

PACK RATS'



PACK RATS

CLUB CALL: W3CCX

MT. AIRY VHF RADIO CLUB, INC.

CHEESE BITS



MT. AIRY VHF RADIO CLUB, INC. PHILADELPHIA, PA. ARNS
50.2, 145.2, 432.03, 1296.03, Repeater, WR3ACD - 222.98/224.58 Mhz

AFFILIATED CLUB: AMERICAN RADIO RELAY LEAGUE

Meetings: Third Thursday of each month at 8:00 p.m.
Southampton Free Library, 947 E. Street Road
Southampton, Pennsylvania 18966

VOLUME XIX

DECEMBER 1977

NUMBER 12

THE PREZ SEZ

The November general meeting featured several Pack Rat experts talk on home printed circuit board construction. There were as many methods as there were speakers proving for the nth time that "Where there is a will, there is a way." W3NSI, Lynn; W3IIT, Harry; WA3AXV, Ron and Dick, K3IGX showed techniques that ranged from the best commercial practice down to the crudest slap-dash methods. All methods reported had been used in making successful home brew projects. Dick ("The French Chef") K3IGX donned his apron and put on a "soup to nuts" demonstration of the best photographic techniques. The other speakers showed interesting manual methods applicable to short run and one-of-a-kind boards. This excellent technical session was cooked up on short notice by our club members. The informative result is typical of what Pack Rats accomplish working together.

The rescinding of FCC docket 21033 is a further example of what amateurs can accomplish by working together. This docket would have allowed repeater operation on 144.5 to 145.5 Mhz all of 220, most of 420-50 and 1215 Mhz and up. Action on this docket was halted upon the written urgings of the league and a large number of radio amateurs. My VUAC notebook contains several examples of the lively correspondence to the FCC on this docket. The arguments against the action were well thought out and presented. All the on-the-air gripe sessions in the world are not worth one written comment!

The club is currently preparing a petition to the FCC for the expansion of Technician privileges to all of 6 and 2 meters. K3BPP, Walt is spearheading his effort. Walt will appreciate any help you can offer in writing, typing or reproduction. It's time to drop the mike and grab a pen!

73, Tony, W3HMU

* * *

VISITORS AT THE NOVEMBER 17, 1977 MEETING:

WA2ZZF, Paul Wade, Somerville, N.J.
WA3LBI, Jim Malone, Cornwells Heights, Pa.
WB3EFO, Ed Lee, Huntingdon Valley, Pa.
WB3HHO, Paul Randolph, Phila., Pa.

WB3HHP, Paul Randolph, Phila., Pa.
K2KRC/WA3LJT, Frank, Phila., Pa.
WA3IWT, Rich Prim, Feasterville, Pa.
WA3YJ, Al Schnifer, Phila., Pa.
David Soll, Southampton, Pa.

* * *

OFFICIAL BULLETIN NR 680 FROM ARRL HEADQUARTERS NEWINGTON CT NOVEMBER 17 1977 TO ALL RADIO AMATEURS BT: In past years, Christmas message handling exhibits have been very popular club projects. For materials and ideas on setting up a display, contact the Club and Training Department at ARRL Headquarters. Do it soon as mail delivery will slow as Christmas approaches. AR

Pack Rats CHEESE BITS is a publication of THE MT. AIRY VHF RADIO CLUB, INC. Philadelphia, Pa. and is published monthly.

Subscription Rate - \$1.50 per year.

We operate on an exchange basis with other publications. Anything that is printed in CHEESE BITS may be reprinted, unless otherwise stated, provided that proper credit is given

SWAP SHOP ITEMS - no charge.

DEADLINE FOR ARTICLES IS THE GENERAL MEMBERSHIP MEETING.

EDITOR:
W3CL, Harry B. Stein
2087 Parkdale Avenue
Glenside, Pa. 19038
215 - TU 7-5052

PUBLISHER/SUBSCRIPTION MANAGER:
K3GAS, Doc Cutler
7815 New Second Street
Elkins Park, Pa. 19117
215 - ME 5-1078

PRINTER:
K3IGX, Richard Boyle
7915 Bayard Street
Philadelphia, Pa. 19150
215 - 927-6471

PRINTERS DEVIL:
WA3FOF, Ralph Alexander

TYPIST:
WA3TEM, Marsha Lissauer

TRUSTEE OF CLUB CALLS: W3CCX-WR3ACD
WA3AXV, Ronald Whitsel
209 Frog Hollow Road
Churchville, Pa. 18966
215 - 355-5730

AWARDS CHAIRMAN:
W2EIF, Joseph Kilgore
#5 Sunnybrook Court
Stratford, N.J. 08084
609 - 783-9478

CLUB HISTORIAN:
W3CL, Harry B. Stein

OFFICERS: 1977 - 1978
PRESIDENT: W3HMU, Tony Souza
VICE-PRES: W3HQT, Bill Olson
COR. SECY: W3IIT, Harry Brown
REC. SECY: WA3NFV, Dan Mitten
TREASURER: K3GAS, Doc Cutler


DIRECTORS:
K3MXM, Lee A. Cohen (Ex-Officio)
K3MWV, Dick Pierce (2 years)
WB2SZK, Randy Bynum (2 years)
K3IGX, Dick Boyle (1 year)
K3JJZ, El Weisman (1 year)

<u>MONDAY NIGHT NETS:</u>	<u>NET CONTROL</u>
145.2 MHZ 7:30 PM	W2EIF
50.2 MHZ 8:30 PM	W3CL
221.4/224.58 MHZ 9:00 PM	K3GAS
432.03 MHZ 9:30 PM	K3IUU
1296.3 MHZ 10:00 PM	W2EIF


<u>FRIDAY NIGHT ATV NET:</u>	<u>NET CONTROL</u>
439.25 MHZ 7:00 PM	WA3AXV

PACK RAT REPEATER - WR3ACD - 222.98/224.58
Churchville, Pa.


215-674-0300



LAFAYETTE RADIO ELECTRONICS
"Associate Store"
531 Easton Road
Horsham, Pa. 19044




Paul Hamilton, Bruce Clark



PENNSYLVANIA
INSTITUTE OF TECHNOLOGY

PAUL D. MERCADO - W3FBF
FCC AMATEUR Instructor COMMERCIAL
LICENSE INSTRUCTION

(215) FL 2-7100 414 SANSOM STREET
(215) JA 8-6998 UPPER DARBY, PA. 19082



HIGH VOLTAGE

MUSIC FOR ALL OCCASIONS

PI 2 3525 PI 5 6785

CALENDAR OF COMING EVENTS
Syllabus by Lee, K3MXM

DECEMBER

- 1 Co-ordinators Meeting for January Contest, QTH, K3GAS, 8:00 P.M.
- 3-4 ARRL, 160 meter contest. See Page 79 November QST
- 5 1st Day of Hanukah
- 7 Pearl Harbor Day, 1941
- 8 Board of Directors Meeting, QTH, W3IIT, Harry Brown, 3012 Potshop Rd. Norristown, Pa. Directors and interested parties cordially invited. If lost, 584-484
- 10-11 ARRL, 10 Meter Contest. See Page 78 November QST.
- 12 Pennsylvania became a State - 1787
- 15 General Club Meeting, Southampton Free Library, Street Road, Southampton, Pa. 8:00 PM Package Nite in preparation for January Contest. Home Brew Nite, a time to demonstrate and show to your peers what you have been making in all those workshop sessions. Special awards for best in several categories. The Mario Raffle, Frankies Silent Auction, Refreshments. An open meeting to one and all. Invite your buddies to spend a pleasant evening.
- 21 Winter officially begins. NOW is the time for that antenna party..
- 25 MERRY CHRISTMAS AND THE BEST HOLIDAY GREETINGS from all of us connected with Cheese Bits to all of our reader friends out there in Radio Land.
- 30 Gadsden Purchase 1853. OK, now who was Gadsden and what did he buy??
- 31 Straight Key Nite

JANUARY 1978

- 1 HAPPY NEAR YEAR. If you missed our greeting last year, let us start the New Year off with our greetings..
- 5-8 SAROC, Hotel Sahara, Las Vegas, Nevada. Enjoy yourself for us, you lucky guys that can go there...
- 19 General Club Meeting, Final and Secret Preparation for Contest. MEMBERS ONLY.
- 21-22 VHF Sweepstakes, THE CONTEST.... Good Luck To All!!!!

* * *

TID BITS

Congratulations to Betty and Herm (K3GOZ) on the occasion of their 47th Wedding Anniversary.

Earl Garber, N3EG, was transferred from Student Grade to full membership by a unanimous vote at the regular meeting on November 17, 1977.

Pack Rat Gary, W1YHO spent the Thanksgiving Holiday period in the local area. He worked the gang on the Pack-Rat Repeater and checked in on the Monday Night Net from WA3AXV QTH.

Make sure you come out to the January meeting and get your 1977 January SS Certificate prepared by Jo, W2EIF.

Pete Shavney, WA3OVH, assisted by Paul Randolph, WB3HHP, gave an amateur radio presentation to a group of young people at the Southampton Free Library on Friday evening Nov. 4, 1977.

NEW PRODUCTS OF INTEREST TO HAMS

By Lynn, W3NSI

1. UHF RF AMPLIFIER: The Trevor Co. has a tiny encapsulated UHF receiving amplifier which gives a gain of 15 db, with a noise figure of 1.5-2 db. Unit has teflon coax pigtailed for in and out connections, and is tested and ready to go from the factory. A 220 model is available. Size = 1 3/4" x 1 1/4" x 5/16". Price \$29.95. P.O. Box 102, Getzville, N.Y. 14068
2. ANTENNA MATCHING UNIT: Dentron Radio Co. has just entered the market with a very small all band antenna tuner covering 1.8 - 30 Mhz. The unit is small enough to be taken along on vacation to use with wires tossed out a hotel window. Antenna inputs are provided for random wires, coax unbalanced and balanced feed lines. Input from the transmitter is coax unbalanced. Three controls on the front panel control inductance using a tapped toroid, plus input and output tuning. Box is 5 1/4 wide by 6 deep and 2 3/4 high. Power rating is 300 watts. A meter on the panel indicates forward relative power. This is used as a tune-up aid and in use is simply adjusted for max reading. Price \$79.50. 2100 Enterprise Pkwy. Twinsbury, Ohio 44087.
3. BEARCAT #210 SCANNER: A test sample of the #210 was borrowed from Trevoise Electronics in order to run a more complete series of tests. This receiver is probably the best of the recent generation of this type unit. Unlike the Tenalco receiver which will allow just about any frequency to be punched into its built-in frequency generator circuits (no crystals needed), the 210 will print out 'E' for error if a frequency is dialed up that it cannot cover. A much improved system. The slanted front panel is a much better arrangement also. Unfortunately, the unit does not go into the six meter band. However, it does cover the top two Mhz of the 2 meter band and I suspect that the low end will be added, now that the ham repeaters might be moving into that area. The 432 Mhz band is covered from end to end as well as the normally used sections of frequencies for police and fire monitoring. A whip antenna seemed more than adequate to hear most local signals. An external antenna can be added. A small battery is used to hold the memory circuits when the receiver is shut off. In this way, it is possible to dial up all ten channels with various frequencies and hold them in the memory from day to day. An automatic search feature allows the operator to dial up the low and high limits, push a button, and the radio will search from low to high, stopping at any frequency in use. When the high frequency limit is reached, the unit goes back to the low limit and starts over again. A very smooth operating receiver. Price about \$290. Stop at Trevoise Electronics and take a look.

* * *

VHF/UHF REPORT

By Jo, W2EIF

The six meter band has been open a few times during the past month. Activity has not been very good. Some of the openings have been during the day with corresponding lower activity. It seems a shame that the 6 meter band has deteriorated so badly. I am convinced that the TVI problem or just the possibility of it has contributed heavily in addition to the flight of amateurs to the 2 meter FM mode! Maybe if the ARRL and the FCC would buy a known TVI prone set and proceed to make it TVI proof with substantiating data, it would serve as an example of what can be done. Some sort of program is required which will take the wind out of the sails of irate TV viewers who automatically assume that the amateur is at fault. Otherwise, we may see the demise of one of the best VHF bands. Two meters has been sailing along. Not tremendous activity, but continuous. CW activity continues good, as well as SSB at the low end of 2 meters and at 145.025. Some good tropo openings have been noted and several aurora openings. 220 Mhz on Tuesday nites at 8:30 PM usually finds W2EIF, K1PXE, K1FO, W1FAJ, W3EAX and W1OOP operating on CW and SSB. Occasionally, one also hears K4LHB and WA2MMB. 432 continues active particularly on 432 nite which is Wednesday evening. The 1296 net on Monday nite continues active and occasionally K1PXE is worked. WA3JUF has been keeping regular schedules with K2YCO and K2EVJ both in Western New York.

* * *

OFFICIAL BULLETIN NR 679 FROM ARRL HEADQUARTERS NEWINGTON CT NOVEMBER 17 1977 TO ALL RADIO-AMATEURS BT: On October 29, 1977, YV5ZZ and LULDAU set a new DX record on the 2-meter band, without the use of artificial satellites or EME (moonbounce). The record breaking 3135 mile (5044 kilometer) QSO was made after two years of scheduling and broke the previous record of 2540 miles (4087 km) set by W6NLZ and KH6UK in 1957. January QST will carry further details. AR

60 WATT 220 MHZ SOLID STATE
AMPLIFIER

By Ron Whitsel, WA3AXV

Recent success with the construction of a solid-state amplifier for 220 MHz motivates me to pass the information along in the hopes that mobile signals into the Pack Rat repeater will soon improve. HI! This will be a two part article. Amplifier construction is presented this month and packaging of the amplifier for mobile use appearing in a subsequent issue.

DEVICE:

The device used in this amp is Solid State Systems (S.S.S.) DS-1416; a device primarily intended for use at 175 MHz, but works FB on 220 MHz with slightly less efficiency. At an input power of 120 watts, I was able to obtain at least 60 watts output with 12 watts drive from a Clegg FM-76 transceiver. By the way, I was able to get 70+ watts out on two meters with the same transistor with slightly more drive and about 60% efficiency. All this with a single stage amplifier! Only the 220 MHz information is presented here, but the data for 145 MHz is available from the author. The schematic for the amplifier is shown in Figure 1.

CIRCUIT BOARD:

The circuit board layout is shown full size in figure 2. The board is a 5"x2" piece of 1/16" glass epoxy material, copper clad on both sides (one side also o.k.) The technique I use for making simple PC boards is somewhat unique and requires a drill press and a 1/16" or 1/8" end mill. By mounting the end mill in the drill press chuck and carefully setting the depth of cut so that just the copper clad is machined from the board, one is able to duplicate simple layouts very quickly. I use rubber cement to attach the full size layout to the PC board. The tool is then lowered to the board, on one of the lines to be machined, and locked in place. The board is then maneuvered on the table so that the tool follows the outline on the layout. Once completing a circuitous cut, the tool is raised and the board moved so that the next area to be machined is under the tool. This is a very difficult procedure to put into words. In practice, it is very simple and produces a finished board very quickly. The remaining paper is peeled off easily and a quick rub with steel wool completes the operation. Conventional etching techniques could also be used but be sure to leave the ground plane in tact. Another method would be to make small "pods" or "islands" out of PC board material and attach them to the board to form isolated tie points for the components.

CIRCUIT:

The circuit as shown in Figure 1 was taken directly from the S.S.S. data sheet for the DS-1416. New values for the tuned circuits were developed empirically for operation on 220 MHz. The only really critical components are C3 thru C6. These capacitors are used in areas of high RF current and require devices capable of surviving the environment. Don't compromise. Sources for some of the components are shown at the end of the parts list. (More constant output was obtained with a 22 PF unelco capacitor in place of C7. This modification is recommended.)

CONSTRUCTION:

Construction is straight forward and requires only that one follows good VHF circuit building techniques. Component placement is shown in Figure 3, and should be followed rather closely. The input and output connections were made on small ceramic stand-offs. Coax cable can be brought to these points and the braid soldered directly to the ground plane.

HEAT SINK:

The amplifier requires a rather large heat sink to dissipate the unused power (60 watts). A sample calculation is shown below.

$$\Delta T = P_d(\theta_{jc} + \theta_{cs} + \theta_{sa})$$
$$\Delta T = T_j - T_a \text{ where } T_{jmax} = 200^\circ\text{C}$$
$$P_d = 60 \text{ watts}$$
$$\theta_{jc} = .795 \text{ }^\circ\text{C/watt for SD-1416}$$
$$\theta_{cs} = 0$$
$$\theta_{sa} = \text{unknown}$$
$$\theta_{sa} = \frac{\Delta T}{P_d} - \theta_{jc}$$
$$\theta_{sa} = 140 - .795 \approx 1.53^\circ\text{C/}$$

To be conservative and to account for real world effects, I chose a heat sink with a thermal resistivity of about 1 oc/watt. A heat sink that meets these requirements is about 7" long by 5" wide and about 1" high including fins. Consult the catalogs to obtain precise thermal resistance values for the heat sink you use. Thermal compound is used between the transistor and the heat sink. Matching mounting holes are drilled and tapped in the heat sink to facilitate mounting. Full details for mounting the amplifier and its heat sink in an enclosure will be presented in Part II.

TUNE-UP:

Tune-up will require a VHF watt meter (Bird), amp meter, 13.5 volts at 8 amps, dummy load and about 2 lbs of patience.

First, the input network is tuned for minimum VSWR. With no voltage on the amp apply drive from the exciter (12 watts) and alternately tune the input capacitors (C1 & C2) for minimum reflected power. Close to unity match should be achievable. The tuning will change when B+ is applied, but this procedure will get you close.

Next, install an amp meter between the power supply and the amplifier. Apply power and check to be sure no current is indicated when no drive is present. If there is current, check for shorts. The output of the amplifier should be connected to the dummy load through the watt meter. The watt meter is not required on the input anymore, but if you have two it is nice. Reduce the B+ on the amplifier to about 10 volts and apply drive. Peak the output capacitors for maximum output. Do this quickly and keep an eye on the current. Now go back and peak the input capacitors for maximum output. Once you have everything peaked, go back to the output capacitors and retune them so that a condition of maximum output power and minimum current occurs. You will find there are tuning conditions which produce maximum power, but draw large amounts of current. (just like the old tube days, eh?!) This is where you will use the two pounds of patience.

Finally, raise the voltage to 13.5 volts and tweak the tuning once again to obtain the conditions described above. When you are all done, collector current should be 8-9 amps with 55 to 65 watts output. A small fan on the heat sink will keep things cool during the tune-up process.

Part II will detail a method for mounting the amplifier in an enclosure suitable for mobile operation.

(THIS IS PART 1 OF 2)

* * *

T'was the night before Christmas and all thru the shack
Not a VK was sturing, not even in the rack
The stockings were hung by the rig table with care
In hopes that new final tubes would soon be there
With the XL in her kerchief and I in my cap
We had just settled down for a long winter's nap
When up on the roof there came such a clatter
That I sprang to my feet to see what was the matter
I threw open the shutters, and opened the sash
Just in time to see that Santa's sleigh had ran into my antennas with a crash
He spoke not a word but went quickly to work, replacing the tribander with
one that would work

After he replaced the antenna, he disappeared for a sec.
So I went downstairs just for the heck
When what to my wondering eyes should appear
But a little fat man and my new piece of gear
My KWM-2A and 30L1 were finally here
He loaded the rig on 20 and made a series of "v's"
And he saw that the wattmeter was pinning on those might "v's"
Since he had checked out the rig so well he knew it would be sounding like a
bat out of hell

So he went to his sleigh and picked up the mike
And I heard him say as he went out of sight,

"SEASONS GREETINGS TO ALL AND TO ALL NO MORE MIKE FRIGHT!"
(From the Pennarc "Kilowatt")

de WA3FOF

MT. AIRY V.H.F. RADIO CLUB, INC.



ADS

A request from your AD Manager

PATRONIZE OUR ADVERTISERS
Tell them you saw their ad in **CHEESEBITS**. Leave your QSL card with them.
CHEESEBITS is one of the best read local radio class papers. Circulation - 300

B.B.C
ELECTRONICS COMPANY, INC.
"ONE OF THE FINEST NAMES IN THE INDUSTRY"
SPECIALISTS IN
High power RF transistor components
CMOS integrated circuits and associated components.
A complete line of amateur HF and VHF equipment including the best names in the business.
Liberal discounts to licensed amateurs has been, and still is, our policy.

TRADE-INS ACCEPTED

FOR ALL YOUR AMATEUR NEEDS
WRITE - CALL - OR COME IN

B.B.C

Blue Grass Plaza
2417 Welsh Road
Phila., Pa. 19114
Phone 216-464-1880

ROOSEVELT BLVD.

KORVETTE SHOPPING CENTER

BBC

PROVIDENT BANK
WELSH RD. DRIVWAY BLUE GRASS
E 1ST TRAFFIC SIGNAL SWAP SHOP EAST OF BLVD.



AMERICAN RADIO RELAY LEAGUE
HARRY A. McCONAGHY, W3SW/W3EPC
DIRECTOR, ATLANTIC DIVISION

8708 FENWAY DRIVE - POTOMAC
BETHESDA, MARYLAND, 20824

(215) 707-3000

W3CL

HARRY B. STEIN ASSOCIATES

COMMUNICATIONS CONSULTANTS

HARRY B. STEIN

2007 PARKDALE AVE.
GLENSIDE, PA. 19039

NE 7-8320

GEORGE S. VAN DYKE, JR., P.E.

CONSULTING ENGINEER

W3HK

4907 CONVENT LANE
PHILA., PA. 19114

SWAP SHOP

FOR SALE: (From WA3PDV Estate)
Lafayette HE-45A 6 mtr. TR w/xtals \$30
Gonset 2 mtr. Communicator \$25
Hammarlund HQ-145X Rcvr (Bdcst to 30 MHZ w/banspread dial) Includes custom built mounting base with control panel \$75
Drake TR22 w/AC supply & 6 pair xtals \$120
Engineering Research 12 VDC 3A Pwr Sply \$8
CONTACT: Jim Beaver, W3AHZ, 1015 Edge Hill Roslyn, Pa. 19001, Phone: 215-886-8180
WANTED: 88mh Torroid Coils.
CONTACT: Jack Power, W2AXU
Phone: 609-882-8811

FOR SALE: Clegg Zeus - 6 & 2 mtr 150 W. AM Transmitter - \$150. Heath HX-30 - 6 mtr SSB 6360 Final Transmitter - \$100.
WANTED: 2 mtr mobile amplifier (FM), 2 mtr T-51
CONTACT: Lloyd Schoenig, WA2KOI
Phone: 609-886-1467
FOR SALE: Clegg 27B, mint condx. manual and mobile mount with lock - \$200
CONTACT: Caesar Arena, W2SVV, 2377 Pennington Trenton, N.J. 08638- Phone: 609-737-3079

* * *

OFFICIAL BULLETIN NR 678 FROM ARRL HEADQUARTERS NEWINGTON CT NOVEMBER 10 1977 TO ALL RADIO AMATEURS BT: Superseding the information of ARRL Official Bulletin Nr 677 dated November 3, 1977, the FCC has delayed implementation of the new repeater regulations scheduled to go into effect on November 4, 1977. Many parties, including the ARRL, filed petitions for reconsideration in Docket 21033, and pending FCC action on those petitions the old rules will remain in force. In particular, the proposed new repeater subbands, and technician segment 144.5 to 145 MHz, are not yet available for use. Also, mobile and portable auxiliary-link operation is not authorized. There is still a freeze on the filing of applications for new repeater, auxiliary link and control stations, but applications for modifications and renewals of these stations will be processed. AR.



BARRACKS TRADING POST

Camping • Electronics • Canvas

RT. 38 AT RUDDEROW AVE.
MAPLE SHADE, N. J. 08052

HARVEY PRIMOST
609-662-6114



ELECTRONIC CENTER
SCHLUMBERGER PRODUCTS CORP.
OVER 500 ELECTRONIC KITS

TED HALDIS
MANAGER
K3EPK

6316 ROOSEVELT BLVD.
PHILA., PA. 19149

TELEPHONE
815 CU 8-0180



Scott's
Surplus
Electronics

134 E. Park Av. Merchantville, N.J. 08109

Division Of dab Associates Inc.

Pres: Scott Layman

609-665-2466



AMIL S. GUMULA
PRESIDENT

A. G. RADIO PARTS CO.
939 TOWNSHIP LINE RD.
ELKINS PARK, PENNA. 19117
TELEPHONE: 215-886-5100

RCM Authorized
Distributor

HOURS
CLOSED MONDAY
TUE. & THUR. 9:30-6:00
WED. & FRI. 11:30-9:00
SAT. 9:30-5:00

(215) 723-1200
(215) MI 8-2511

ELECTRONIC EXCHANGE

ALL TYPES OF HAM GEAR & ELECTRONIC EQUIPMENT
BOUGHT, SOLD, TRADED & REPAIRED

GORDON R. KITTEL
K3AIG

136 N. MAIN STREET
SOUDERTON, PA. 18964

AMATEUR & CB RADIO
SALES & SERVICE

(215) OL 9-5900

"HAM" BUERGER INC.

Communication Specialists

BOB HERSHMAN
WA3ZID

68 N. YORK RD.
WILLOW GROVE, PA. 19090

Suburbs: (215) 449-2300
Phila.: (215) 528-6120

KASS ELECTRONICS DISTRIBUTORS



DISTRIBUTORS OF
RADIO — TELEVISION PRODUCTS
INDUSTRIAL ELECTRONIC PARTS & EQUIPMENT

2502 TOWNSHIP LINE ROAD
(West of Lansdowne Avenue)
DREXEL HILL, PA. 19026



J.C. R/C HOBBIES

215/659-0770

Hours:
Mon. & Sat. 10:00 — 5:00
Tues. thru Fri. 10:00 — 9:00



MINIATURE FLYING MODELS
Radio Control Equipment & Supplies
Crafts for All Ages
BOATS, TRAINS, CARS & PLANES

23 EASTON ROAD
Willow Grove, Pa. 19090

JERRY COWAN
Owner

K3KTY

215-567-7130

TRANSPORT EQUIPMENT COMPANY

"EVERYTHING FOR THE TRUCK"

JOHN A. TATE
President

2215 - 2217 Race Street
Philadelphia, Pa. 19103

WA2MWB

CARL BARISH
(609) 667-9092

MELCO LABS

Suite 309, 606-110th N.E.
Bellevue, WA 98004

(206) 455-5661

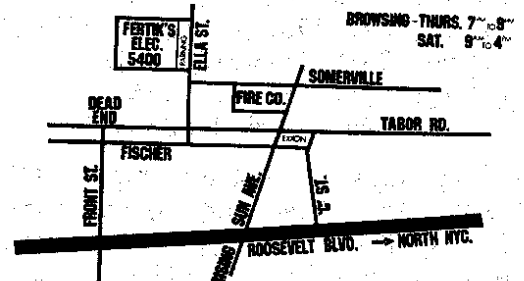
Day-Nite (215) 455-2121

FERTIK'S ELECTRONICS

Components & Equipment

LEON FERTIK

5400 ELLA STREET
PHILADELPHIA, PA. 19120



WB9PUJ

RICHARD E. BOKERN
PRODUCT MANAGER
COMMUNICATIONS PRODUCTS OPERATION
FORT WAYNE DIVISION

1818 PRODUCTION ROAD
FORT WAYNE, INDIANA 46808
PHONE: (219) 482-4411

**MAGNAVOX GOVERNMENT AND
INDUSTRIAL ELECTRONICS COMPANY**



W3KKN

ERNEST KENAS
TOOL DESIGN
MANUFACTURING ENGINEERING DEPARTMENT

THE BUDD COMPANY
AUTOMOTIVE DIVISION

PHILADELPHIA, PA.

People who look for peace get it.

—Guru Maharaj Ji

For information contact:

DIVINE LIGHT MISSION (DUO)
6037 Overbrook Ave.
Phila., Pa. 19131
Office: 215-GR 7-2800

1 Year = \$15
3 Years = \$25

73

magazine

for radio amateurs

PETERBOROUGH, NEW HAMPSHIRE 03458

FIELD MOWING - EASTERN PENNA.

GROUNDSKEEPING -
PHILA. AND SUBURBS
INSTITUTIONAL - INDUSTRIAL - PRIVATE
EQUIPMENT LEASING

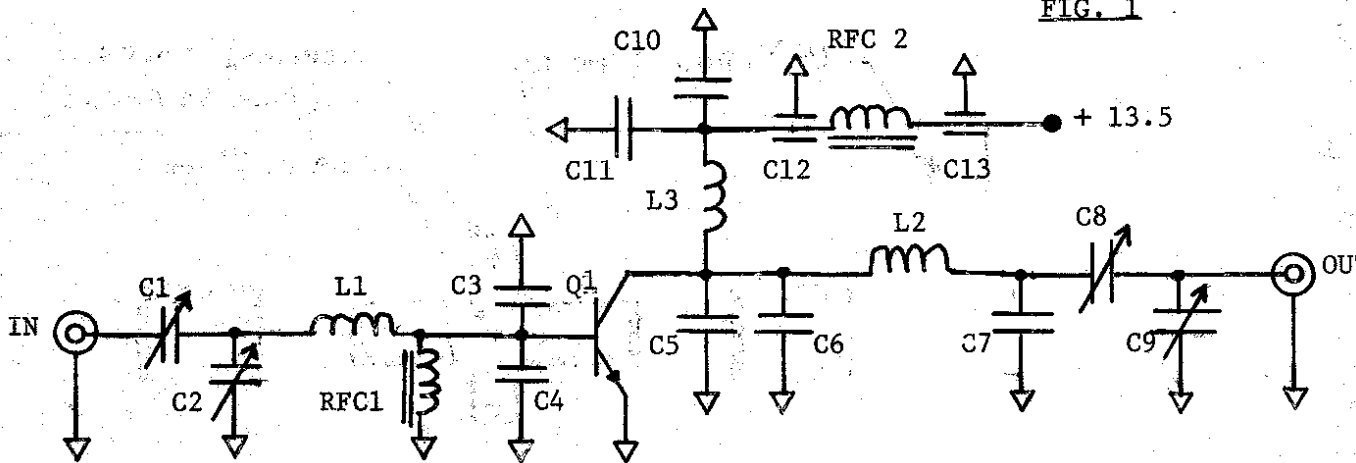
PETER H. SHAVNEY
LANDSCAPING
111 S. EASTON ROAD
GLENSIDE, PA.

WA3OVH

886-1859
OR
933-0451

220 MHZ SOLID STATE AMPLIFIER

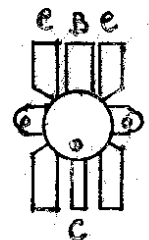
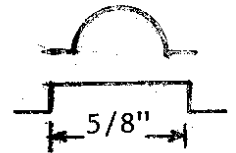
FIG. 1



PARTS LIST

C1-ARCO 423
 C2-ARCO 421
 C3,C4,C5,C6-Underwood J-101-22pf
 C7-Underwood J-101-22pf or
 ARCO 423 (see text)
 C8-ARCO 423
 C9-ARCO 404
 C10- 0.1uf,30 WVDC
 C11-10uf,30 WVDC
 C12,C13- 1000pf Feed-thru

L1- 1/2t, 1/2"dia.,#12
 L2- 5/8" long, #12
 RFC1,RFC2- VK-200 Choke
 Q1- SD-1416



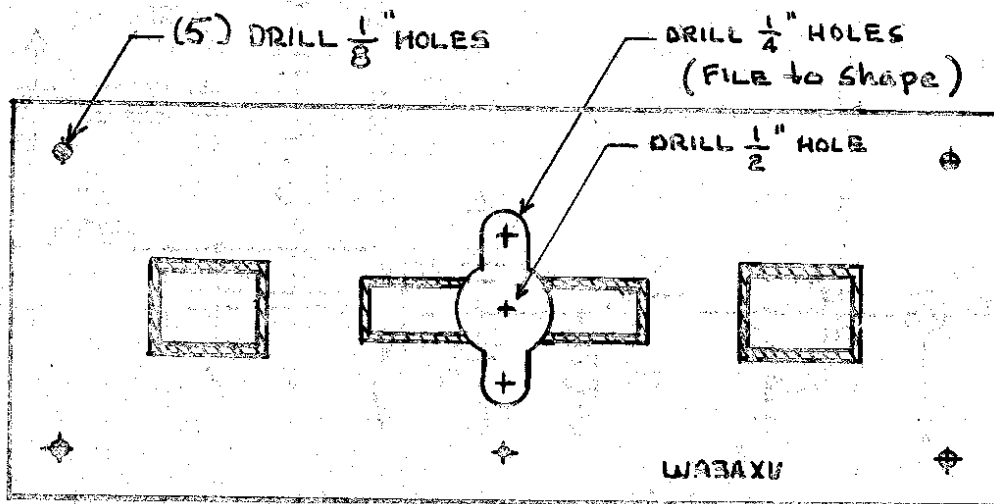
PARTS SOURCE

ARCO CAPACITORS : Circuit Specialists Inc.
 P.O. Box 3047
 Scottsdale, AZ 85257

UNDERWOOD
 CAPACITORS : Webster Radio Inc.
 2602 E. Ashlan Ave. J-101 @ \$1.75
 Fresno, CA 93726

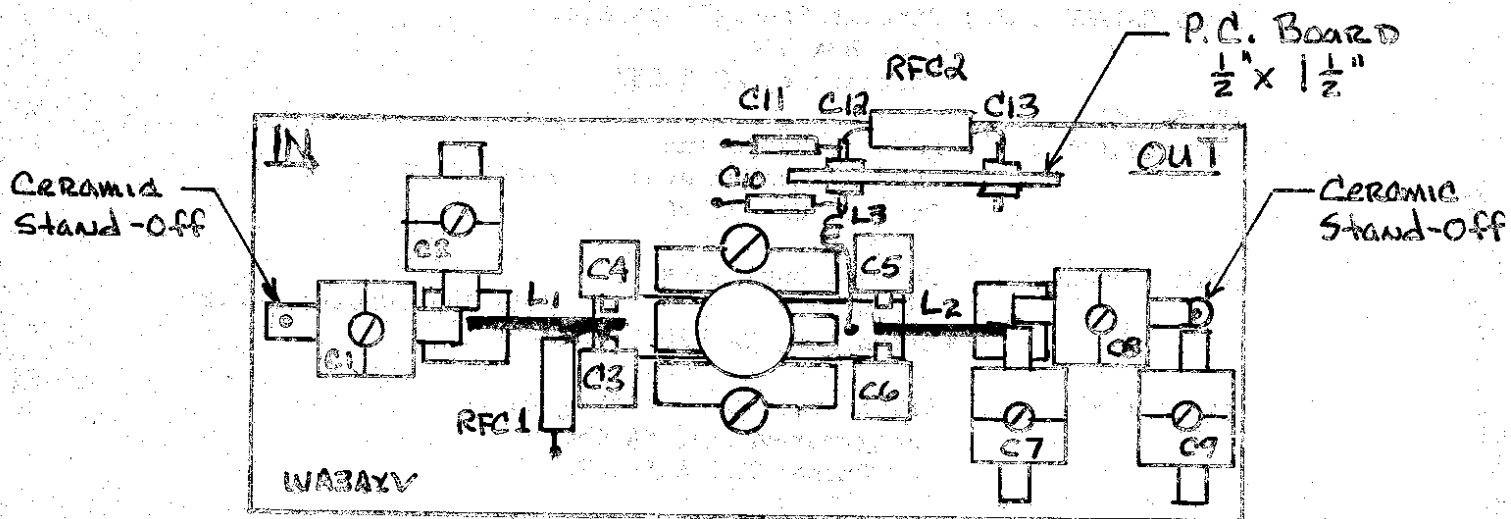
RFC1 & RFC2 : Palomar Engineers
 Box 455 Wide-Band Chokes @ \$.80
 Escondido, CA 92025

SD-1416 : Solid State Scientific, Inc.
 Montgomeryville, PA 18936
 Phone: 215-855-8400



FULL SIZE TEMPLATE - P.C. BOARD

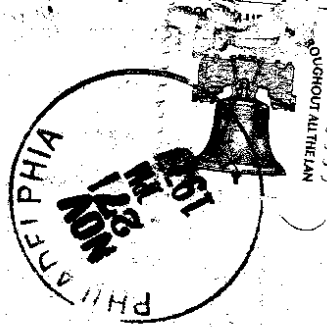
FIG. 2



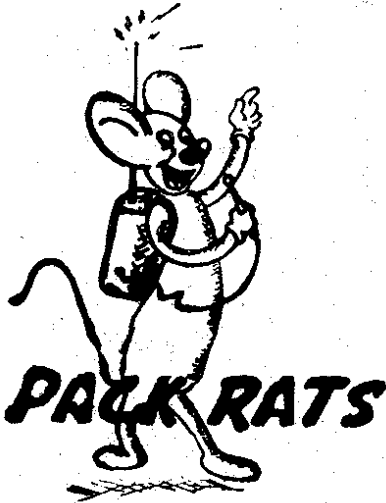
COMPONENT PLACEMENT

FIG. 3

Cheese Bits
2087 Parkdale Ave.
Glenside, Pa. 19038



WA3WAS, STEVE SIMONS
8506 KENDRICK PLACE
PHILA., PA. 19111



MT. AIRY VHF RADIO CLUB, INC.

FIRST CLASS

MEETING NOTICE

"HAM" BUERGER INC.

AMATEUR RADIO EQUIPMENT-PARTS & SERVICE

68 N. YORK RD.
WILLOW GROVE PA. 19090
(215) OL 9-5900

HOURS:
MWF 9:30 to 9:00
TThS 9:30 to 5:30

Bob Hershman, WA3ZID

BUY TRADE SELL on CONSIGNMENT



THESE BRANDS
AND MORE



"W2AU" BALUN

