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vol. 24
JUNE 1980

PAARA

GRAPHS



PALO ALTO
AMATEUR
RADIO ASSN.

MENLO PARK C.D. RADIO CLUB, K6YQT

- 2 - SHAVER RADIO, INC.

DAVID SHAVER
K6DTX

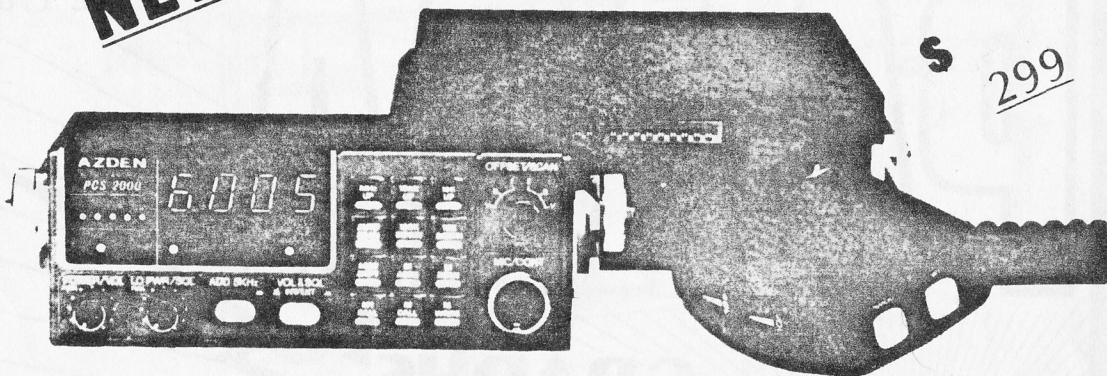
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REVOLUTIONIZES THE STATE OF THE ART
AWE AND AZDEN INTRODUCE THE BRILLIANT NEW PCS-2000
MICROCOMPUTER CONTROLLED
2 METER FM TRANSCEIVER

NEW!

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INTRODUCTORY
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COMPARE THESE FEATURES WITH ANY UNIT AT ANY PRICE

- **FREQUENCY RANGE:** Receive and transmit 144.00 to 147.995 MHz, 5KHz steps + MARS-CAP, and MULTIPLE OFFSET BUILT IN.
- **ALL SOLID STATE-CMOS PL DIGITAL SYNTHESIZED.**
- **SIZE:** UNBELIEVABLE! ONLY 6 1/4" x 2 1/4" x 9 1/4". COMPARE!
- **MICROCOMPUTER CONTROLLED:** All scanning and frequency-control functions are performed by microcomputer.
- **DETACHABLE HEAD:** The control head may be separated from the radio for use in limited spaces and for security purposes.
- **SIX-CHANNEL MEMORY:** Each memory is reprogrammable. Memory is retained even when the unit is turned off.
- **MEMORY SCAN:** The six channels may be scanned in either the "busy" or "vacant" modes for quick, easy location of an occupied or unoccupied frequency.
- **FULL-BAND SCAN:** All channels may be scanned in either "busy" or "vacant" mode. This is especially useful for locating repeater frequencies in an unfamiliar area.
- **INSTANT MEMORY-1 RECALL:** By pressing a button on the microphone or front panel, memory channel 1 may be recalled for immediate use.
- **MIC-CONTROLLED VOLUME AND SQUELCH:** Volume and squelch can be adjusted from the microphone for convenience in mobile operation.
- **ACCESSORY OFFSET:** With one optional crystal, three non-standard offsets become available.
- **25 WATTS OUTPUT:** Also 5 watts low power for short distance communication.
- **DIGITAL S/RF METER:** LEDs indicate signal strength and power output. No more mechanical meter movements to fall apart!
- **LARGE 1/2-INCH LED DISPLAY:** Easy-to-read frequency display minimizes "eyes-off-the-road" time.
- **PUSHBUTTON FREQUENCY CONTROL FROM MIC OR FRONT PANEL:** Any frequency may be selected by pressing a microphone or front-panel switch.
- **SUPERIOR RECEIVER SENSITIVITY:** 0.28 uV for 20 dB quieting. The squelch sensitivity is superb, requiring less than 0.1 uV to open. The receiver audio circuits are designed and built to exacting specifications, resulting in unsurpassed received signal intelligibility.
- **TRUE FM, NOT PHASE MODULATION:** Transmitted audio quality is optimized by the same high standard of design and construction as is found in the receiver. The microphone amplifier and compression circuits offer intelligibility second to none.
- **OTHER FEATURES:** Dynamic Microphone, built in speaker, mobile mounting bracket, external remote speaker jack (head and radio) and much, much more. All cords, plugs, fuses, microphone hanger, etc. included. Weight 6 lbs.
- **ACCESSORIES:** 15' REMOTE CABLE \$29.95 *MARS CAP KIT... TBA PCS-6R A/C POWER SUPPLY. \$49.95.

VOLUME 24 NUMBER

1980

PAARAGraphs is the official organ of
The Palo Alto Amateur Radio Association and the Menlo Park Civil Defense Radio Club

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Membership in PAARA is \$6.00 per calander year (payable in January) which membership includes a subscription to PAARAGraphs. Interested others may subscribe to PAARAGraphs for \$6.00. Make payment to:

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Mailing	:	Ed Fairbanks	W6AIN
Cover	:	Sue Lindner	LØVLY

FRIDAY

7:30 P.M.

Rooms 15 & 17, Menlo Park Recreation Center,
Alma at Mielke Drive
Menlo Park

ADVANCES IN POWER SUPPLY TECHNOLOGY

by

Gerry Tucker, WA6LNV

A discussion of switching power supply technique in the development of the next generation of power supplies for high voltage applications.

Circle the Date

June 6, 1980

Future Meetings: July 11, August 1, September 5, October 3

Field Day June 28-29. Work Crew June 27 (Friday).

PAST CORNER: The May 2 meeting started at 1930 ± 5 and was attended by sixty hearty souls which included nine guests and, or, visitors.

Irene, WB6RAF, gave a treasurers' report, Bob, K6SEM, distributed Club badges to those who were available, Jock, N6YV, reported on the rainy day picnic that was enjoyed by 30 or so. Alan, WA6AZP, reported the May 10 Scout-O-Rama was well planned and that help would be needed to raise the 66 foot tower they plan to use. Fred, K6YT, suggested if possible, those who expect to raise the tower at Field Day be present to become acquainted with our newest acquisition in Field Day ammunition. He also hoped any who could, be available for pre-Field Day activity—including several weekends prior to the June 27 countdown start—and to let him or SEM know the periods of availability.

A letter regarding TVI, not caused by a member, was given PAARA for reconciliation. A committee was appointed with Steve, K6FS, as chairman, with the hope that Bill, W6DVB, could resolve the problem or negotiate a reasonable settlement.

Eric, W6DU, thanked the crew that helped him put up his new antenna. He immediately added two new countries to his compounded DXCC group. Dave KB6WP, reported on the communications for the 200 KM bike ride from San Jose to Livermore via Mount Hamilton by about 350 cyclists. Reportedly there were no communications or physical problems. Remarkable.

Jerry, WA6LIJ, was encouraged to report on the EMARC Flea Market and then Gerry, W6NIR, gave the near and far (time and place) Flea Market picture ending with the PAARA extravaganza in October.

Swede, N6CHL, reported a source of conversion kits for CB rigs to 10 meter SSB and invited any interested to contact him.

Jerry, LIJ, gave a report on malicious interference and presented a petition to the FCC for signature. Gene, WB6000, asked for help in the Menlo Park City Council Chambers May 27 at 7:30 p.m. to plea against his neighbors demands that he remove his station from the neighborhood.

And all that didn't take much longer than it did to write. Eyeball QSO's followed with coffee, hot chocolate and cookies led to Bob Thompsons, K6SSJ, presentation of a detailed analysis of four recent addition to amateur radio equipment, and described what some DX-Club members had done to overcome some of the deficiencies.

Intermodulation problems and their solution in 2-meter repeaters was discussed using some of the HF equipment improvement methods.

Bob reported that a comprehensive examination of the new Collins, Ten-Tec Omni D and the Astro 102 had been made but the tabular format has not

yet been made available.

Somewhat the story got back to TVI. Bob reported an incident during a DX contest where the offending ham got his crew together, went to his neighbor: "Look," he says, "I've got all this help and we're going to lick your TVI and work all day and all night to do it". During their "breaks" a member of the crew would go next door and look at the TVI. The lady was so impressed with their concern she fixed coffee, cookies, sandwiches and cake to keep "those hard-working, dedicated young men" going.

A raffle of manuals, tools and equipment followed. By 2200±5, rooms 15 and 17 had emptied with some continuing their interrupted eyeball QSO's across the tracks to that little place on the corner where there are tables and benches for fun people.

o o o

BOARD CORNER: It started a little late but once going, was spirited. Bob, K6SEM and Eric, W6DU, stopped by Fred's, K6YT, place to help load the 60+ foot tower on a trailer for the Scout-O-Rama. But the meeting did take place May 7.

The Club trailer was almost full. Bob, Chairman, Eric, V.P. of PAARA, Ed, W6AIN, Gerry, W6NIR, Jock, N6YV, Irene, WB6RAF, Shannon, K6TNY, Gerry, WA6LNV, Steve, K6FS, Swede, N6CHL, Bill, N6CHI and Terry, N6RY, were present.

There was no report from the secretary but assorted papers and mail were distributed by those who periodically check the P.O. Box (mainly Irene).

Six reddotter got caught up on dues and because Bob, W6BFH, didn't remember to dot all lax members, another "red dot" issue is expected in June.

Shannon, TNV) reported on progress with the 2.5kw generator that belongs with the trailer. He was happier the day before when he got it working than he was at the meeting—now he has 155vac where he'd like 120±5.

Bob, SEM, called ARRL headquarters for clarification of Field Day rules and feels he has them well in mind. His questions and comments to ARRL stirred interest at headquarters and now he has the job of writing them down for consideration in future contest rule changes. Fred, YT, Bob, SEM, Eric, DU and Gerry, NIR, did considerable research before SEM's call.

A Field Day Committee meeting May 5 had most of the logistics for FD solved except for a dedicated Novice group. (f...)

The Question we seem to get most often from our customers:

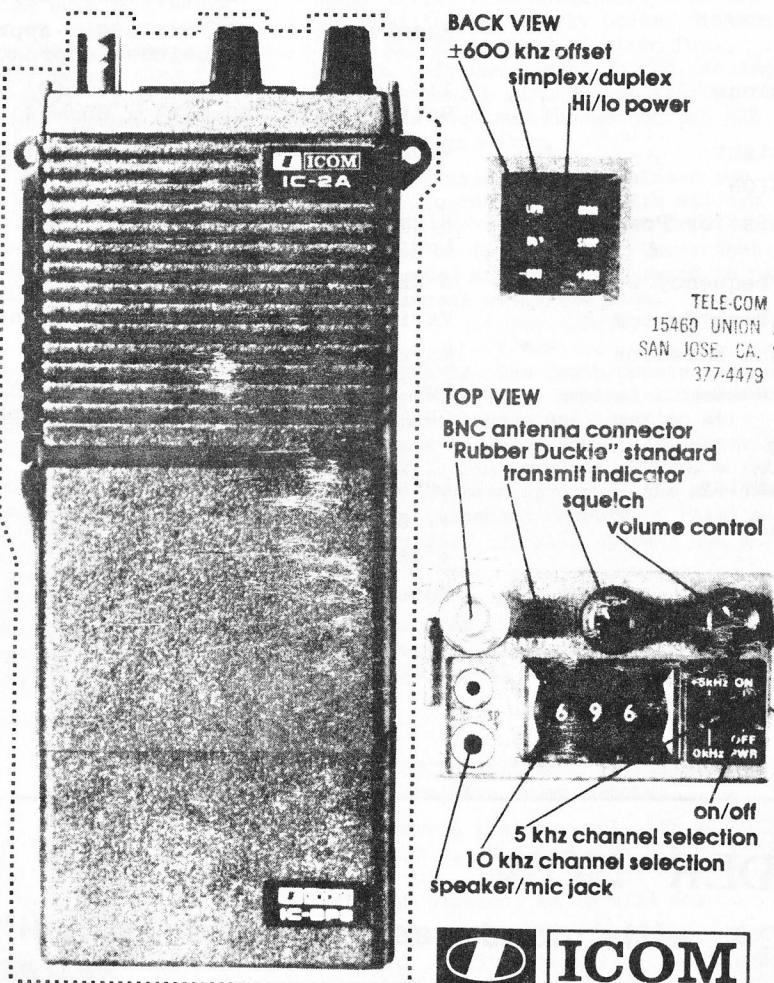
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Switch to .15 Watt.
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& Mic. Excellent audio
quality.
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- Variable size Nicad Power
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standard). Makes the IC-
2A the most compact
synthesized HT on the
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Performance-ICOM
Quality Receiver in a
compact package (.2uv/
20db typical)
- Optional Tone Pad, Desk
Charger, Speaker/Mic
available.
- With slip on/slip off Bottom
Nicad Pack, you can vary
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about 116 mm high to 175
mm high. Easy to carry
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THE ANSWER IS: now!

All 800 channels of it!

SPECIFICATIONS

GENERAL:

Frequency Coverage	144.000 ~ 147.995 MHz
Power Supply Requirements	DC 8.4V with attendant batteries
Current Drain	Transmitting: High (1.5w) approx. 600mA Low: (0.15W) approx. 200mA
	Receiving: At max audio approx. 140mA Squelched approx. 20mA
Dimensions	116.5mm(H) x 65mm(W) x 35mm(D) without battery case Battery case: 49mm(H) x 65mm(W) x 35mm(D)
Net Weight	450g including batteries and flexible antenna
TRANSMISSION:	
Transmission Power	High: 1.5w (at 8.4v) Low: 0.15w
Max. Frequency Deviation	5 KHz
Modulation System	Variable reactance frequency modulation
Spurious Emission	More than 60dB below carrier
Microphone	Built-in electric condenser microphone optional 600 ohm dynamic microphone can be used.
RECEPTION	
Sensitivity	Less than 0.4uV for 20dB Noise quieting
Selectivity	\pm 7.5KHz At the -6dB point \pm 15KHz At the -60dB point
Audio Output	More than 300mW

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IC2A with nicad pack charger and built in touch
tone pad - - - - - \$249.50



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Eric, W6DU, reported that Gerry, WA6LNV, would like to speak at the June meeting. Eric commented he'd like some help for the July and August programs. Anyone that can give Eric a bit of help should contact him.

A discussion followed, assessing the relative merits of various kinds of program material... . . .

PUBLIC RELATIONS CORNER: Visitors and guests at the May meeting were in greater number than, except for an occasion or two, ever before. Jim Hayes (NC) and Maury Harp, W6KJG, came from Belmont; Teresa King from San Carlos; Joe Lutz, WB8EAS, from Foster City; John Gordano, K6JJU, and Kurt Feiler, NC, from Redwood City; Beryl Root, NC, and Ron Panton, W6VG, from Menlo Park, and Allen Takasuka, N6CCK, from Mountain View were scattered among friends and strangers. To all a warm welcome and we hope to see you at the June meeting. For the first-time visitor: your face will be more familiar then.

+ + +

UPGRADE CORNER: Charolette Conboy is now KA6KKD and groping for the 1x3 call so she can get on 2 to talk to the OM, Terry, N6RY. Congratulations, Charolette.

No other activity has been reported— maybe there is a little less radio activity in the spring-time.

= = =

HELPING HAND CORNER: With Doug, KA5DQR/MMI calling on one end of the band, and Bob, W6BFH, listening on the other, Perry, N6CHD, somehow got the two together, interrupting a QSO with a ZL to do it.



"I've gotten a dozen offers for the farm since I built it."

PUBLIC SERVICE CORNER: Several members of PAARA teamed with members of Golden State Sidebanders recently to provide emergency communications for Lockheed's PEDALERA 200 KM Mt. Hamilton Bike-a-thon. Swede, N6CHI, provided base communication at the LERA building in Sunnyvale while Dave, KB6WP, supported checkpoint 3 in Pleasanton.

Morning hours utilized simplex frequency 147.45 from checkpoint 1 on top of Mt. Hamilton, manned by Golden Staters John, KA6FEX to base station Paul, KA6IDB. Afternoon support and coverage of checkpoint 2 with Steve, KA6ETB, Dave and Sweed required the use of the EUZ Mt. Diablo repeater.

The Lockheed Club appreciated our help and awarded workers with mileage expenses, jacket patches and free beer and pizza at the Rip-Off. Those that participated are looking forward to next year's annual event and bash.

Dave, KB6WP.

* * *

K60TR CORNER: The South County Amateur Radio Service Club, nominal licensee of K60TR, has found a new location at St. Thomas Aquinas Church, 745 Waverly St. Palo Alto. Jim Hartwell, K7UDG, a PAARA member, has been appointed the new station trustee. Licensed members of PAARA's Explorer Post 599 will operate and maintain the station.

Thus K60TR, a venerable call sign in existence for the past 25 years, will not be allowed to die. Thanks to the Explorers and PAARA, K60TR will have a new lease on life.

Loren, WA6ENC.

CONSTRUCTION CORNER: "How to Make an Extremely Sensitive Galvanoscope:

"Procure a glass vessel with as thin walls as possible. The shape should be preferably as per cut. If this cannot be had, a vessel with straight walls will do.

"Next get a piece of barometer glass tubing with fairly thin walls, not thicker than 1/32". The bore should be about 1/16". Supply houses usually carry such tubes.

"Bend the tubing in an alcohol flame to a right angle. Draw the shorter piece out to a fine point by means of alcohol or other hot flame. Break off the point so as to leave an extremely fine opening in the tube (see figure). This aperture should be so fine that it cannot be distinguished by the naked eye. (pg. 9)

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DAVID SHAVER
K6DTX

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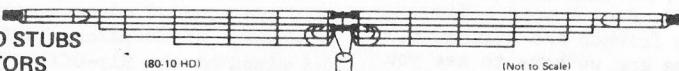
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WORLD'S LARGEST SPECIALISTS IN THE DESIGNING, DEVELOPING
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NO TRAPS,
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NO CAPACITORS



multi-band multi-frequency HF communications antennas
one half the length of conventional antennas
high performance and maximum efficiency
lowest cost/highest performance antenna available
fully assembled and pre-tuned ready for installation

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Available Only from MOR-GAIN Two Models
Specifically Designed for the Novice/Technician Operator.
All of the Features and Performance of the Regular
MOR-GAIN HD Dipoles but Optimized for the
Operating Requirements of the Novice/Technician
Licensee. See Below for Specifications and Prices.

• There is no better antenna at any price . . . W9QIO • I had a Mor-Gain antenna and liked it extremely well . . . K4JMR
• The antenna has worked out well with very good reports . . . W2TVK • I can only give glowing reports about it . . . WA2IRN
• I have used these fine antennas before and see no reason to change now . . . W6BF • It has given me excellent service and results . . . W6CZS • I believe I have "sold" your antenna to almost every ham I have talked to . . . W4AHN • Its performance here far surpasses any other antenna that I have had . . . WASGGS • For several years I have used the Mor-Gain and have been very satisfied . . . K2TSD • Am letting everybody know that it has been doing a good job for me . . . VE2VW • The antenna is performing just beautifully . . . W8WDZ/6 • My 75-40 has performed beautifully and I'm very happy with it . . . WB8DMB
• Another chap said he had also used it and that it was the greatest . . . W4NSP • I do not hesitate to recommend the antennas to others . . . KOSPR • I heard a ham extolling the virtues of your antenna . . . WB0PTM • I worked a station last night and the Mor-Gain was doing quite a job for him . . . WA3TCV

MOR-GAIN HD DIPOLES . . . • One half the length of conventional half-wave dipoles. • Multi-band, Multi-frequency • Maximum efficiency - no traps, loading coils, or stubs. Fully assembled and pre-tuned - no measuring, no cutting. • All weather rated - 1 KW AM, 2.5 KW CW or PEP SSB. • Proven performance - more than 15,000 have been delivered. • Permits use of the full capabilities of today's 5-band xcvars. • One feedline for operation on all bands. • Lowest cost/benefit antenna on the market today. • Fast QSY - no feedline switching. • Highest performance for the Novice as well as the extra-class op. • ST and HD models are furnished with crimp/solder lugs for transmission line connection. • HD/A models are furnished with female coax connector which mates with standard PL-259 male cable connector. • Designed for low height installation: 20-40 feet. • 50 ohm feed point impedance on all bands. • 75-(xx) models are factory tuned for resonance at 3950 kHz; 75-(xx) HD (S/P) models - 3800 kHz, 80-(xx) models - 3650 kHz.

EXCLUSIVE 66 FOOT, 75-10 METER DIPOLES

MODEL	BAND (Meters)	LENGTH (feet)	PRICE
40-20 HD	40/20	36	\$58.25
40-20 HD/A	40/20	36	\$63.50
75-10 HD	75/40/20/15/10	66	\$94.25
75-10 HD/A	75/40/20/15/10	66	\$99.50
75-10 HD(SPI)	75/40/20/15/10	66	\$94.25
75-20 HD	75/40/20	66	\$88.25
75-20 HD/A	75/40/20	66	\$85.50
75-20 HD(SPI)	75/40/20	66	\$80.25
75-40 HD	75/40	66	\$69.50
75-40 HD/A	75/40	66	\$68.00
75-40 HD(SPI)	75/40	66	\$67.25
75-40 HD(DPI)	75/40	66	\$73.25
80-10 HD	80/40/20/15/10	69	\$98.50
80-10 HD/A	80/40/20/15/10	69	\$103.75
80-10 HD(INT)	80/40/20/15/10	69	\$98.50
80-10 HD(INTIA)	80/40/20/15/10	69	\$103.75
80-40 HD	80/40/15	69	\$72.00
80-40 HD/A	80/40/15	69	\$77.25
80-40 HD(INT)	80/40/15	69	\$72.00
80-40 HD(INTIA)	80/40/15	69	\$77.25

Please include \$2.75 for shipping and insurance.

NOVICE LICENSE OPERATION. The MOR-GAIN HD Dipole is the ideal antenna for the new or Novice operator. As the Novice progresses to higher license classes, he can easily re-tune the HD Dipole to the new frequencies of his higher frequency privileges. The HD Dipole is thus a one-time investment. HD Dipoles are available for all Novice frequencies.

"Now fill your vessel with mercury so that it covers the bottom of same. On top of this fill electrolyte prepared by pouring 1 part of sulphuric acid (oil of vitriol) into 10 parts of water. (Oil of vitriol must always be poured into the water, never vice versa, as an explosion might occur.)

"Now fill your finished tubing with mercury about half-way up. Bring the upper part of tube through a cork, into which it should fit tight.

"A silver or platinum wire goes through the cork down to the bottom of the vessel to make contact with the mercury. A similar wire is then introduced in the openpart of the tubing to make connection with the mercury.



"If the two outleading wires are now connected to an old, nearly worn-out dry cell, the thin capillary thread of mercury in the fine point changes its position. The thread will move a greater distance the stronger the current is. Too high a voltage squirts the mercury out through the fine aperture. Too much mercury in the tube has the same effect.

"If carefully built this excellent instrument will record a pressure of 1/300 volts. It works on both direct and alternating current.

"It is as sensitive as a good many instruments costing \$10 and higher and will last for a long while."

The above from a 1906 "Modern Electronics" magazine, supplied indirectly by Erv, W6YPM,

There must be a moral to the story. If the average amateur of today lived 75 years ago knowing what he does—what a whiz he'd be! Hugo Gernsbach, the author of the Galvanoscope article, kept on developing simple replacements for expensive equipment through much of his life. The articles became more and more corny as the readers' mind developed and his own equipment became more sophisticated, but there was always a young and curious mind he reached.

= = =

NOT SO "OLDEN" CORNER: Ten years ago PAARA was preparing for Field Day. Operating from the Club trailer in the Menlo Park Civic Center, only a few calls are still recognized: VE3FZK, W6WQD, W6AQL, W6BFH, W6AIN, W6AKR, WA6OPA, W6DEF, W6TFT, WA6LIJ, W6ISQ, W6FLE, K6RB.

The equipment sounds as antiquated as the Galvanoscope. A Conset Communicator, a Viking II, and Andy's mobile rig.

Word was to arrive a 9 a.m. for a 10 a.m. start.

The program consisted of a movie "The Ham's Wide World" and it was reported Dr. Phillipott showed slides of Lunar soil and its analysis under white light and under various light wavelengths.

New members were elected to PAARA and included Bob, W6WQD, Ken, K6RB, Bob, W6BFH, Fred, W6OWF (now K6YT), Lee, WB6BJB and Ken, K6GDH.

Ten big pages—including the first of a series that was to end in all Club members having identical 2-meter rigs.

+ + +

THE FIVE YEAR CORNER: Articles, comments, projects, station news, exciting events, or other good gonk was sent to Rick, WA6NCX, Editor.

A two line announcement of Field Day suggests it was either well prepared for or nothing had yet been done.

Jack Miller gave a talk on R.C.A. Land Mobile Radio Equipment, complete with samples of gear "for drooling over".

Jerry, WA6LIJ, got a certificate from ARRL for garnering 39732 points and Fred, K6YT, got the CW award for 26660 points, first place in PAARA's part of the competition, for Sweepstakes

Terry, WB6GRZ, (now N6RY) had a construction article for a bazooka antenna for wide bandwidth on 80 meters; Jerry, WA6LIJ, had a H. G. article on HAM TINKER-NEERING.

The back cover had an ad from QUEMNTS.

CCRC CORNER (abridged)

COMING EVENTS IN HAM RADIO

June 10 SCCARA Flea Market 8:00 AM
Quement's parking lot, S. J.

June 14-15 ARRL VHF Contest

June 28-29 FIELD DAY

July 25-27 1980 ARRL National Convention
Seattle, Washington

Aug. 2-3 ARRL UHF Contest

Aug. 30- Sept. 1 ARRL Pacific Division
Convention, San Jose

Sept. 5-7 ARRL Southwestern Division
Convention, Los Angeles

Sept. 13 FARS Flea Market

Sept. 13-14 ARRL VHF Contest

Oct. 4-5 California QSO Party

LAST OF A KIND CORNER? The following construction article has quite a history.

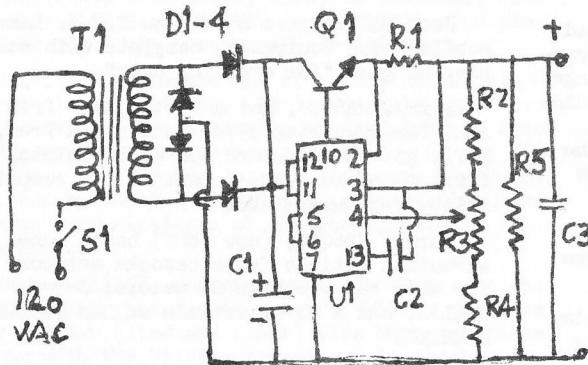
NEED A REGULATED POWER SUPPLY? TRY THIS ONE....

This power supply is a very versatile one in that it may be used as a variable voltage source or a fixed supply. Also it may be either breadboarded on perf board or a printed circuit board may be used.

The current rating of the supply is up to the builder. Only three of the parts are involved; T1 fixes the maximum current available, D1-D4 and Q1 must be capable of handling the current you need.

All but T1 and C1 are available at your friendly Tandy Co. outlet which is better known as Radio-Shack. You may be lucky enough to find either of those two parts in your junk box or the usual Electronic Parts outlet. Radio Shack parts numbers are included for your convenience.

The January 1978 issue of 73 includes an article on page 70 entitled "New Life for Old Transformers". The author explains how to rewind a transformer to give you the voltage and current you desire for a power supply.



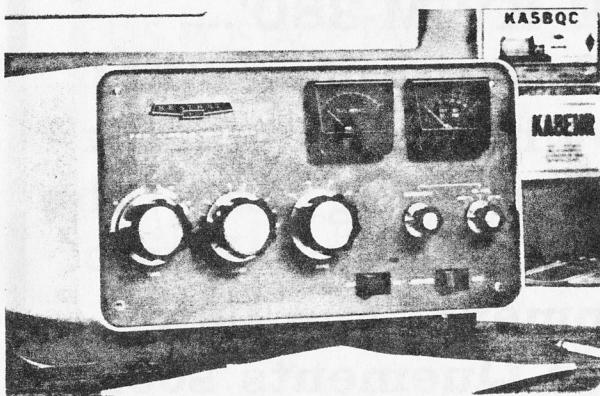
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Heathkit linears fight inflation with more punch per dollar



SB-221 SPECIFICATIONS. Band coverage: 80, 40, 20 & 15 meters. Max. power input: SSB, 2000 W. PEP; CW, 1000 W; RTTY, 1000 W. Driving power: 100 W. Duty cycle: SSB, Continuous voice modulation; CW, continuous (max. key-down 10 min.); RTTY, 50% (max. transmit time 10 min.). Third order distortion: -30 dB or better. Input impedance: 52 Ω unbalanced. Output impedance: 50 Ω unbalanced. SWR 2:1 or less. Front panel controls: Tune, Load, Band, Sensitivity Meter, Switch, Power, CW Tune — SSB, Plate meter, Multi-meter (Grid mA, Rel. Power, High Voltage). Rear panel: Line cord, circuit breakers (two 10 A), Antenna Relay (phone), ALC (phone), RF Input (SO-239), Ground post, RF Output (SO-239). Tubes: Two Eimac 3-500Z. Power req.: 120 VAC, 50/60 Hz @ 20 amp. max. 240 VAC, 50/60 Hz @ 10 amp. max. Cabinet size: 8½" H x 14¾" W x 14½" D.

Get a 20 over 9 signal with the Heathkit SB-221 2 kW Linear

\$619.95

- Parallelled Eimac 3-500Z's deliver top power
- 2 kW PEP on phone, 1 kW in on CW and RTTY
- Heavy duty power supply for reliable operation
- Easily wired for either 120 or 240 VAC

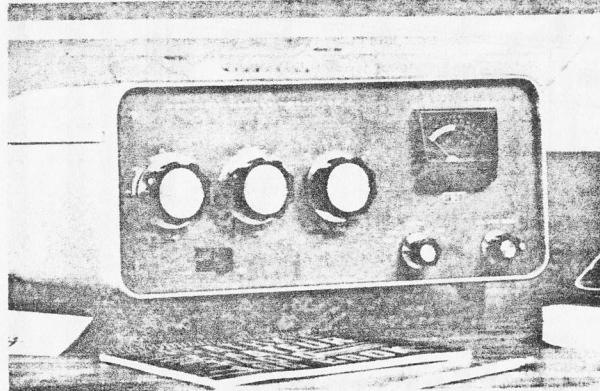
Haven't you lost enough contacts because you can't punch your signal through? The Heathkit SB-221 Linear Amplifier packs a wallop that will get you 20 over 9 reports when the others are down in the noise. And the SB-221 does it at a price that's hard to beat. Now that you're ready to move up to 2 kW power, see why this amp is the one for your shack.

A pair of rugged Eimac 3-500Z's deliver 2000 watts PEP in on phone, and can be loaded to 1 kW in on both CW and RTTY. A broad-band pre-tuned pi-input delivers maximum efficiency with extremely low distortion over the entire 80-15 meter bands. Just 100 watts of exciter drive is all that's required to drive this amplifier to full output. No alignment necessary.

With an SB-221, tune-up couldn't be easier! Just select the band you wish to operate, set the CW-tune/SSB rocker switch to the CW-tune position, adjust both tune and load controls for maximum relative power out — and you're ready to go. Ready with the kind of signal that always catches the new DX, gets your traffic through, and provides reliable year-after-year communications performance.

The SB-221's power supply can be easily wired for either 120 or 240 VAC operation. Zener diode-regulated operating bias reduces idling current for cooler running and extended tube life. The amplifier incorporates built-in circuit breaker protection and a large, quiet-running fan provides maximum tube cooling. Other features include ALC to prevent distortion-producing overdrive; front-panel switch-selected monitoring of grid current, relative power, and high voltage. There's also a separate meter for measuring final amplifier plate current. A great amp with a great price, and it has been accepted by the FCC.

Kit SB-221, Shpg. wt. 66 lbs. **619.95**
HDP-3622, 3-ft. RG8/U Jumper w/PL259 Connectors, Shpg. wt. 1 lb. **4.95**



SB-201 SPECIFICATIONS: Band coverage: 80, 40, 20 & 15 meters. Maximum power input: 1200 watts P.E.P. SSB, 1000 watts CW. Driving power required: 100 watts. Duty cycle: SSB, continuous voice modulation; CW, 50% (key down time not to exceed 5 min.). Third order distortion: -30 dB or better at 1000 watts PEP. Output impedance: 50 to 75 ohm unbalanced; variable pi-output circuit. SWR not to exceed 2:1. Input impedance: 52 ohm unbalanced; broad-band pre-tuned input circuit requires no tuning. Meter functions: 0-100 ma grid current, 0-1000 ma plate current, 0-1000 relative power, 1:1 to 3:1 SWR, 1500 to 3000 volts high voltage. Front panel controls: Load, Tune, Band; relative Power Sensitivity; Meter Switch; Grid-Plate-Rel. Power-SWR-HV; and Power Switch, on/off. Tube complement: Two 572B T-160-L (in parallel). Power requirement: 120 volts AC @ 16 amperes (maximum); 240 volts AC @ 8 amperes (maximum). Cabinet dimensions: 6½" H x 14¾" W x 13¾" D.

Heathkit 1 kW Linear gets your signal through the QRM

\$429.95

- Rugged 572B finals need just 100-watt exciter
- Forced air cooling is ideal for contesting
- Switchable multifunctional metering
- Pre-aligned cathode-input tank circuits

Do you find yourself sitting on the sidelines during a pileup for a rare DX find because your signal doesn't measure up to the challenge? Then move up to the Heathkit SB-201 1 kW Linear Amplifier. It won't put a hole in your ham-gear budget while it's punching a hole through the QRM.

Just 100 watts is all it takes to drive the 201's heavy-duty pair of forced air-cooled 572B's to a full 1200 watts PEP in on phone, and 1000 watts in on CW. So it's ideal for use with most popular transmitters or transceivers. And you have no fear of TVI, because those finals are completely shielded to insure excellent TVI protection.

The SB-201 sports an ALC output to prevent distortion-producing overdrive. And for maximum efficiency, the 201's cathode-input tank circuits come pre-aligned and ready to go on air. No alignment necessary.

The SB-201 has a built-in solid-state power supply which features full circuit breaker protection. A switchable multi-function panel meter shows SWR, grid current, plate current, relative power and plate voltage. For extra operating convenience, an antenna relay automatically switches the antenna to the exciter input when the SB-201 is off.

The sturdy yet lightweight construction of the SB-201 is achieved by using a heavy-gauge one-piece aluminum chassis that is partitioned for extra strength and component isolation. The amplifier's clean open chassis layout assures easy assembly and provides maximum efficiency for year-after-year dependability.

From its front panel right on back to the rear apron, the SB-201 is packed with features that make this amplifier a bargain. Has FCC acceptance.

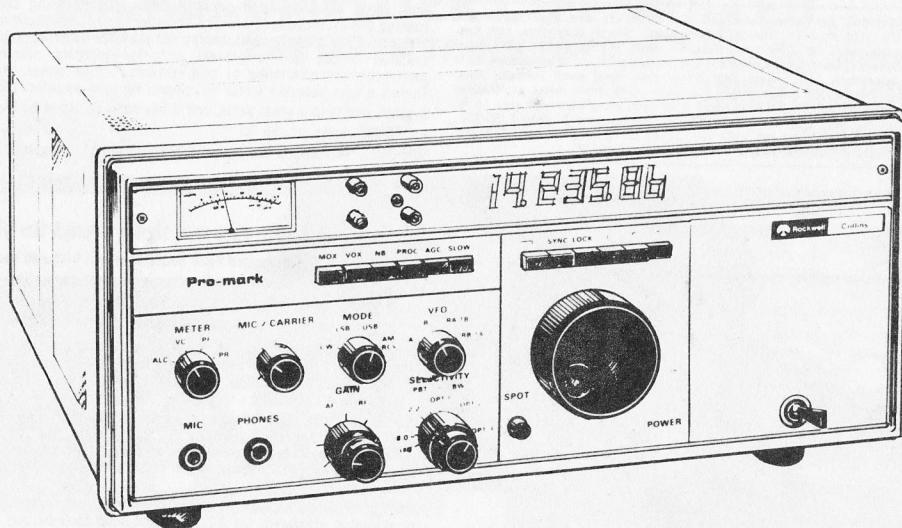
Kit SB-201, Shpg. wt. 47 lbs. **429.95**
HDP-3622, 3-ft. RG8/U Jumper w/PL259 Connectors, Shpg. wt. 1 lb. **4.95**

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