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888A

Eddystone User Group

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Newsletter

Issue No: 23.

Featured Model:

- The 888A, An Amateur Bands Only Model

Covering Top-Band to Ten Metres in Six Pre-W.A.R.C Bands, Using Twelve Valves.

*A non profit newsletter for Eddystone Users

*Information quoted from Eddystone Literature by kind permission of Chris Pettitt, G0EYO, Managing Director of Eddystone Radio Limited

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ROSSENDALE, Lancs, BB4 9TR

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- Issue 23. -

- Soon to be the Fifth year of EUG, neither Kathy nor I thought it would get this far. Both personal and practical problems have had to be overcome to keep this newsletter going, Kathy has had to bear the main burden. The offer by Chris Pettitt to help with the admin; side means that EUG can go on hopefully to better and bigger things. It is planned to produce a supplement this coming year giving a listing and breakdown of actual recorded faults on many of the commoner models both valve and semicon; types.

- The featured model is an old favourite, the ham bands only 888A, Despite its 1957 vintage the 888A can still make a good showing on today's bands, although it does not cover the newer WARC bands. Two EUG members, licensed amateurs, use it as their primary station receiver, in one case with a 6V6-807 CW only Transmitter built in the sixties and still going strong.

- Several items of interest in this issue, the article sent in by Peter, re resistor problems in his 940. Sheer age means that many of the passive components in our 'hollow-state' models are beginning to fail, sometimes slowly, in other cases catastrophically as in the case of blown electrolytics. A letter from Isaac mentions that on return from holiday he powered up the 830 to get a smell of burning, a dead Rx, and when opened up he found two burnt resistors and an exploded electrolytic.

- The restoring of an 888A, kept over for a few months so as to complement the 'featured model' item, this came from Stan who comments that he is now expecting a further 30 years from the 888A.

- Which to choose, the 840C or the 940 ? - a problem posed by one member, all depends on what you want/expect and can afford, says Joe. He says that some of the more complicated front panels can be off-putting to newcomers.

- Gremlins ? to all of us 'oldies' or 'wrinklies' these were a definite force to be contended with, long before they were made so famous by the Videos. They are still around too ! And don't laugh because that irks them.

- Enjoy your newsletter, if you want to contribute then feel welcome to do so, nice if typed on A4 but I can always type it up for you, may not be in next newsletter but will be held on file to go in later, your name or anonymous as you wish.

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- Featured Model, the 888A.-

- This model came out in 1957 and was for ham bands only, the pre-WARC bands that is, of 160, 80, 40, 20, 10 metres, this latter band spread over four bands of 500 Kc/s each.

Those who still use it find that this is no problem, in fact some have added a convertor for the other bands, thus making it into a triple superhet on the new bands. The high first IF gives good image rejection and the second low IF gives good selectivity.

The 12 valves are a mixture of octal, B7G and B9A types, all still easily available today. The one RF amplifier feeds the first mixer with a local oscillator to give a first IF of 1620 Kc/s, this goes to a 2nd mixer/oscillator to give the 85 Kc/s 2nd IF of 85 Kc/s, an IF stage follows and then an AF/det/AVC stage which feeds the AF output stage. The crystal calibrator is fed to the desensitised output of the RF amp; the BFO at the 2nd IF feeds into the detector stage, although it is rather more than a BFO, it is called an SSB detector, the modern term is 'product detector' and this is the main difference with its predecessor the 888. A noise limiter/ S meter stage is fed from the detector stage. Both BFO and LO are fed with stabilised HT. No internal S meter is fitted but a socket is provided to plug in the model 669 meter. The calibrator can be reset against an external off-air source and the pointer can be reset from the front panel. Standby switching and a variable mute pot; enable the set to be used for monitoring ones own signal. Provision for /p or /m use is enabled by means of the octal socket on the rear for powering from an external source of LT and HT, the unit type 687/1 vibrator pack for instance.

The aerial socket is for 75 ohm type aerials, i.e. the doublet or dipole type and may be balanced or unbalanced feed. This will suit most beam type aerials also.

Front panel controls are,- Bandchange, Tuning, RF gain, IF gain, AF gain, BFO pitch, Oscillator trim, Selectivity, Mains, AM/CW/SSB, N.L, Standby, AF filter, AVC, Calibrate. In addition there are two internal controls for standby sensitivity (mute) and aerial trimmer.

FREE MEMBERS ADVERTS.

- FOR SALE, 770U Rx covers 150 to 500 Mc/s, AM/FM, in very good original condition for £75, or will consider swap for other models, prefer valve types. See below for phone.

- WANTED, Eddystone and RCA AR88 extension speakers also plug in coils for 358X and festoon dial lamps. Please phone 0274-824816.

- FOR SALE, 358X with a dozen coils, does work okay but has been stored in garage so needs overhaul, offers please to Gordon on 021-749-4162.

- FOR SALE, 680X receiver, in excellent condx, no mods or twiddling, needs a good home, £100. Ring 0926-490499 after 6.00 p.m.

- FOR SALE, 680X receiver in original packing box, and in perfect condx, little used but stored many years, has Eddystone mains filter fitted in mains lead, serial number of set is 1639. Offers please to John on 0785-50089.

- FOR SALE, Sangean ATS 803A digitally tuned SW rx, yours for £50 inclusive of p & p, write Herbert Clark, 6 Pentney Rd, Balham, London, SW12 ONX.

- WANTED, model 830 late series (/7 or /9 ?), also EC958. write to John Price, Oxted Place East, Old Oxted, Surrey, RH8 9PF.

- WANTED, EC958 receiver, would do part-ex for my EA12 with cash to make up value, but must collect, Phone Patrick on 0736-330188.

- WANTED, dial glass for model 670, semicircular scales, also mains connector for this set, phone (Somerset) Crewkerne 76143.

- FOR SALE, 1837/2 receiver GWO for £400, also for sale 1590 in good external condx but needs internal repair. Phone George on 0772-704009 after 6.00 p.m. Answerphone other times.

- WANTED, handbook for Taylor Valve Tester type 45A, also handbook for Marconi Testset TF1064/1065, costs and post refunded, all letters answered, reply to A.E.Trayling, DJ/MC, O/T. IHME-ROLOVEN, Hannoversche, Str.6, 30952, Ronnenberg. Germany.

- REPAIRS, Dave Tizard of Weymouth, Dorset, (not Devon as previously stated) will undertake repairs to your Eddystone at a fair price, he can be contacted on phone 0305-772927.

- FOR SALE, polarised connectors for Eddystones, i.e. 840A etc; also 32 + 32 mF_d e'lytics at 350 or 500 v.w, new stock these, plus many of the valves you need. Philip Taylor, 3 Silver Lane, Billingshurst, W Sussex, RH14 9RP, or phone 0403-785250.

- SELL, Eddystone receivers models,- 750, 770S,840A, 990S, EP17R, 840C, 680X, 888, 40A, 640, 770U/2, 940, and one black diecast speaker type 688. Ring Kathy on 0706-218290 after 6.00 p.m. There is one problem MUST COLLECT !!!

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FREE ADS cont;-

- FOR SALE, FAX-1 weatherfax unit, maps, CW or RTTY software fitted, runs from 12 volts and takes AF from receiver output, also Trio valve receiver, model 9R59DS ring Kathy at EUG.
- WANTED, the circuit diagram and handbook for the model 720, a.k.a the 'Yachtsman' receiver, will pay costs of copying and post, reply to EUG.
- HELP, can anybody say whether the DF unit type S.480 was made by Strattons ? - it was marketed by Marconi, write in first place to EUG.

***** NOTA BENE *****

- SINCE EDDYSTONE WILL BE TAKING OVER THE ADMIN: SIDE OF THE E.U.G AS FROM APRIL IT WOULD HELP IF MEMBERS GET THEIR SUBS FOR THE NEXT YEAR, 1993-4, in on time. If you have already paid then no problem it will be sent on by Kathy. The address for EUG from that date will be EDDYSTONE USER GROUP, c/o EDDYSTONE RADIO, ALVECHURCH ROAD, WEST HEATH, BIRMINGHAM, B31 3PP.

- IT MUST BE STRESSED THAT NO PHONE CALLS CAN BE TAKEN, any queries by letter will be split, admin will be dealt with by the volunteers at Eddystone, technical will be forwarded to Ted Moore for reply by mail or in the newsletter, PLEASE HELP BY KEEPING TO THESE GUIDELINES.

LATE, LATE ADVERTS.

WANTED. HANDBOOK (OR PHOTOCOPY OF SAME) FOR
DUMAR MODULATION METER TYPE 1785.
MARCONI SIGNAL GENERATOR TYPE TF1064.
TELEQUIPMENT OSCILLOSCOPE TYPE S51B.
CIRCUIT DIAGRAMS FOR HALLICRAFTERS S38 AND S53A
RECEIVERS.

ANY INFORMATION ON OLD FOUR VALVE RECEIVER CALLED
WAYFARER - USING 2 VOLT H.V.A.C VALVES. POSSIBLY A
CLYNE RADIO OR WIRELESS WORLD PROJECT.

ALL LETTERS ANSWERED + POSTAGE REWARDED BY
A. E. TRAYLING, HANNOVERSCHE STR., 6, 30952 RÖNNENBERG,
GERMANY.

FOR SALE 358X PARTS FOR SALE. METAL CABINET
NO FITTINGS, V.G.C. TUNER MECHANISM, CONDENSER, SHUM
SWITCH CONTROL, VALVE CHECK METER, AERIAL FITMENT,
RF GAIN CONTROLS ETC. DIAL GLASS DIAL, BRASS MAKERS
PLATE COIL RANGE F AVC ETC. SWITCHES. WRITE WITH
OFFERS FOR LOT OR INDIVIDUAL PARTS. JOHN EDMOND
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SCOTLAND. NO CASH, SWAPS ONLY, WHAT HAVE YOU INTERESTED
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FOR SALE. TTOR MK1 ROUGH BUT WORKS £35. TTOR MARK II
GOOD FAIR CONDITION. £75 TEL. NO. JENNINGS. 021 475 8647

FOR SALE 880/1 TABLE MODEL, GOOD CONDITION AND 688
SPEAKER, MANUAL + HISTORY. LITTLE USED £250. ALSO TEST
GEAR SUITABLE FOR VALVE EQUIPMENT VINCENT. TEL NO
0635 49308

IMPORTANT NOTE TO MEMBERS

After the publication of issue No. 24 of the newsletter I will be retiring from the job of doing the administration of the EUG.

With effect from May 1994 the administration of the EUG will be undertaken by volunteers at Eddystone Radio. All correspondence and subscriptions should be sent to EUG, c/o Eddystone Radio Ltd., Alvechurch Road, West Heath, Birmingham. B31 3PP. All queries, comments and advertisements by letter only please. They will not be able to deal with telephone calls on any EUG matters.

Teddy will still edit the newsletter and deal with the technical items in conjunction with Eddystone Radio, so no letters or telephone calls to Moore Cottage please after issue No. 24 has been sent out.

All cheques for 1994/95 are payable to EUG as before from May, 1994.

I have enjoyed the part I played in EUG since 1990 and wish the group well for the future.

Kathy Moore

LATE, LATE ADVERTS CONTINUED

FOR SALE EDDYSTONE 7700 MARK 2 WITH PLINTH SPEAKER. EXCELLENT MECHANICAL AND ELECTRICAL CONDITION, FULLY WORKING, TO SPECIFICATION £150.
EDDYSTONE 840A. EXCELLENT MECHANICAL AND ELECTRICAL CONDITION, WORKING TO SPECIFICATION GOOD ORIGINAL CONDITION £85. TEL NO DAVID 0223 843408.

LAST, BUT NOT LEAST

EDDYSTONES FOR SALE FROM TED MOORE
7700 KITS, 740 £70, 640 £60, 840A £40, 840C £85,
EP17R £90, 40A £130, 888 £85, 670A £80, 1 DIECAST
SPEAKER £15. BUYER MUST COLLECT. TEL NO
KATHY MOORE 0706 218290.

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- Restoring an 888A. -

- Having bought this 888A at the Leicester Rally for £40, pressure of work had meant that it was still waiting when the Christmas Holiday arrived, thus it became a Christmas Project. Externally it looked to be in very good condition, a cursory glance inside gave the same impression, it did work after a fashion, but compared with another 888A I own the performance was mediocre. Having got the chassis out onto the bench and tipped up on its side I could see that a lot of 'work' had been done to the underside of the chassis. V7 socket was empty - two 1n4001 diodes having been fitted across the socket pins, not a good idea as these are not signal diodes to begin with and their characteristics would change the 'S' meter readings also the noise limiter levels.

- Further checks showed that the HT rectifier had also been removed and similar diodes fitted in its place, again not a good idea as no other components had been included, as they should have been, in my opinion a series resistance and a parallel condenser should be used when fitting a semicon diode in place of a thermionic diode. These were also removed and a GZ34 fitted from stock. Wiring around the mains input had been re-arranged so that the fuse formerly in the centre-tap of the secondary winding was now in the primary, live side. This was replaced as per the original schematic diagram. The single pole mains switch, as was when new, was removed and a matching double pole type was fitted, a foible of mine from my radio servicing days, I have never liked mains switching in one leg only. When at rallies I buy up as many toggle switches as my pocket allows, and since they are usually cheap I now have a fair stock.

- Next stop was T5 the audio filter, in order to lower the tone at which it peaked some extra condensers had been tagged across C82 & 83, a possible clue here to the original owner, many professional operators preferred a lower tone when copying CW, 1000 c/s was not good for long periods of copying with the 'lids' on. This was put back to original spec; by simply removing the two add-on condensers, luckily Eddystone made this filter a sealed unit and so no 'twiddling' is possible.

- In this model, and other similar comms receivers the NL heater is run from a separate winding on the transfo, somebody in their wisdom, having replaced the NL valve by semicon diodes had then wired the now spare winding to the local oscillator valve, no need for this to my knowledge as there is no indication on other 888A models I have of any longterm stability problems, caused by heater voltages. I replaced the wiring as per original again.

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888A cont;

- The 85 Kc/s second IFTs appeared to be untouched but there was evidence that the first IFT at 1620 Kc/s had been 'twiddled', tell-tale marks on the top of the core. I did check with the signal gene; that the second IF alignment was okay and then set to, to re-align the first intermediate frequency. Not difficult at all once I had removed the 6C4 local oscillator valve to de-activate the LO. This brought to light the fact that overall gain from V2 to the output was lower than spec; all valves were replaced one by one with valves from a known good 888A, lucky me to have one. This was not the cause although V4 did need to be replaced with a spare 6AJ8 from stock, emission on the Avo valve tester was just about borderline. Stage by stage checks of the voltages as per the table supplied showed that anode and screen volts at several stages were low. five resistors and seven decoupling condensers later I had got all the voltages up to spec; gain was still a bit low but when I retouched the trimming of IFT T1 all was okay. A point here for the less experienced, if you have a receiver with variable selectivity then re-align at max; selectivity, and don't tackle IF alignment, especially on an 85 Kc/s stage unless you have a sig; gene; which is up to the job. Very few of those available on the second-hand market can be relied upon to be any near the displayed frequency at 85 Kc/s, nor at 450 if my experience is anything to go by.

- RF alignment was easy enough since only the Range 1 & 2 showed as being slightly off at the HF end of the scale. The input from the sig; gene; should be kept as low as possible whilst still allowing a reasonable indication on the output meter. The IF trap across the aerial input must not be forgotten as the modern MW band does go up to 1620 and one German station some 30 Kc/s lower has often been the cause of breakthrough here, I can listen to it at a comfortable level when my BC221 is tuned to the station frequency and a short length of wire attached as aerial.

- Little work was needed to the outside of the cabinet, paintwork was very good, the scale glass was cleaned, the knobs were cleaned using a toothbrush dipped in vinegar and then rinsed in warm water. As a finish the case was polished with silicon car polish. Costs were minimal and as the work was considered to be a pleasure I consider this 888A to have been a £40 bargain. I was recently offered one 'needing attention' for a £100 but resisted the temptation.

- Resistor Problems with an Eddystone 940. -

- Recently I acquired a 940, but reception was noisy, and there was a noticeable drop in level when switching from manual to AVC. There were obviously problems as the 940 is noted for its quietness and the AVC was not at all right.

- The input stage is a cascode amplifier especially intended for low noise operation and is the heart of the performance of the 940. However checking is difficult as the socket is completely hidden by the bandchange switch. The operating conditions of this valve are set by the voltage on the upper control grid, pin 2. There are two 100 k resistors of doubtful parentage, as a voltage divider, and if they drift, the EC189 will not work.

- An easy way to check is to pull V1 out and measure with a high resistance voltmeter (a FET meter is ideal), the voltage on socket pins 1 and 2. The voltage on pin 1 should be around 165v, with 80 to 90v on pin 2. If this latter voltage is much outside the range of say 75 - 95v, then the resistors R5 and R6 need to be changed. Furthermore with RF gain full up, the voltage on the lower cathode should be 1.4 volts. This can be sampled at the valve end of the 150 ohm resistor in the aerial compartment. It is tucked right up under the wavechange switch.

- Repairs need patience and a steady hand, and use a fine soldering iron. Unsolder the leads to the socket disappearing under the switch from both coil box compartments. R2 & 4 are terminated in the aerial section. The other leads are in the second section. Filament wiring is yellow, and the anode lead goes to the band change switch. This work is made easier if you unsolder and remove L6, mounted by one screw. Now undo the socket mounting plate, not the socket itself. The nuts are under the switch but can be got at with right angled pliers. Tilt the ceramic condensers to clear the hole. Lift the socket out from the top, and replace the resistors with metallised 1/2 watt types. Keep the wiring tight and the leads short as the original or you will foul the bandchange switch. Whilst you are about it check the cathode resistor R4. Replace the socket, taking care to include the earth lugs under the screws.

- Another problem was R14, a 47 kilohm dropper for V2 screen. It had gone up to 150 kilohm.

- Next I checked the AVC delay volts, pin 5 of the 6AL5, it ought

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to have been 45v positive but registered zero. R44 another 100 kilo-
hm resistor was open circuit, its mate R43 was high. The AVC fault
was serious but not obvious. By having no delay, noise alone was
sufficient to generate enough voltage to bias back all the AVC
controlled stages.

- More faulty resistors were found, R57, 58, and 62, the audio
amplifier resistors were all high.

- Once this work was done the 940 came to life and now has a full
performance, and is quiet on the high frequencies.

- Unfortunately Eddystone made a bad choice of resistor. The type
chosen - Vitrohm brand I suspect - were conveniently smaller than
the ceramic bodied Erie brand previously used, but values above 20K
have been found to be unreliable when carrying even small values of
DC. This problem is likely to be encountered in all models of rec-
eiver using this brand. They can be recognised by their brown rough
textured moulded bodies.

- One last hint, If a bit more audio lift is required the 12AU7/
ECC82 can be replaced by a type 12AT7/ECC81, effectively doubling
the AF amplifier gain, i.e. 6db. Existing resistor values are quite
satisfactory for either valve.

by Peter Lankshear, Invarcargill.
New Zealand. May 1992.

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- Subs renewal, for those who cannot remember. An idea
from several members, there will be a reminder/renewal form in the
last issue of the year from now on. It can also be used by new
members should you want to pass it on.

- A PROPOS THE 888A Featured Model. -

- Letter just in from one reader, queries the trimming of the
calibrator unit to zero beat with MSF transmission. It is the
trimmer cap; that does this Simon, not the ferrite slug. The
slug should be set for best output on the 28 Mc/s band, of the
calibration pips.

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- A 670A repair job. -

Sounds simple doesn't it ? But this 670A was in a bad way after some ten or twelve years in a damp garage. There were rust patches in several places on the outside of the case, where the original paintwork had been damaged. The same on the inside of the case and on edges and corners of the chassis. None was deep and penetrating and so normal car derust solution was used after the worst had been wirebrushed away. All the valves were physically intact and so they were removed and put aside whilst the chassis was cleaned with a Hoover and stiff brush. It pays to use care when doing this around the area of the tuning mechanism and variable condenser. Since the mains lead was now in very poor condition with insulation peeling off, it was replaced with a new plastic insulated type. WD40 was used on all the chassis area which was then wiped clear with tissues. The scale glass was removed and the scale was cleaned carefully so as not to remove any printing. Some 3 in 1 oil was used on the pulleys of the cord drive and light grease on the gearing. RS switch cleaner was used on the rangechange switch and the bearings of the variable condenser. It was also used on the pots, volume and tone controls.

By now I was ready to do some insulation tests on the chassis, prior to applying power. Trouble was found immediately since when a continuity test was done from live to neutral a reading of 11 kilohms was found, remember there were no valves in at this point. Some checks showed that both C60 and C61, in the input 'hash' filter were leaky, new 0.05 mF @ 600 volt types were fitted here (tubular paper as were the originals). C58 & C59 the two 50 mF - 450 vw electrolytics seemed okay on the avo but it seemed certain that some reforming would be needed. A check for chassis to outer case insulation came next and this too was down, a reading of some 34 kilohms across C3 meant another swop of a 0.01 mF paper type. I was able to locate a 750 vw A.C type, polystyrene condenser for this one, a very important point on any AC/DC set. This seemed to be it for the mains insulation side but as the several paper condensers had been 'low' it was thought best to check all similar ones in the 670A. Eventually all 17 were swopped regardless of whether they showed any leakage, the junk box here is always well stocked with these in various values as commonly used in Eddystones. Checks of resistors for 'tolerance' were next, here again many were way out of tolerance, the worst being R8 at 360 kilohm, this for a nominally 200 kilohm item. Eleven resistors had to be swopped including R36 which is across the thermistor, from 560 ohms this had gone up to 1250 ohms and looked somewhat brownish.

The next job was the cleaning with a brass bristled brush of the pins on the six valves, plus a small amount of switch cleaner into the

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socket holes before the valves were inserted. Since no valve testing facilities are available here the only testing had been by substitution in another Eddystone of the UAF & UCH types, a simple heater check had to suffice for the UL41 and DM70.

My normal practice when powering up a 'doubtful' set is to apply 240 volt mains through a series 100 watt bulb, this was done and it was possible to see that all heaters lit up, albeit faintly, except for the DM70. A check on the input/output of the selenium rectifier since I have a particular dislike of these beasts, all seemed okay at this point and the 'beast' was rectifying. The measured D.C voltage across C58 & C59 had been a mere 50 volts at first - remember there was reduced A.C applied at this time. It had gradually crept up and after 15 minutes at the reduced voltage I decided to apply the full 240 volts. This gave me a reading on the avo of 145 volts to begin with but it climbed within a few minutes to 180 volts at point 'S', only 13 volts low from spec; not too bad.

By now there was the normal happy sound of white noise, or pretty near it, from the speaker. A short length of wire plugged into the aerial socket brought in signals on all ranges at a 'normal' sounding level. But a few checks showed them to be off calibration on all ranges. What was worse was that at about $\frac{2}{3}$ of full capacity there was a noise and break in reception on all ranges, definitely the variable condenser. Some checks showed that whilst the plates themselves were not making contact a white deposit on them was visible at this $\frac{2}{3}$ capacity point. Use of a toothbrush and some switchcleaner fluid soon cleared this & when checked the problem was cleared except for poor calibration on the HF end of Band 1 & 2. Using a signal generator it was found that the apparently untouched IFs were still 'spot-on' and only minor 'touch-ups were necessary on the trimmers of the Band 1 & 2 local oscillator circuits. By now the de-rust process had stabilised and the places on the chassis were smoothed down and resprayed with, as usual, an aerosol of car spray paint to match, my best match for chassis is the Honda grey. The same was done for the case using matching spray, as sold for Fords in this case. By now the 670A was in 'as good as new' state and ready to take its place in my growing collection. Total time was about 30 hours and cost was £6.50, as most small components came from the ready stocked junk box, always refilled at rallies.

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- Down to 80.-

Well so the spec says. Whilst servicing a model 670A recently, I spotted the phrase 'good results will be obtained on this model with the mains selection panel set at 110 volts but with only 80 volts applied.' Worth a try anyway and so the variac was hooked up to supply the required 110 volts, the set was checked out for sensitivity on LF and HF range limits. Next step was to lower the applied mains volts via the variac - and the isolation transfo since this is an AC/DC set. Sure enough the 670A played away quite happily at this low voltage, checks showed that overall gain was down, somewhat. It was also noticeable that volume had to be turned up for a normal, equivalent level of output. BUT, the fact was that even up at 28 Mc/s there were signals coming through. On the medium wave broadcast band apart the volume pot being wound up a bit little difference could be found. So it was not just an advertising blurb. One thing that I was reminded of again was that at the 110 volt setting very little heat was developed in the 670A whilst it was operating. Of course most of the heat we are normally accustomed to from an AC/DC set does come from the dropper resistor, which dissipates between 20-25 watts.

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- A Guttled 870, Solid-State Mod gone Bad.-

A recent acquisition is an 870 which has been gutted of all valve circuitry, valve holders included. A start has been made on converting this poor 870 to transistorised operation using modern epoxy cased NPN transistors. I have come across this idea before not only with an 870 but also various other models. So far I have yet to see or hear of any case where this type of conversion has been successful. My plan is to eventually rebuild the 870 as per the original spec; using items actually in stock, or bought when seen at rallies. A concession will be made to permit the use of up to date resistor and condenser types.

Problems that I can foresee are the locating of a suitable dropper resistor, and the correct type of rectifier, here I may have to again compromise and use a modern silicon diode. A start can be made with fitting the valve bases since these are available from the 'junk' box. Next step will be the sorting out and listing of the various passive components, resistors and condensers since again many of these will be ex-stock. More on this in the newsletter when completed.

- EAA91 versus EB91. -

Comments in a previous issue re these two valves being equivalents has brought what must be the definitive answer from Ross Paton in New Zealand. Seems that he has previous experience in the valve production industry, so he ought to know. I quote, "re the item in issue 14 on the subject of EAA91 valves. The original 6AL5 was made in the same size glass envelope as a 6AK5, slightly smaller than the EB91, which is the same height as a 6BA6. The EAA91 was made in the same size, mini bottle as the 6AL5 by firms such as Philips of Holland, Telefunken, etc; The Mullard EB91, Osram D77, Cossor DD6, and Brimar version of the 6AL5 all use the larger 6BA6 size glass envelope. The standard size 6AL5 cum EAA91 has different characteristics from the EB91/D77. The latter has considerably greater current carrying capability, although in its usual applications this would not matter much. What does matter is that you have to use the right one where specified in e.g Eddystones, Murphy B40, these have valve shields for the EB91/D77. "

- Re those Paper Condensers.-

Again from Ross Paton, "Certainly these were not expected to have to last forty or fifty years, but I have memories of many lasting a far shorter time than that. I have fixed 1930s vintage radios which were full of replacement 1940s type condensers. Obviously the originals were not much good at all. I also had to replace all the Dubilier type 'Mil-Spec;' tubular condensers in the Racal RA117 that I am restoring. Every one of these aluminium cased, hermetically sealed, caps; was leaking. My method is to replace all paper types with modern plastic dielectric types and all carbon rod resistors with modern film types. Metal film resistors can be used for replacements around the local oscillator stages and the RF amplifiers and should improve the S/N ratio, being much quieter than the carbon rod types. I did this on my 680/2 when I first got it and am sure this has contributed to the present low noise figure, right up to the HF end of the range."

- Recalcitrant EC10, Mark I.-

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- Returning from holiday to find that my EC10 was dead as a dodo, not my idea of a welcome home. That same evening I found that my FRG 8800 was malfunctioning too ! Must be a clue here. Anyway my priorities were EC10 first, so up onto the bench and open it for a visual check. Took a few minutes to spot the cracked open diodes across the balanced input aerial terminals, fitted as protection against static discharges these DD 006 diodes had apparently been subjected to a fairly high voltage, lightning almost certainly. The problem was that they had not protected TR1 as this too was a perfect example of a blown 'three-legged fuse'. I have a cannibalised EB35 and so was able to remove an OC171 from this and refit it to my EC10. All okay now except for range 5, the LF range which was very weak, just one or two of the stronger BBC signals. Further investigation showed that the IF rejector trap, L1 / C2 was open circuit. Another dig into the old EB35 since this uses the same component. Now the EC10 was back on line, sounding as before. I use the set from an in-loft ten metres loop aerial fed to the low impedance input sockets AE and AI, asking around the neighbours I found that there had been just one very loud clap of thunder several days before my return, this must have induced sufficient potential into the loop to blow the front end of my EC10, moral is of course, next time unplug all aerials.

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- Low Gain Model 840.-

- And low gain it was too, plenty of noise when the AF gain was turned up full but just one or two of the stronger signals could be heard under the mush, and these were spread out over the scale, the local BBC station covered some 400 Kc/s.

- Off with the case and the set was checked over for any visual indications of the fault. The symptoms came up during an evenings listening on a hot summers day, could humidity have played a part in the failure ?

- All heaters seemed to be glowing normally, HT was within the quoted norms, that is 98 volts on C63, manual says 100 +/- 10%. Checks with the Avo were made on all anodes and kathodes and it was only when I got to the anode of V3 the IF amplifier that I came across any discrepancy. Some poking around with the probes led me to the secondary winding of the first IF transformer, it was open circuit, thus leaving the grid of V3 floating. Out came the transformer,

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and then the difficult bit, they are sealed units. A scrap 740 chassis which is kept for just this kind of thing provided me with the required item and having struggled for a while I finally had the thing in situ, soldered up and powered up the set. Much better but the IFT was off tune evidently so a re-alignment was called for.

- Some weeks later after using a really heavy duty, circa 1950, soldering iron the faulty IF transformer was opened up and it was found that the secondary had corroded through at the soldered joint. But this was a SEALED unit !?!? Can only put it down to the flux used in manufacture. Still a $\frac{1}{2}$ inch length of tinned copper was used to extend the wire and a good soldered joint made, all other joints in the unit were resoldered also. The unit was then resealed using my 'Trojan' 150 watts iron again, and to think I had thought of throwing the old iron out on several occasions.

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- Bewhiskered EB37.-

- The title gives the game away of course. Gain had dropped and the noise level had gone up quite considerably. That the problem was in the RF/IF section and not the AF section was evident as noise disappeared when AF gain pot was turned to minimum. I did all the usual checks, visual, voltages etc; but thought I had found it when a tap on the second detector diode with a screwdriver tip caused a cessation of noise, this is a point contact diode and my slight tap must have knocked it O/C, anyway a replacement did not cure the original fault, just brought it back on. The old trick of snipping the 'screen' leads to the OC171 RF amplifier DID reduce the noise, doing the same for TR2 and TR3 cleared the fault condition. That was it, germanium whiskers growing from the collector out to the screen can, a very common fault with these older, first generation trannies. Not having any replacements for the OC171s I have put the EB37 back into service as is, no apparent ill-effects from having snipped the leads. But am making enquiries for some replacements.

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NOW HEAR THIS :

- Tight fitting valve screening cans can cause premature valve failure !!! Several references to this in text books and magazines - apparently it is SO, they cause localised overheating and prevent convection cooling.

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- The 830 series & Piccolo. -

- So many owners of model 830 receivers find when they open them up that the filter crystals for the crystal position of the selectivity switch, are missing, that Eug gets a regular fan mail from these owners asking why the crystals have been removed.

- The 830 sets in question will have been used by the Foreign & Commonwealth Office in their Diplomatic Wireless Service. In this service a complicated data mode of transmission was used from 1962 onwards, and this required a special narrow band crystal filter allied with a very stable receiver - the 830. Piccolo was also used by the RAF Communications Network and one or two private companies, i.e. The Cunard Line.

- Piccolo is basically a radio-teletype code which whilst not using any actual error correcting procedure was able to provide a very low error rate. That it did so, still does in a modern updated version, was due almost entirely to the fact that it is able to allot a 100 msec slot to each code element. Typical error rates of 1 in 10,000 were obtainable with Piccolo, however this was only possible with very stable Transmitters and Receivers.

- In the 830 series the crystal filter used gave a bandwidth of about 370 c/s, the required receiver stability was specified at 1 c/s overall. Not bad for a 1960s valve type receiver. The /9 version does have the facility for crystal control of the local oscillator and possible use of external high stability drive to this stage.

- Why the name Piccolo ? well it does sound a bit like one when tuned in - any music lovers amongst you might disagree here. The actual modulation consists of (in the Mk 1 system) thirty two tones one for each of the combinations in the RTTY alphabet. These tones are separated by just 10 c/s, a difficult job for the filters in the decoder. The effective speed of the system is about 75 baud, not fast nowadays but a good speed in the 60s. It can still be heard on HF but even should you have the required decoder you will find that the traffic is encrypted, try listening on 15.855 or on 16.270 Kc/s for that tell-tale multi tone sound.

- Later versions, the Mk VI is in use today, use fewer tones and the tone spacing is 20 c/s but the basic theory of the system remains unchanged.

- As to why the crystals are missing, well it was simply a case of de-activating the 830s for disposal from Government stocks to second-hand 'civvy' users. You can always get close tolerance crystals to your spec; and refit them, for CW use.

- High Level QRM, don't be Defeatist.-

- The proliferation of electrical and electronic equipment has brought interference levels, especially in town or city QTHs, to nuisance level, in so far as SWLers are concerned. Be the source sodium type street lighting, computer processors, TVs, in house security systems or the vacuum cleaner, the difficulty is first to locate that source, then attempt to eliminate the QRM at source, failing that to reduce pickup of the interfering signal at your receiver whilst not attenuating the wanted signals too much.

- Location and cure at source are subjects best dealt with by specialists as high volyages and irate owners can both be dangerous. At your receiver end there are well tried methods which YOU can check out for yourself at little cost.

- Is the QRM getting into your set via the mains or the aerial system ? To eliminate the latter disconnect the aerial system and turn the receiver gain full up, tune up and around the affected bands, has the QRM gone ? Then it is coming via the aerial. If still audible then it is getting in through the mains and earth system. To eliminate the earth system, disconnect the mains earth and connect an outside earth from a buried earth rod. In fact the modern earthing system is a potent source of interference. It does not go to earth at your premises but is 'earthed' at the substation. If the separate earth cures your problem okay but if not then it will be necessary to fit RF suppressors to the input of your receiver. Some, like the old marine 670C had chokes fitted internally & these are very effective at suppressing mains borne QRM, helped by the two parallel condensers. Similar mains filters can be fitted to any model and will prove equally effective. They should be either in line types fitted close up to the receiver socket or actually 'insitu' types fitted under the chassis, this latter is best.

- In a QTH where QRM is bad and is proved to be aerial pick-up interference the worst kind of aerial is the simple longwire or random wire type, unless it can be located far from the source and fed to the receiver by screened leadin. A balanced type of doublet or dipole will be much better, here the local QRM will balance out in the two arms of the aerial and the wanted signals whilst somewhat weaker will be QRM free. If it is possible for the doublet to be 'cut' for the specific band used so much the better.

- Several queries as to when this came on the market, somebody did tell me that it first appeared in 1943, others quote dates as early as 1936, this last is way out and I believe that it was the year that design work on the 358 may have started. Confirmation of this came from a former Strattons engineer so that seems to be a sure enough fact. The first known advert for the 358, as distinct from the 358X, was in 1938. The first known date for the 'X' version seems to have been late 1941. Same for the /1 version and for the 400 variants.

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- Pre WW II prices comparison with Postwar prices. -

- In 1936 the All World Eight, (see issue 13), cost £27-10-0d, in modern parlance that would be £27.50. The Homelander, (not yet a featured model), cost £12-10-0d or £12.50. In the first case the cost included three coilpacks and no loudspeaker, this item itself was quite costly in those early days. Remember wages in those days would be measured in shillings not pounds. After WWII the 640 was on sale at £27-10-0d also but what a stride forward in technical terms, again this model did not include the speaker which itself cost another £2-17-6d, (£2.87 to you youngsters). Compare that last price to the cost of a type 688 round diecast speaker today. One of our members paid the exorbitant price of £39 + VAT plus carriage and it came to £57. Honest I think that was TOO much, but then as I have always said, prices depend on how much you the buyer need something. Being in the lucky position of having several of this model speaker I am able to be complacent.

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- Awful AF Couplers.-

- Steve writes in to say that he has twice been caught out with this syndrome. His first was in a model 740 where output was nil & a voltage check showed 12 volts on the control grid of V5 the AF output valve. He removed the 0.01 mF mica condenser C40 which couples the signal from V4 anode to V5 grid and did a check on the megohm range of his Avo, no leakage and so he replaced it and tried a new valve, had to buy it too as none was to hand. Still the same with a new EL42. Out came the 0.01 again and a check done with HT on it, this showed up the leakage current whereas the 15 volts of the Avo had not. In such a case always test for leakage with about 100 volts he says.

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- Transformers.-

- Recently the magazine Radio Bygones dropped a 'transformer mart' item where readers with old transfos doing nothing in their junk box, could advertise them, so as to provide a source for those others who desperately needed just such a transfo to get a much loved set back on the air. Lack of reader response was the reason given. Well it does seem to me that EUG members need such a swop or buy/sell corner as so many of you write in asking plaintively 'where can I get a spare transfo for my xxx model'. The readers ads will do admirably for this purpose, no need to wait until you need something yourself, think of others, if you have any Stratton/Eddystone bits - not just transfos - why not advertise them, and make somebody else happy? I do keep a file made up from your letters of bits needed, and past issues have such 'wants' in the ads. Make your prices realistic though.

- Panadaptors.-

- Several queries from members, 'what are panadaptors?' so I guess a few words needed to elucidate.

- Not as one jocular writer said, an external add-on convertor built on a chassis made from a saucepan. The idea was to display, on a cathode ray tube, a band of frequencies centred on a chosen frequency, giving in effect a panoramic display of all the received signals in that band. For HF use it would be say a bandwidth of 100 Kc/s total centred on, say, 10 Mc/s. This would show the MSF signal at centre scan with all the received signal from 9.95 to 10.05 Mc/s on either side of MSF. For VHF the band would be much wider, say, 1 Mc/s, 0.5 plus and 0.5 below the chosen frequency. Not many of these appear on the second hand market so if you do see one snap it up, even if you do not want it you can re-advertise it in the newsletter, somebody else will be delighted to get one.

- Model types? well two most common that I have seen at rallies are the EP17R and the EP20, the first has an input at 5.2 Mc/s to suit the 770 series of receiver, the latter has an input of 100 Kc/s to go with either the 830 series or the EA12 receivers. In the case of the EA12 I kept mine on the 10 metre beacon band, with audio turned down. It was a doddle to identify the various Dx beacons as they faded in or out according to propagation conditions.

- Battery operation of the 'Baby' Models.-

- The EB and EC10 models which are fitted with a battery box to take 6 'D' type cells can be run more economically if operated by a PP9 layer type battery. Several readers have mentioned this and I myself have found that even with some 4-5 hours a day of use the PP9 will give 4-5 weeks of service. The general idea seems to be that the battery box is discarded, a polythene icecream container is cut down and glued to make a holder for the PP9 which then sits inside the receiver, just fitting nicely between top and bottom pcbs. Thanks to John for this gen.

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-Digital Readouts, and Analogue Receivers.-

- There are several models of digital readout available at the present time, some boxed and ready to use others requiring a small amount of wiring up, take your pick. Connecting them is another matter as none of the Eddystone models have a take off point for local oscillator output. This however can be arranged with a minimum of work on the receiver. Stan Davies has an 840C and he has solved the problem by using the circuit shown. Effectively he has lifted the earthy end of the kathode bypass condenser C31 and has fitted a 72 ohm resistor between this and earth (chassis). From the junction of the C31 & 72 ohm he has connected a 150 pF ceramic condenser to a length of miniature coax which runs to a BNC socket on the rear panel of the chassis. The output from here is adequate for driving the digital frequency readout which is simply stuck to the top of the 840C with double sided adhesive tape. No problems over the supply as he uses a rechargeable internal PP3 battery in the DFM - and keeps a spare on trickle charge. On an AC model it would be possible to take the supply from the heater winding, either as is rectified by a fullwave diode circuit or if need be by a voltage doubler supply to give 12 volts.

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-New NDBs on an EB37 receiver.-

- The re-hash of marine NDB frequencies and modes has been a headache for some members who are into QSLing NDBs. Eric is one member who gnashed his teeth recently when returning to his early pastime. Problem - No BFO. Eric decided that rather than swap his set for another he would modify the EB37. A PW article gave him the basic idea and so he now has an EB37 which not only has a BFO but also has RF gain and AVC on/off. He copied the RF gain control from the EC10 schematic, ditto the AVC on/off, a hole in the front panel

20 is available - hidden by the finger plate, this took the RF gain pot. Another hole is available to the left of the main tune control, this took the BFO on/AVC off switch. The dial lights were wired permanently on and the switch removed, a BFO tune condenser was fitted here. As to the BFO circuit, it was a simple single transistor oscillator and was built in 'dead bug' fashion on a piece of plain uncoppered PCB material about $1\frac{1}{2}$ " square. Components all came from a cheap 'tranny' bought for 50 pence at a car boot sale, namely one IF transfo, one transistor, three resistors, three condensers and the tuning condenser. He simply copied the circuit of the original local oscillator in the 'tranny' only used the IFT as the oscillator coil, the VC capacity was considerably reduced by putting a series 33 pF in the circuit. Connection was to the collector of the IF amplifier in the EB37 via a small value condenser - unmarked but an approximate value of 47 pF. The IFT of the EB37 did not require re-alignment.

- Mobile with an 870A. -

- Dennis Fry has a vintage Austin A40 estate car and has run his 870A from a rotary convertor in the A40 for more than 20 years. A heavy duty battery was the only mod needed. The 870A is mounted to the left of the driving position on a purpose made bracket, the ex WD dynamotor is mounted under the bonnet. Operation from a whip on the rear bumper gives satisfactory signal levels and the use of a dynamotor to provide the DC supply appears to be a plus factor as regards valve life. They have only been renewed when tests showed that emission was low, none have failed in service. His main interest is SW broadcasting and he finds that operation from a QRM free site up in the hills can give surprising results for such a simple model as the 870A.

EB35/36/37 & EC10 models.

- Queries from several members as to means of increasing the selectivity of these sets without major mods being done ? Can U Help on this ? If so write EUG in first instance will pass info on.

No Dial Lights ?

- Alan wants to know why the 670A did not have dial lights fitted to it ? Any special reason ? Any ideas to EUG.

- Problems with an 840A -

- Having acquired this set at a Bring & Buy sale for £18 I was not expecting too much from it. My first essay into ownership of a comms receiver for more than 30 years rapidly turned into a DIY servicing job.

- A phones jack of the insulated type had been fitted to the front panel below the RF gain, in place of the standby switch. I thought that this was strange - two phones sockets - and so went looking for the reason. It turned out that this was in parallel with the other but was not a break-jack. This would allow use of say, a morse decoder whilst still listening to the AF on the phones or speaker, it worked successfully too as I found out later.

- HT appeared to be down by some 20 volts, a replacement UY41 cured that problem in no time at all. Next stop was the AVC/BFO switching. The BFO worked okay but AVC operation seemed quite limited, especially on some of the MW stations after dark. After doing some basic component and voltage checks I located a 0.5 Meg resistor R19 in the feedline to the AVC which was reading Infinity on my Avo. A check on a high voltage PSU with the meter on mA showed that the resistor was effectively open-circuit.

- One last problem was that the BFO needed resetting to zero-beat with the white spot on the knob at 12 'o' clock. Not having any signal generator, nor any other testgear besides a rather ancient analogue Avo, I decided to utilise the carrier from MSF, using this to first reset the calibration points on the scales, and then using MSF plus my BFO to set the BFO. I connected the Avo on AC volts as an output meter. Tuning MSF in 'on the nose' - I set the gain so that I had a $\frac{1}{2}$ scale reading on the meter, from the rectified tone on the MSF transmission. Switching on the BFO I tuned it to zero beat, so that just either side of zero-beat the needle on the AVO wavered up and down slightly. Going back off zero beat I set the knob to the 12 'o' clock position and then trimmed the core of the BFO coil to bring me to zero-beat, as ascertained both aurally and visually.

- I now have a good working 840A which has been cleaned up until it looks quite presentable. My first ever Eddystone was an 840A in the 1950s, this one works at least as well.

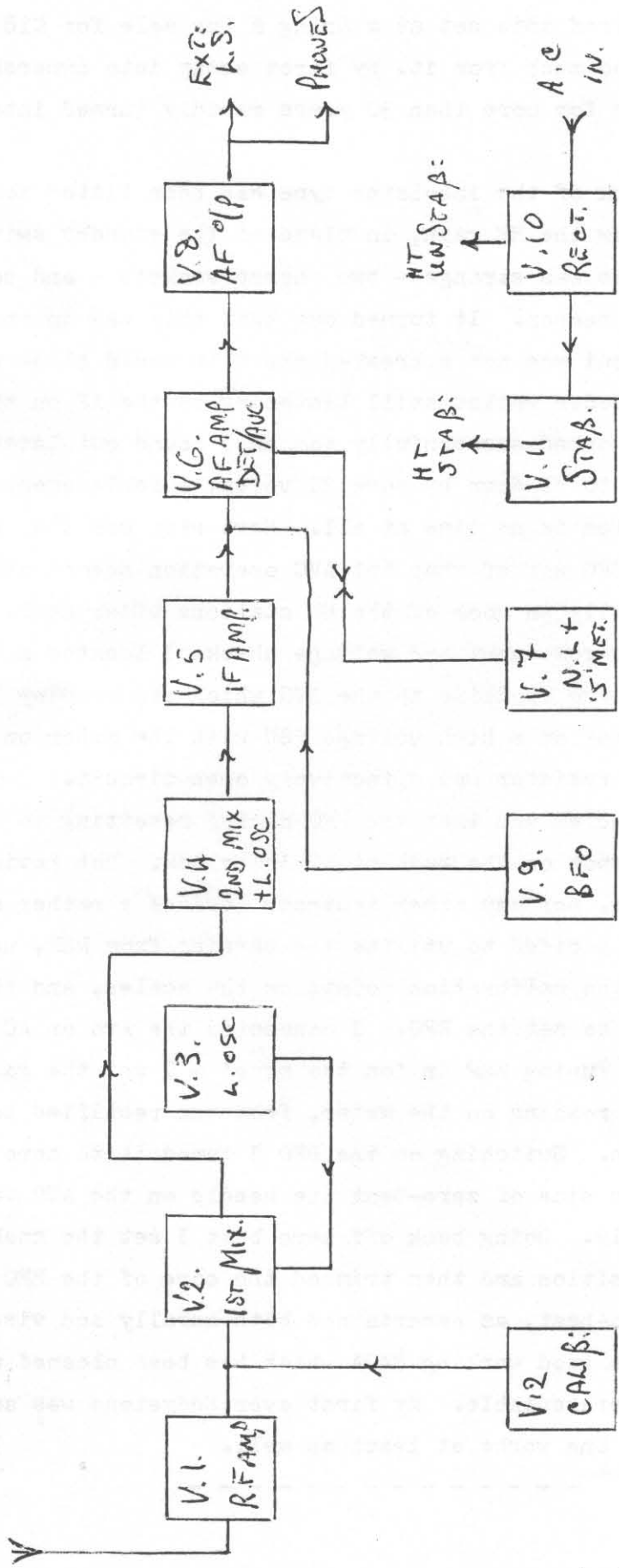
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$V_1, V_5, = 6BAG.$ $V_2 = ECN81.$ $V_3 = 6C4.$ $V_6 = 6AT6.$ $V_4 = ECN81.$

$V_7 = 6AL5.$ $V_8 = 6AQ5.$ $V_9 = 6BE6.$ $V_{10} = 5Z4.$

$V_{11} = VR150/30.$ $V_{12} = 6AU6.$

$E @ 75 \Omega.$



MODEL 888A . CIRCA 1957.
 DOUBLE S/HET, 6 HAM BANDS.

- That is it. Another issue for your delectation, we hope. Should you wish to contribute have a look at the several items sent in by members, the one by Peter Lankshear is a good example, clear and concise. Helps Kathy and myself if typed, but if not well I can type it up.

- Have had some luck with recent ads so my mail tells me. The fact that the readers are specialising in Eddystone does help, most of you have by now a good knowledge of the various models. Some of you are even clued up on the very exotic types too, never ceases to surprise me the nuggets of info that I get in the mail from you.

- Finally a plea re ads, try to get it to us within the calendar month following your receipt of the newsletter if you want it in the next issue, okay ? BCNU es 73.
