THE HOLLOW STATE NEWSLETTER

MARCH 1984

NO. 5

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PRICE: $4 for one year/four issues; $8 for two years/8 issues; back issues are available at $1 apiece; currently available issues 1, 2, 3, and 4

MAKE CHECKS PAYABLE TO
CHRIS HANSEN

LAST ISSUE \
PLEASE RENEW.

WELCOME, FRIENDS, TO THE NEWSLETTER that instead of "daring to be different" strives to be exactly the same as things were around 20 or so years ago. It seems that the changeover to all-tube receivers has been widely accepted and our current membership is pushing the 100 mark. Thank you for making this possible through your continued support and your steady stream of information.

A very important and somewhat scary piece of information comes to us from new member DICK NELSON. Anyone out there who owns an R390A should take note as well as immediate steps. Go inside your IF-subchassis and check capacitor C-533. It is a .Ø1 mf paper unit that has a rather low voltage rating; it frequently shorts out and (here's the scary part, please read it sitting down) TAKES THE MECHANICAL FILTER IN USE OUT WITH IT!!! To compound matters Dick knows of one fellow R390A user who, discovering his set was dead, proceeded to switch to various bandwidths in an attempt to get audio, thereby popping ALL of the precious (and terribly expensive) filters because C-533 had shorted out. Dick's recommendation is to replace C-533 with a 400 V or 600 V orange drop Mylar capacitor. I would go further and say that while you have the rig unracked tear in and get rid of all the paper capacitors. These types of capacitors deteriorate with age and (get this) lack of use, like sitting on a surplus store shelf for a while. Orange drops are made by Sprague and can be found at any radio-TV parts store or through many catalog sources. THIS TYPE OF MODIFICATION IS APPLICABLE TO ANY TUBE-TYPE RECEIVER WITH PAPER CAPACITORS IN IT. So, go over your schematics today. I have seen some really impressive modifications done in antique radios where they have taken the insides out of the paper cap and placed the usually smaller Mylar capacitor inside the old paper capacitor case, thereby preserving the original appearance.

Incidentally, Dick Nelson represents Astronomy, Unlimited, 3470 Travis Ave., Simi Valley, CA 93063. Perhaps in future issues Dick might let us know if and how receivers of our favorite ilk are used by amateur radio astronomers. I saw a book on this subject once and found it fascinating. I think that book recommended the old Heath H-312 or some such receiver. Anybody with any ideas send them in.

If you want to hear a lot of experienced people talking about tube-type gear PETER CURRY recommends that you listen to the frequencies occupied by ham radio operators who are into using AM, in contradistinction to most hams who use SSB. Pete says that you might try 1885 (160 M) nights, 3860-3890 (75 M) nights; 7290-7295 (40 M, daylight until wiped out by foreign broadcast stations), 14285 (20 M), approximately 9 PM EST weeknights, as well as 29000 kHz band around dinnertime when conditions permit. These AM frequencies are useful

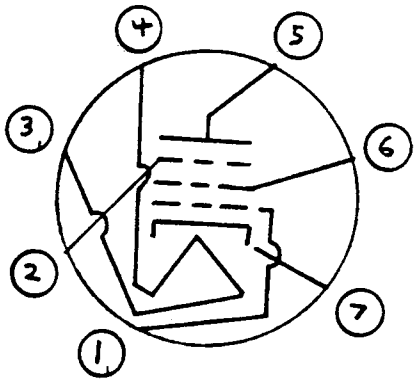
to tube-type equipment users in that these folks tend to prefer using vintage equipment and spend a great deal of time talking about it. If you thought ham AM was dead Pete can prove otherwise, with over 500 loggings.

JOE BUNYARD reminds us of two tried and true methods of reading those faded-out tube numbers. Method one is to put the tube in the freezer for a few minutes and then remove it and look at it quickly. The obvious caution in this case would be to allow the tube to return to room temperature before installing it or performing any tests on the tube. Too quick a change from cold to hot could fracture the envelope. Method two, and a very effective one too, is to dip the tube in plain old household ammonia. This will usually bring the number right up. Some dyed-in-the-wool tube scroungers carry a small bottle of the stuff with them to hamfests and flea markets.

AND NOW A NEW FEATURE (drumroll). Welcome to MEET THE TUBE, an in-depth investigation of a specific tube in common use by all of us tube-set fans. This issue we get to know and love the ever-popular 6AU6 and 6AU6-A. The 6AU6 is a miniature-type tube used in radio equipment as an RF amplifier. It is most often found in high-frequency, wide-band applications, but it is occasionally used as a limiter tube in some FM equipment. What makes a 6AU6-A out of a 6AU6 is the addition of a controlled heater warm-up time (usually around 11 seconds) for use in applications employing series-connected heater strings. The 6AU6 makes its home in a seven-pin miniature socket, and it can be operated in any position, making it desirable for portable and mobile applications. This tube can be found in applications with or without external shielding. In some cases, the external shield is connected to the cathode. This will affect interelectrode capacitances when the tube is used with a triode connection. Tubes of this type are most commonly referred to as "sharp cut-off pentodes."

Filament voltage.....6.3 volts
Filament amps.....0.3
Capacitances uuf
C in.....5.5
C out.....5.0
C gp.....0.0035
Plate supply voltage.....250 volts
Grid bias.....68 ohms
Screen voltage.....150 volts
Screen ma.....4.3
Plate resistance.....1 megohm
Transconductance.....5200 micromhos

6AU6
6AU6-A



No substitution information available at this time but this is a common enough tube. Current prices range from Radio Shack's current lifetime replacement price of $6.29 through Edlie Electronics $2.45. Hamfest price is usually around $1.00.

Incidentally, a little-known service of your local Radio Shack (so little-known that you might have to remind the manager of it) is Radio Shack's Tube Hotline. Radio Shack's current catalog (page 121, in case you have to prove it to the manager) claims over 2000 tubes available. Also, all Radio Shacks are supposed to have tube testers. These can be found in a back corner, usually, and you might want to bring a rag with you to dust it off before using it. However, special kudos must go to the Cherry Hill NJ RS store, as their tube tester is prominantly displayed in the front of the store next to their fancy computer display. Some people can remember their roots, ya know.

We received a letter from a company called the Windsource Co, P.O. Box 280, Wamsutter, WY. Owner Al Smith tells us that they specialize in radios from WLF through microwave. They stock parts as well as complete sets.

While involving myself in another un-radio-related activity I ran across a man who works for Powell Electronics, Inc. South Island Road, Box 8765, Philadelphia, PA 19101. They are THE source for Amphenol, TRW, Kings, and SMA connectors. They stock all current and previous military connectors. They do, in fact, stock the connectors for the R390, R390A, and special applications connectors for command sets, et al. These are all NEW connectors. They are knowledgeable in both civilian and military part numbers, so send them your want list.

FINAL WORD on the tube shield controversy comes through DALLAS LANKFORD and his copy of Army Manual TM11-5820-358-20. This manual states that all tube shields except V201, V206, V505, and V701 can be removed. There does not appear to be any new leakage paths around the mechanical filters with any other tube shields removed.

'lso from Dallas comes this word about tube testers. They are notoriously unreliable for necking tubes. (Do they do anything else? pub.) Of bad, weak, and otherwise defective tubes I have tested on tube testers, about 90% have tested good. The standard approach to tube replacement is replacing with a known good tube. Of course, there is a catch. You need an identical piece of equipment which is known to be in good operating condition. (There we go, I now have an excuse to talk my wife into a second R390A. ed) Fortunately, it usually suffices to replace one tube at a time until the problem goes away. The only case I have encountered where the one-tube-checked-at-a-time did not work was an HQ-180 which slowly lost AGC voltage (resulting in the S-meter reading S(+40 on almost all signals). The problem was traced to two bad gain-controlled IF tubes. When this 180 was compared to my older 180 the AGC voltage on the older 180 was found to be less for stronger signals. This problem was traced to the 455/60 kHz converter (which is gain-controlled). No change in S-meter readings was observed after correcting the problem, but strong signal handling performance noticeably improved. Perhaps the 180's reputation for overloading is undeserved.

This might be a good place to note that we have on hand very few non-R390 articles for publication. For that matter, we are low on articles all the way round. We will need a lot more information if we are to keep from delaying publishing the next issue or substantially shortening it. You are the user group. Please send information on receivers, tubes, or what have you. Your humble editor also could use desperately up-to-date tube substitution data. Send all of the above to: Skip Arey, P.O. Box 421, Mount Holly, NJ 08060. The newsletter you save may be your own.

ANYBODY GOT DATA ON OLD-STYLE CARBON MICROPHONES ?????????

AND NOW, live from the elegant Tube Room, high atop Skip Arey's R390 rack, comes more TUBE SUPPLIERS:

reller TV, 208 S. 2nd St., Augusta, AR 72006 sells used, carefully checked tubes. Send $1.00 for catalog.

Elmira Electronics, Inc., P.O. Box 4320 SS Sta., Elmira, NY 14904 handles all Westinghouse tubes, ships within 24 hrs., and accepts personal checks. Tubes are guaranteed.

Rutan Electronic Sales Co., 164 Mercer St., New York, NY 10012 handles RCA and GE tubes. They do list the 6DC6, 3TF7, 25Z6, and even the discontinued 6BA7. You can call for current price data at (212) 334-9393.

Steinmetz Electronics, 7519 Maplewood Av., Hammond, IN 46324, phone (219) 931-9316. Send $1.00 for catalog.

Electronictown, Inc., 440 7th Av., Box 2048, San Diego, CA 92119, phone (714) 232-9379

Electronictown (East Coast Store) 1617 South Main St.,Box 1000, Wilkes-Barre, PA 18703 phone (717) 824-7859.

Spencer Tubes, RD2, Box 24, Corning, NY 14830 specializes primarily in final amp tubes like the 6KD6, 6LF6, 6LQ6, 6JB6, etc. It sells matched pairs for such applications.

Slep Electronics Co., Hwy. 441, Otto, NC 28763, phone (704) 524-7519 is a source for tubes and equipment. It's almost as good as Fair Radio for most gear.

THIS MONTH'S TUBE AND EQUIPMENT SUPPLIER DATA CAME FROM JOE BUNYARD AND JOHN ARTHUR.

About half a dozen members wrote suggesting that I let everyone who is in love with Collins equipment in on this information. Some of you might recall that I mentioned in a previous issue that Collins was celebrating its 50th anniversary. Well, a fine book has been published about this fact called: "The First Fifty Years: A History of the Collins Radio Company and the Collins Division of Rockwell Collins." It is available for $10 plus $2.75 shipping from: "Spectrum Association, Attn: Judy Jourdan, 105-161, 400 Collins Road, NE, Cedar Rapids, IA 52498."

'IATSAMATTER, BUNKY, ya say ya can't find a schematic or shop manual for your old Sky-Buddy receiver?? Ya say that even if you find a SAMS photofacts dealer who can supply one he wants your first-born child as payment? Well, take heart, friend. You need merely call

the central branch of your nearest large city library. I found out that really big libraries often have a complete set of SAMS photofacts, with xerox machines standing close by. So, make a few calls and you will no longer have to pay $14 for one sheet of paper (last quoted price for the Hallicrafters S-120 diagram)(But, watch out! I once requested the photofact sheet on an esoteric piece of equipment from the Boston Public Library. They brought it out but would not allow me to xerox it -- I had to COPY IT BY HAND!! So, bring your straightedge, circle template, and lots of pencils with erasers. pub)

SO YOU KEEP SEEING OLD HEATH GEAR AROUND HAMFESTS without original manuals? Relief in the form of replacement manuals, parts, and technical support is but a phone call away at (616) 982-3296. I must have called this number dozens of times over the past few years and I have always received expert assistance. Once, when tracking down some power supply data on a very old piece long since out of production, the technician helped me by supplying alternative power supply designs using updated components. The folks at Heath are OK in my book.

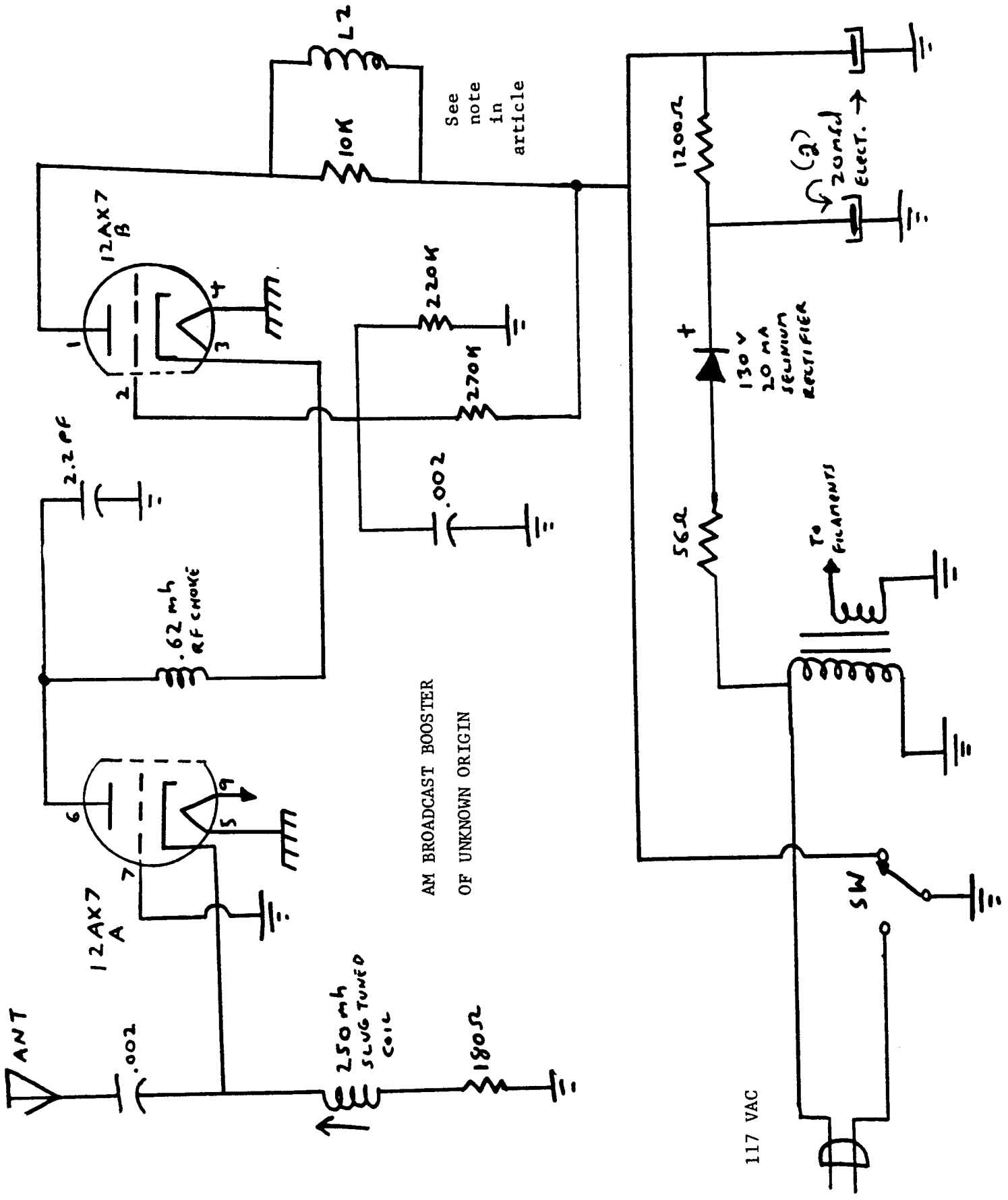
From LARRY DAVIS comes this problem and solution that R390 owners might face. "I've had a problem in my receiver since I first got it of low sensitivity on most bands below 8 MHz. I tried all the normal fixes in the first mixer and first crystal oscillator, and replaced nearly all the components in these circuits with no noted improvement. Finally, in desperation I dragged the receiver to my job, where I have access to a spectrum analyzer (some people have all the luck. ed). I used it to make relative gain checks throughout the front end. I found that I was getting 14db less signal from the RF amplifier into V202 grid on 7 MHz than I was getting to V203 grid on 8 MHz (the normal sensitivity range). This was with all the tuned circuits properly tuned, of course, and I couldn't find any failed components. The problem of excessive loss was in the RF amplifier rather than the first mixer oscillator. If you look carefully at Z204-2 (etc), the second tuned circuit in the RF amp plate circuit, you will see that the output of these to the next mixer is tapped-down from the maximum with two series capacitors (C240-2 and C241-2 in Z204-2). I found that by moving the line going to the mixer grid (through S207) from pin 2 over to pin 3 (the ungrounded end of the 12 pf capacitor C321), the gain went up to a level similar to the bands over 8 MHz. I also did this to all the other under-8 MHz bands with similar good results. I can't explain why I had to go to this extent to get normal sensitivity, but I suggest anyone with a similar problem might try this also.

Another hint from Larry is that a 6BA6 will substitute directly with the 6DC6 RF amplifier and will also give higher gain. You will have to run the RF gain lower for the same results, otherwise, it works well.

This admonishment concerning mercury-vapor rectifier tubes comes from JOE BUNYARD. Mercury Vapor Rectifier tubes such as #83, #816, #872, et al. should always be stored and handled in a vertical position. Before installing, apply filament voltage (5 V) only, for 30 minutes to one hour. This will increase the tube life. If turned off, allow a minimum of 1 minute before turning on again.

Also from Joe this question. What does the suffix "WA" stand for in a tube name, e.g. 12AU7 WA. Joe saw this in some older radio ads and noted a higher price on such tubes. The only thing I can think of, Joe, is that it could be the equivalent of the "A" designation (see "Meet the Tube" on page 2).

A number of you have asked about a tube-type amplifier for boosting an AM broadcast loop antenna. I have not been able to find any circuits that are directly designed for this purpose, but I did find an old junk box schematic that someone drew up for a friend a number of years (about 15) ago. I must say up front that I have not tried this circuit, so perhaps one of the more adverturous members might want to give it a try. This circuit is inductively coupled to your present antenna circuit through L2, and please note that only the filaments are at chassis ground. WARNING: FAILURE TO CORRECTLY ASSEMBLE THIS GROUND SCHEME WILL RESULT IN A "HOT" CHASSIS AND PASS UNWANTED VOLTAGE THROUGH THE COMPONENTS, THE RIG, THE ANTENNAS, AND, WORST OF ALL, THE USER. DO NOT ATTEMPT TO BUILD THIS IF YOU ARE NOT AN EXPERIENCED EXPERIMENTER FAMILIAR WITH SAFETY PROCEDURES. L2 is constructed by experimenting with a loop of 100 turns of #30 enameled wire configured into a loop sized roughly 2 x 5".



AM BROADCAST BOOSTER

OF UNKNOWN ORIGIN

FOR SALE: Allied SX-190, good condition (SWBC only) $135 + UPS
Drake SW-4A, good condition (SWBC only) $125 + UPS
Dymek DR-33C Digital receiver (50 kHz - 30 MHz), with extra Collins mechanical filters, rack mount, and cabinet both provided. $800
FRG7, damaged by fire but repaired by Yaesu and fitted with new cabinet, works great as backup receiver, however, "DX" position of filter doesn't work despite $105 repair bill, $100 +UPS
Collins 51J4 with 3 and 6 kc filters (mechanical) in original Collins cabinet (1 kc filter missing) $300 + shipping.
All available from: Matt Stutterheim; 510 Main St.; Roosevelt Island, NY 10044
(212) 838-5182 (answering machine)

Two ways to improve audio of the R390. First, from DICK NELSON. He suggests that good audio can be had by coming off the diode load terminal on the back of the set (14 or 15 on TB 103) through a .25 mf capacitor to an external audio system. Dick uses an old Dyna preamp and amplifier in conjunction with a good speaker. The second method is used by LARRY DAVIS. He built a synchronous AM detector and a 10-watt audio amplifier which is fed from the AF output jack on the receiver. The results are well worth the effort. The detector system used with the 8 kHz filter gives response nearly like FM on strong broadcast signals such as the BBC. The circuit used comes from the April 1982 Popular Electronics. Your editor tried to get permission to reprint but could not, so you all will have to hit the local libraries for the schematic for this circuit.) Larry also says that it really does reduce fading distortion in SW and BCB stations. This is one I am going to have to build myself.

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Well, there you have it, Campers. Another issue come and gone. But, our stock of articles and materials for future issues is running mighty low. I'll need a lot more data for the next issue, especially for other receivers such as the Hammarlunds and Hallicrafters rigs. So, if you don't want to receive six pages of "Meet the Tube," please send your stuff post haste. Thanks for all the wonderful support to date. I am confident it will continue into the future with our rigs of the past.

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 The Hollow State Newsletter is available at the subscription price of $4 for one year, or $8 for two years. Back issues are available through the publisher at $1 per issue (issues one through five are available. Samples are also available at the same price (the most recent issue will be sent). An inquiry sheet is available for a SASE.

THE NEXT PUBLISHING DATE IS <u>JUNE</u>. GET YOUR ARTICLES IN EARLY. YOUR CONTRIBUTIONS OF MATERIAL MAKE THIS NEWSLETTER POSSIBLE.

PUBLISHER'S NOTE: The mailing list only, now that I have moved to a different computer service bureau, is computerized (and that only for the next two months will be computerized). However, check your mailing label -- if corrections are needed send the label to me at the New York address above. To find out when you are due for renewal, look on the envelope. If the stamped legend: 'Last issue please renew' appears, this is your last issue. Otherwise, look on your label -- you will see the words "SUB EXP #" and a number. The number is the issue number of your last issue (6 is June, 7 is September, 8 is December, 1984).