur exclusively. (Top 50 kHz of present band, 7250-7300, is proposed exclusively for broadcasting in all three ITU regions.)

20m : 13950-14400 amateur exclusively.

15m : 20950-21450 amateur exclusively.

NEW BAND (11.6m); 25760-25860 amateur exclusively.

10m : 28000-29700 amateur exclusively.

ARRL and FCC earlier proposal for new ham bands at 10, 18, and 24 MHz has been reconsidered; the only new band now being proposed by US for ham use is 25 MHz, as above. ARRL is still pushing for a new band at 10 MHz, to fill the MUF gap between 7 and 14 for long-haul circuits such as may be needed for relief communications following floods, earthquakes, or other natural disasters. In his letter, Dannals also notes need for more spectrum space to accomodate predicted 6 million hams worldwide by 2000 AD. He urges individuals and clubs to think this over, and if so minded, to write to the FCC urging proposal of 10 and 18 MHz ham bands. The FCC is accepting responses until August 1, original plus 19 copies, typed (preferably double-spaced), head "Response to Fifth Notice of Inquiry", and subheaded: "An inquiry relative to preparation for a General World Administrative Radio Conference of the International Telecommunications Union to consider revision of the international Radio Regulations, DOCKET Number 20271" (whew!)

Twenty-seven ham clubs, ARRL, Amateur Radio Advisory Committee, and 62 individual hams sent in responses to the previous FCC proposals - a pretty thin showing of opinion on decisions as far-reaching as WARC's will be. Of course, the communications division of the Electronic Industries Association (EIA) responded. After all, ham radio is a business, too...

..... warped over to next page.....

More WARC...

There is still time for PAARA or any individual to take part in WARC preparation, by writing the FCC in the format suggested, advocating, urging, damning, or cajoling - whatever your style is. Since most of us are going to be around to experience the consequences of WARC '79, and since there are going to be more of us as the years pass, some positive show of concern is very much in order. WE'll make an agenda item of WARC at the July meeting, and again at the Board meeting on the following Wednesday. And expect to hear more on 147.45 Monday nights...

WELCOME TO THE WORLD OF PAARA goes to our new members...

John Walther K6PKT - Advanced - Phone 967-3210
376 View St #3, Mountain View, CA 94041

Jim Smith - with novice due soon - Phone 366-8836
1057 Madison Avenue, Redwood City, CA 94061

Steve Runyon - with a technician ticket coming - Phone 365-3199
461 Myrtle Street, Redwood City, CA 94062

Say hello to these new members and to the old ones too....

... report all changes in calls, class of license, or address to W6AIN, W6BFH, or WB6GRZ.

MERCADO DE LAS PULGAS

- Bob Sackett, ex-WB6OAQ has a Gonset GC-105 2-meter AM transceiver for sale. Asking about \$100, but willing to bargain. 349-5253 (SM).
 - Looking for transmitter or transceiver like DX-60, SB-101, or HW-101. Call Ken Bowen, WB6RRP at 854-3387
 - A two meter bargain... a Heath HW-202 with seven popular sets of xtals (one spare) for a token \$125. Also an unusual Western Union version of the classic Model 15 teletype, much quieter than the normal Bell system version, for \$50. Call Dan, WB6STW at his new tel. number: 326-5647. (His new address is 724 Partridge Street, Menlo Park, CA 94025.)

Mel Cruts, WB6JST now has his latest homebrew project, a micro-computer, up and running. He is interested in contact with other hams interested in "microcomputer processing of transmitted and/or received morse code." (Sounds like a good future club program ...)

Miscellaneous Modulation and Spurious Signals

FCC Amateur Operator exams will be given on Wednesdays (instead of Fridays) after July 1, 1977. Extra code at 8:30 AM, General/Advanced code at 10 AM and Technician code at 1 PM. New comprehensive code exams are now in operation, with ten multiple choice questions based on a five minute transmission in QSO format. New SF FCC phone number is 556-7701, if you want to talk to a person, the old number giving you a nice recording on TVI complaints to hear...

The Commission has relaxed the applicability of the new rules on spurious emission standards. It will apply only to equipment marketed after January 1, 1978 or built after April 15, 1977. Any equipment now in use is thus grandfathered into exemption.

Santa Clara County Amateur Radio Association begins classes for novice and general license preparation on Tuesday, July 5th at 7PM at the San Jose Red Cross at 333 McKendrie Street, SJ. Info from Bill, W6ZM.

Novice code practice sent by W6IHR each monday at &pm on 21.150 MHz.
The Valley Novice Net follows on the same frequency at 7:30 PM.

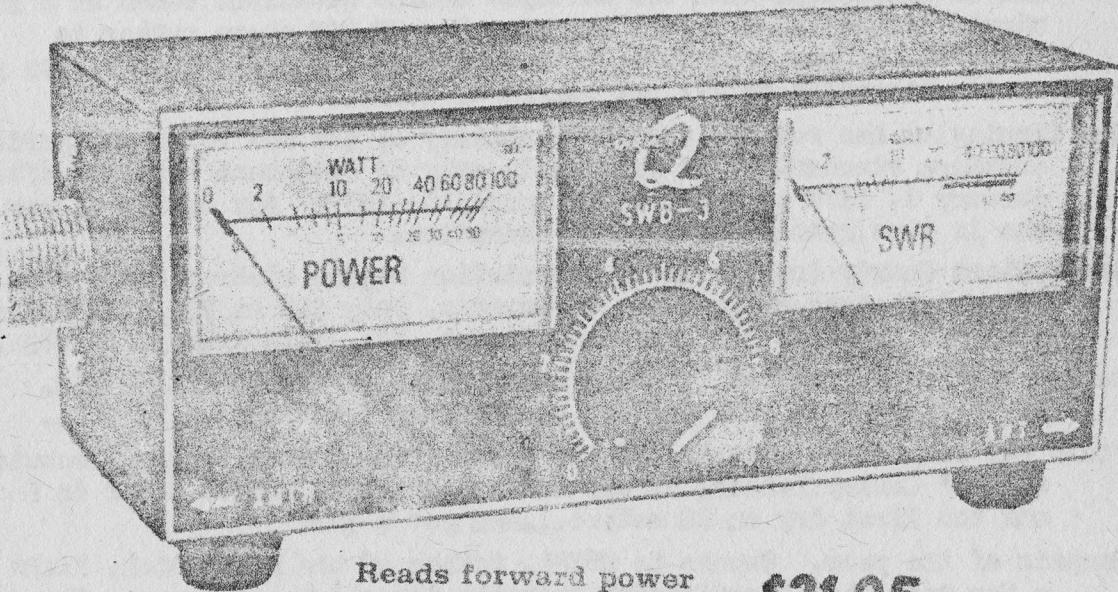
Field Day success is certain, if the first contact made from our beautiful site at Cooley landing is any indication. Cam worked a UK2 in Russia one the first try on 20 meters...and got a 599!

Bargain of the year. Thanks to W6YPM, father of the Kwik-Patch, PAARA has a few very nice transformers suitable for phone patch use. The price is a miracle in these inflationary times... only 25¢. With one xfmr you can build a nice patch for ptt service, and with two of them, you can make a hybrid version that will run VOX. Schematics from W6BFH or WB6GRZ.

Looks like you can expect ~~UR~~ amateur license application to slow down by an order of magnitude or so. Twenty people were let go from the FCC's Gettysburg office during the first week in June due to lack of funds. If this irritates you, write to your federal legislators urging that the Office of Management and Budget be pressured into appropriate action. The FCC has no control over the amount of money it gets...
(Tnx Ham Radio Reports, June 3, 1977 via MDARC Carrier.)

1977 Greater Bay Area Hamfest and ARRL Pacific Division Convention will be held at the Royal Roach in San Mateo on October 15 through the 16th. Preregistration is \$14 and \$16 at the door. (think that includes the banquet.) More dope from GBAH, PO Box 751, San Mateo, CA 94401.

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