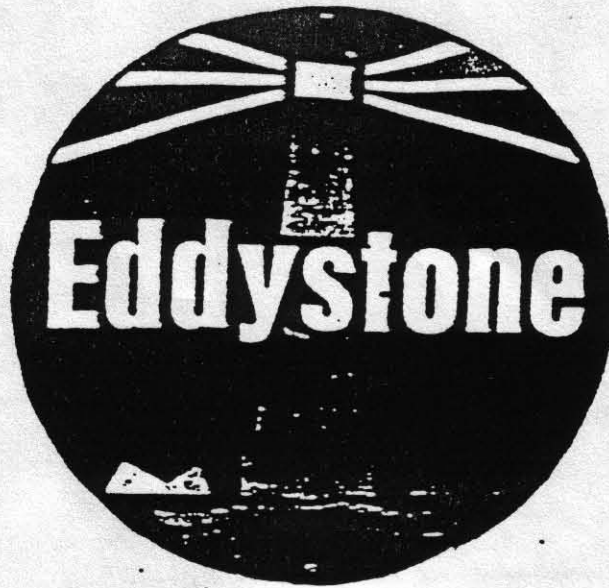


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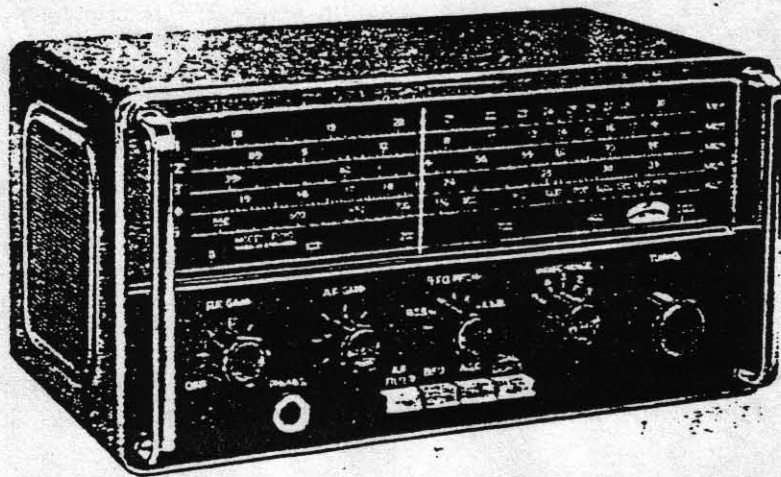
EC10

EC10  
P1 P11



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# Eddystone Users Group



EC10

ISSUE NO. 10.

November / December 1991.

Information quoted from Eddystone Co. manuals by kind permission of Chris Pettitt, Managing Director, Eddystone Radio Ltd.

Featured Model this issue - EC10.

A non-profit-making newsletter for Eddystone users.

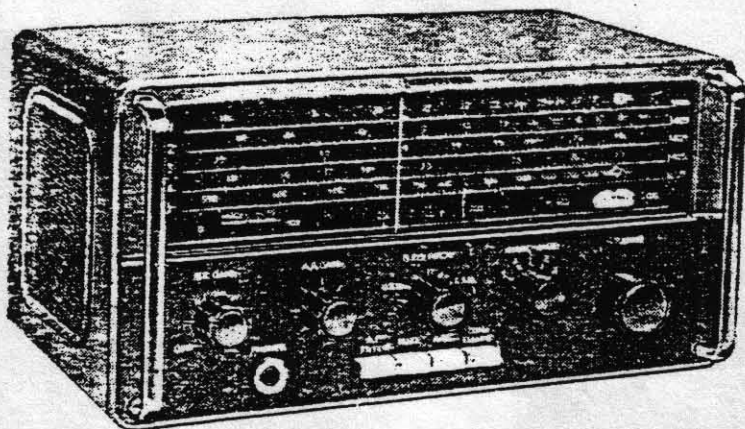
Address all mail -

W. E. Moore, Moore Cottage, 112 Edgeside Lane,  
Waterfoot, Rossendale, Lancs. BB4 9TR



# Eddystone EC10

## All transistor communications receiver



Covering the 1.5 to 3.0 MHz maritime band and providing the maximum listening pleasure from medium-wave programmes, the fully tropicalized EC10 gives reliable reception, in any part of the world, of shortwave broadcasting, amateur, aeronautical and other services in the range of 550 kHz to 30 MHz. The 9-inch tuning scale has a calibration accuracy better than 1% while the logging scale and auxiliary vernier enables station settings to be recorded.

**Primary Features:** Sensitivity better than 5  $\mu$ V for a 15 dB signal-to-noise ratio, independent r.f, a.f and b.f.o controls, powered by U2, car, or boat batteries with optional a.c mains unit available. Light, rugged and housed in two-tone steel cabinet for use under adverse conditions. £53.

Comprehensive information from your Eddystone distributor or: Eddystone Radio Limited,  
Eddystone Works, Alvechurch Road, Birmingham 31. Telephone: Priory 2231. Telex: 33708

A MARCONI COMPANY

LTD/ED57

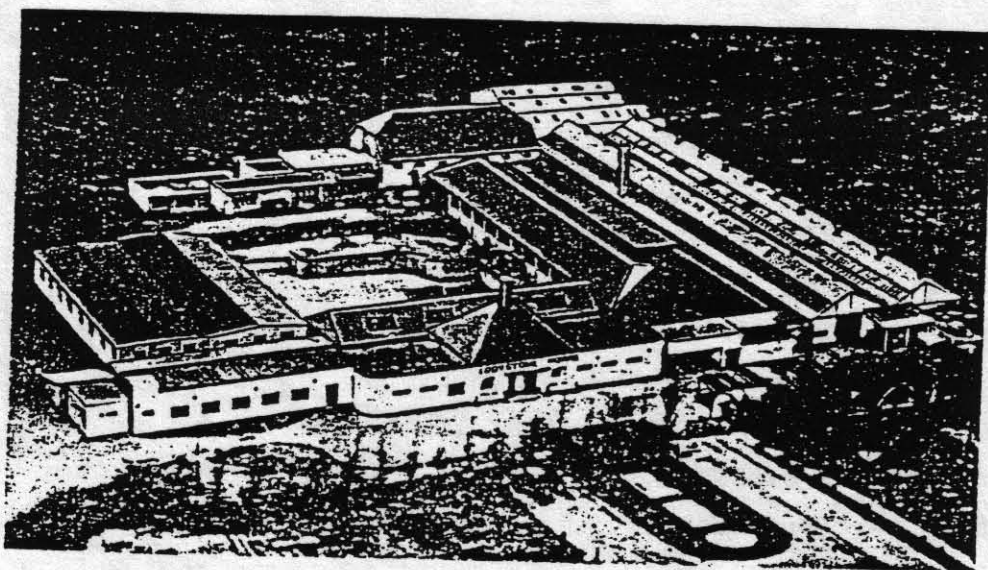
- This Xmas issue features the EC10, a 'baby' Eddystone communications receiver. Very popular even today as a standby station receiver if our members mail is anything to go by. Only the Mark I version is covered in this feature as the differences are enough to merit the mark II being featured on its own in a later issue. The second featured ATU is not in fact 'ours' it was built by a member for a handicapped SWL, the accent in its design being on ease of changing from one aerial to another. And to forestall angry letters, yes it is easy for anybody to have two or even three aerials ! So you live in a cramped area with no vast empty space , One of EUG's members who has but one receiver, a 940, has in fact got three aerial systems which exhibit quite different characteristics one is a bedroom ceiling mounted Howes Active aerial, another is a 20 foot vertical out of the window and hanging down the side of the house almost to ground level, the last is an untuned single turn loop around the curtain rail of the room , about 42 foot of wire. All three are fed by coax and then go through an ATU into his 940. All are good for some bands and the results acheived when switching from one to the other make it worthwhile keeping all three. Back to the well worn matter of an analogue versus a DVX, this is a neverending saga, herewith a few more widely varying volts reading taken with different meters. The matter of Xwords, one letter has been against thir inclusion in the newsletter, in a nice way though. On the other hand there are seven letters which do specifically say that the Xwords are enjoyed, so here's another. Many of the letters we receive at EUG ask for period ads, quite a few ask for more about the company in it's early days, just as many are interested in the company during WW II, here I must mention Tor Narthinsen from Norway. There will be an item on Strattons in the WW II period Tor, it is in preparation, most of it from the horses mouth, Tor has sent another load of info for use in the future issues, he must have plenty of spare time ! One matter brought up in Tor's letter is the 770M, apparently an early version of the 770R but I have to confess my ignorance, never having seen one in the flesh, just a photo of of it. For those crying out for info on the various Panadaptors there is an ad for one in this issue, will publish others soon. Our friend in Burnley , P.Kirkup, who got one for a bargain price of £20 is now looking for a receiver to use it with. Enjoy your Xmas & New Year holiday, Kathy and I hope that this newsletter will put some added spice into the Xmas season, when you cannot eat anymore retire to your Eddystone and do some SWL-ing.

-----

1946

# EDDYSTONE

## RADIO AND ELECTRONIC COMPONENTS



WETTING RADIO  
 14, GORNO STREET,  
 LONDON, W.1.

MANUFACTURED BY:

**STRATTON & CO. LTD.**

EDDYSTONE WORKS, BIRMINGHAM 31  
ENGLAND

TELEPHONE:  
PRIORY 2231/4

TELEGRAMS:  
STRATNOID BIRMINGHAM, TELEX

TELEX:  
33708

- Featured Model, EC10.-

- This is one of the so-called baby Eddystones, similar in styling to the models we are all used to but about two-thirds size. At 6 2/3 x 12 1/2 x 8 inches and weighing 14 pounds with either internal battery box or mains power supply, it is an ideal travelling communications receiver. Don't be put off by it's diminutive size, as front panel controls include separate RF & AF gain pots. BFO, five band range switch, main tuning, power switch, phone jack, AF filter switch, AVC switch, and a push on dial light switch. The cabinet and front panel are of solid steel construction with a typically Eddystone slide rule dial of eleven inches, clearly marked out over the range of 550 Kc/s to 30 Mc/s. A logging scale & micro logging dial in conjunction with the 110 to 1 ratio tuning mechanism allows very close resetting accuracy at all frequencies. The usual Eddystone flywheel tuning mechanism with its silky smooth operation and no backlash are just as effective as on the other full size models. Reception of AM, CW, & SSB are catered for by the ten transistor plus three diode circuitry. The zener diode serves to stabilise the supply to the RF, LO & BFO stages. This also helps provide sensibly constant performance with falling battery voltage when running from dry batteries. A variety of aerial types are catered for by the different sockets on the rear panel. A telescopic whip, a random long wire, or a doublet type can be used. Output is to a built in 5 inch speaker, to an external 3 ohm speaker, or to low impedance phones. 900 milliwatt at maximum of 10 percent distortion is the rated output. The audio filter is fixed tuned to 1000 c/s and for CW reception it provides 6 db bandwidth at 100 c/s. For an early 1960 model the AVC response is quite acceptable, an 80 db change in input signal gives less than 12 db change in output. The five ranges cover 550 to 1500 Kc/s, 1.5 to 3.5 Mc/s, 3.5 to 8.5 Mc/s, 8.5 to 18 Mc/s, & 18 to 30 Mc/s. The IF is 465 Kc/s and there are 5 tuned circuits at this frequency providing adequate selectivity. At 9 volts from six 'D' type cells or from the type 924A power unit, the current drawn is 36 mA quiescent or 77 mA at 50 mW output. At 500 mW output the consumption does go up to 180 mA. Aerial impedance on the four HF ranges is an approximate 75 ohms whilst on the LF range it is about 400 ohms. Sensitivity is better than 5 microvolt for 15 db S/N ratio on the four top ranges whilst it is 15 microvolts for the same ratio on the LF band. IF selectivity is given as better than 6 db at 5 Kc/s off and 40 db at 25 Kc/s off. IF breakthrough is never less than 85 db down. Image rejection is 20 db at 18 Mc/s and 50 db at 2 Mc/s, the calibration accuracy is better than 1 percent with a stability of 1 part in 10,000 per degree centigrade. The RF section comprises 3 off OC171 transistors as RF amplifier, local oscillator and mixer stages. IF amplification is catered for by two more OC171 types, TR4 & 5, three double wound IF transfos provide a high degree of adjacent channel selectivity at 465 Kc/s. An IF

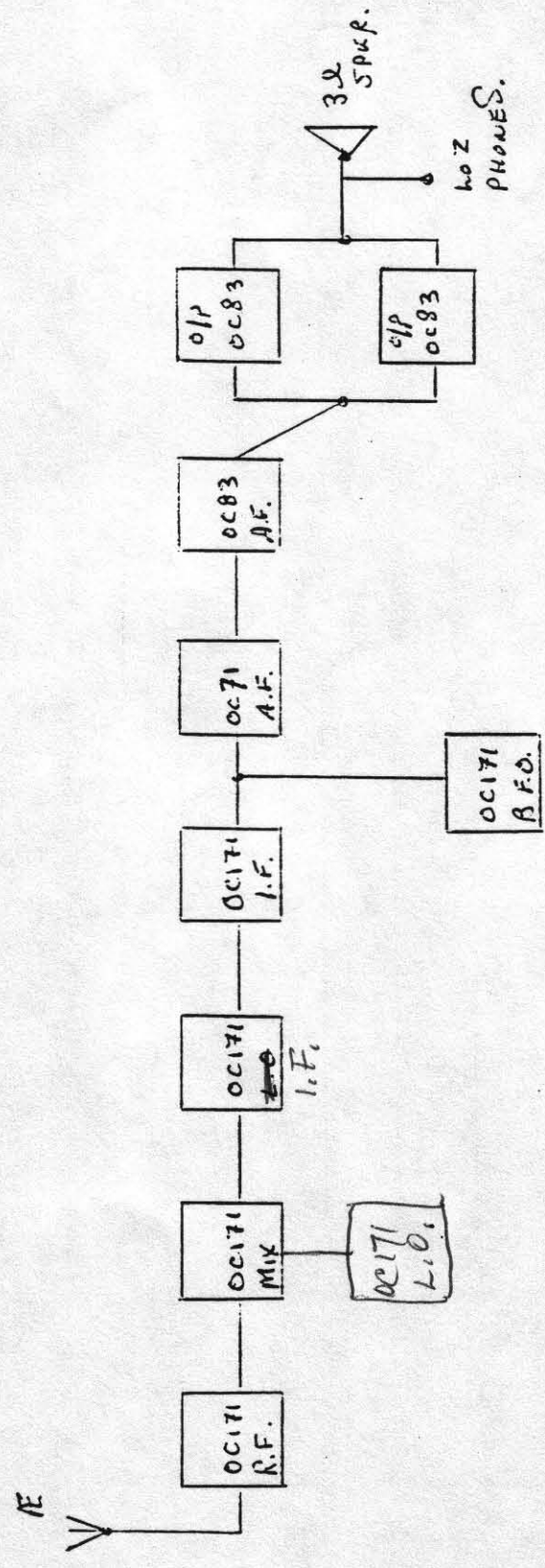
4  
reflector wave trap is fitted in the aerial input circuit. For CW & SSB work the BFO oscillator is another OC171 and this is injected into the detector stage, as a locally generated carrier. This is fed by the zener stabilised supply at 6.5 volts as is the RF & LO. The 1Kcs audio filter is a high Q resonant circuit and may be switched at will, in or out, between TR7 the AF pre-amp and TR8 the AF driver stage. The push-pull AF output stage operates in class 'B' to keep the quiescent current consumption to a minimum for battery use. Two OC33 types are used in this stage. All transistors are PNP types as was normal in the early sixties, and a positive earth supply is used. Either the supplied battery box may be fitted internally or, when this is removed the mains power unit takes its place. This caters for 120 to 240 volts operation. A type 945A PSU can be bought which will run the EC10 from 12 or 24 volt DC supplies. Ideal for mobile or marine operation. The production of this model ran from late 1964 for the early basic EC10 to 1974 for the EC10 Mark II, and the EC10M which was a MIMCO special model. All told 8 variants are known and these cover table or rack mount, with or without speaker, with switched crystal position and the MIMCO badged model number 6689.

-----  
- Wide Band Dipoles. -

- A type of aerial not seen often these days is the three, or multi, wire dipole which may conveniently be fed by 300 ohm twin balanced downlead. (Yes it is easily obtainable, it is stocked by RS Components.) The spaced triple doublet type of aerial is ideal for coupling to the balanced input of an Edystone, ensuring that locally generated LRM is balanced out in the input stages of the receiver. If fed through a balanced AFU unit it is possible to arrange switching for the two downleads to be paralleled so as to use the aerial as a 'T' configured system. In this case the connection between E & AE must be made. Dipole directivity is much less noticeable with these wide band doublets. A sketch for a typical type of three wire doublet is in this issue.

-----  
- Propagation Effects. - On long waves conditions vary less between day and night than on the shorter wavelengths. On both medium and short waves 'skin effect' can increase the range of a transmitter to a remarkable degree. Distant stations, inaudible or just about audible may become quite strong signals during the hours of darkness. During spells of good conditions many weak US utility stations become audible on short wave, and medium wave B/C stations across the Atlantic become audible late at night. On the shorter waves reception of distant low power signals becomes more reliable as they are reflected from the ionised layers in the upper atmosphere. The reflecting power of these layers varies according to the level of the radiation from

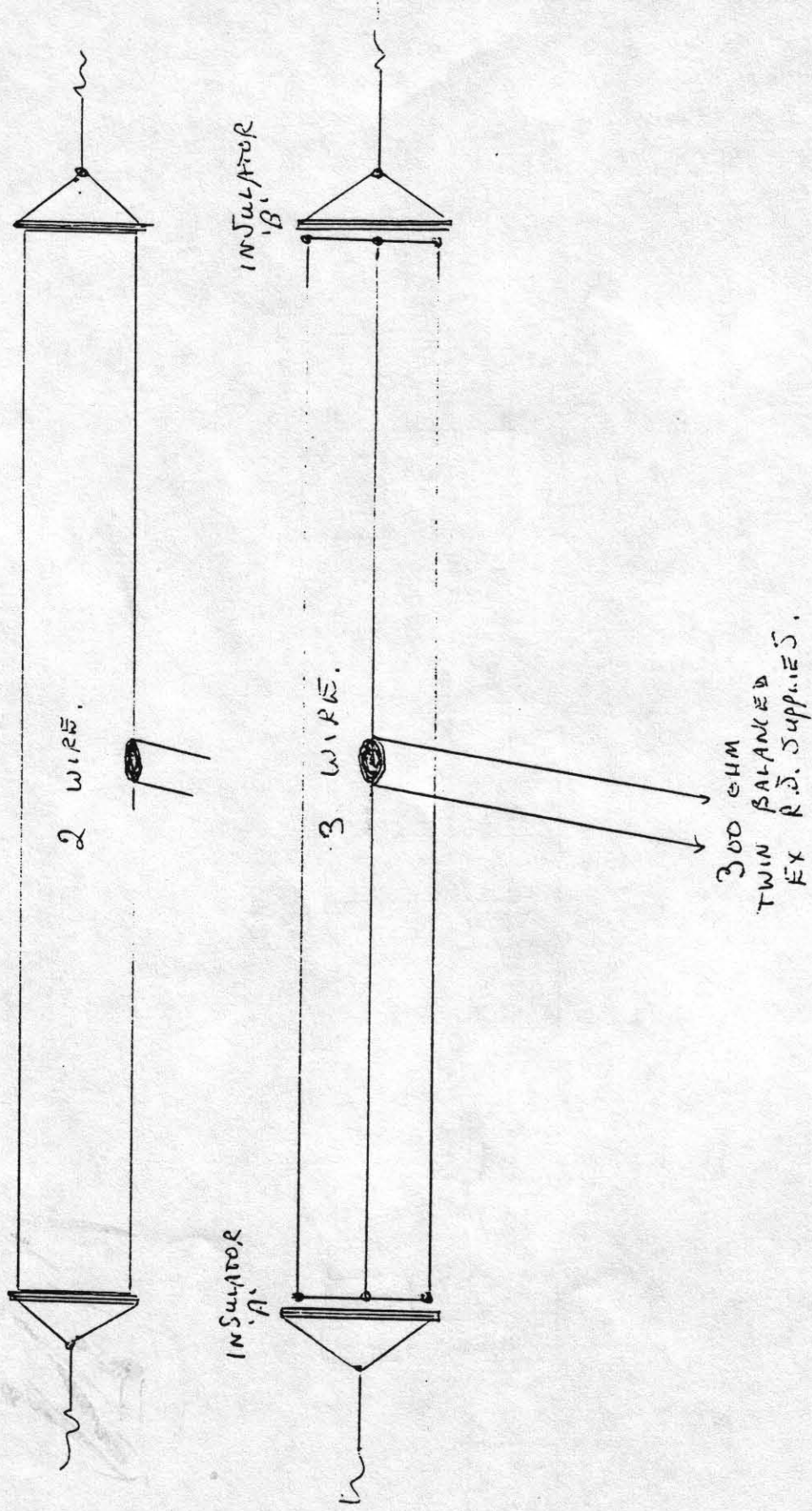
10 TRANSISTOR, 5 BANDS, 550 KC/S TO 30 MC/S.  
 I.F. 465 KC/S.



\* POWER SUPPLY # 924 FOR  
 240V. TO 9V. OR  
 6 x "D" CELLS IN  
 BATT. BOX.

MODEL EC 10. - MINI COMMS RCVR.

WIDE-BAND FOLDED DIPOLES,



SEE TEXT THIS ISSUE.



7

the sun and the height of these layers above the earth also varies from day to night. A further variation in the ionisation level is more long term & is due to sun spot activity, this is the so called eleven year cycle. We are about at the peak of this cycle now and geomagnetic storms causing a complete or partial fade out of radio signals can happen with little or no warning. If you do switch on and the bands are seemingly dead do not just assume that your radio has gone on the blink ! If possible ring a friend & get him to check , fire up another receiver if you have one, otherwise be patient and wait a few hours. If local MW signals using ground wave paths are okay then that is another good indication that your RX is okay and the sun is to blame.

-----  
- Intermittent faults.-

- With an intermittent fault, where for instance the gain or output of a receiver increases or decreases at random intervals some less experienced types tend to simply change every component until the fault hopefully just goes away. A more experienced engineer will do otherwise. He will either put out bait, or gifts to placate those gremlins responsible, or else he will try the time honoured 'hot & cold' method. This is where things can literally get quite 'hairy'. It is necessary to beg, borrow, or steal the XYIs hair dryer. This is not a job for the faint hearted since unless the timing is right a clash of 'needs' can arise. The delinquent receiver is put up on one end on the bench so that there is access to both top and bottom of the chassis. A first phase would be a 'prod test' with some item of non conducting material. Mine is the empty case of a Bic pen. The set is powered up and when working all components are prodded with this to check for any intermittent contacts. If this not successful then the hair dryer can be switched on and a hot air blast directed at the various items both above and below chassis. Alternate blasts of hot and cold air can be used to cause expansion and contraction of metal parts to show up any intermittents. Some common faults found by this means are in the wax paper condensers, old type resistors consisting of a carbon rod with the wire connections wrapped around the ends, dry soldered joints, or turns in coils shorting as the wire warms up and expands. Using this 'hot & cold' method I have located faults such as an intermittent contact on the local oscillator wafer of the range switch, an intermittent open circuit wirewound resistor in the power supply, and after much sleuthing a short circuit when warm silver mica condenser in the BFO oscillator. P.K.Smith.

-----  
- A Directional 2 Metre Loop.-

- If you think about it a simple loop for 2 meter use need only rotate through a little more than 90 degrees for it to cover a full 360 degrees

radius. Since it gives equal strength signals from front or back with no reflector it is ~~is~~ easy to arrange. With his 770R this reader has a foil type of loop made from one inch wide 'Intruder alarm' adhesive foil stuck onto the window of his shack. This was calculated and cut for 145 Mc/s & is terminated with a small adhesive block and fed with coax to his Rx. His shack is an upstairs bedroom and with this aerial loop he can now choose from the two nearest Repeaters, sometimes even a third. Steve.

-----  
- Aerial System for a 770R. -

- A member living in South Wales, just one mile inland, and some 400 feet above sea level, claims to have given his 770R a new lease of life. Suspended from the roof eaves at the top and fastened to a protruding pipe at the lower end this is basically a nest of dipoles. Within the 27 to 165 Mc/s coverage of his receiver he is mainly interested in the following bands, the 50 Mc/s amateur band, the 120 Mc/s airband, the 145 Mc/s band, and the 155/156 utility and marine bands. With this system he does also find it possible to get good signals on other frequencies outside of the bands for which he has cut his dipoles. From a central ribbed polystyrene insulator he has attached the four ready cut wire dipoles for the bands of his choice, a coax feed is also attached here and lead back to his 770R. the ends of the four dipoles are attached to small perspex insulators & then nylon cords attached to these. At the top the four ends of nylon cord are attached to a large screw in cup hook on the wood eaves, at the bottom the four ends of nylon are taken to the protruding pipe. Before the bottom ends were tightened up two perspex spreaders with four slots cut in about two inches apart are taped to the four nylon cords. The results were now quite spectacular. His previous operating had been done with a 15 foot length of wire around the shack walls.

-----  
' SFERICS. '

- Taken to task by a new member for not explaining this word. But I do have a feeling that I have already done so ! Anyway, 'Sferics' is an abbreviated form of atmospherics, meaning of course static crashes and bangs, normal natural interference. It was used in my RAF days as a synonym for gossip and rumour amongst us wireless mechanics. It was also much quicker to send on RTTY as was 'bod' or 'fone' or 'astic'. Sorry if some of you were mystified but never be afraid to ask in the future.

-----

- Home Made QRM. -

- Severe heterodyne whistles on an 870/P and on the XYLs domestic radio caused when my son was using a WWII type HRC RX which I had given to him so as to keep him away from my 870/P. This model of HRC is renowned, some say infamous for the high radiated level of it's local oscillator. The unscreened input downlead was not helping in this case. A screened coax lead to an ATU and thence to the aerial input of the HRC has almost cured this QRM now. I have heard tales of local QSOs being conducted using the keyed local oscillator fed to an aerial, shades of Ismaelia in the Canal Zone in the late fifties. !

- Rustling noise on a 640 when the BFO is tuned to zero beat, this is sure to be a leaky injection condenser, C66. On an 840C this is C61. A 3 pF ceramic is used in each case, a silver mica of known integrity may be used. This 640 when used without its case whilst repairing and setting up the BFO, was also responsible for local oscillator QRM to my RTTY printout done through a Yaesu 8300.

- HINTS. -

- Clean up black crackle, some members say to use black boot polish, others advocate the use of a clear silicone furniture cream, yet another member says to simply dry wipe clean, touch up any surface markings with a Berol permanent marker pen and then give a single coating with a spray can of transparent acrylic varnish.

- From long and frustrating experience most members agree that the FCC type of paper decoupling condensers are now of dubious quality, not to say that they were not first rate when made. After some thirty or more years of working life they need to be replaced with modern polyester types. (And yet, the Dubilier types seem okay, ready for another thirty years.)

- A light coating of vaseline on the brass travel guides which carry the pointer mechanism of models such as the 770, 830, 940, is better than oil. It lasts longer too. I also use this on all drive pulleys & variable condenser bearings.

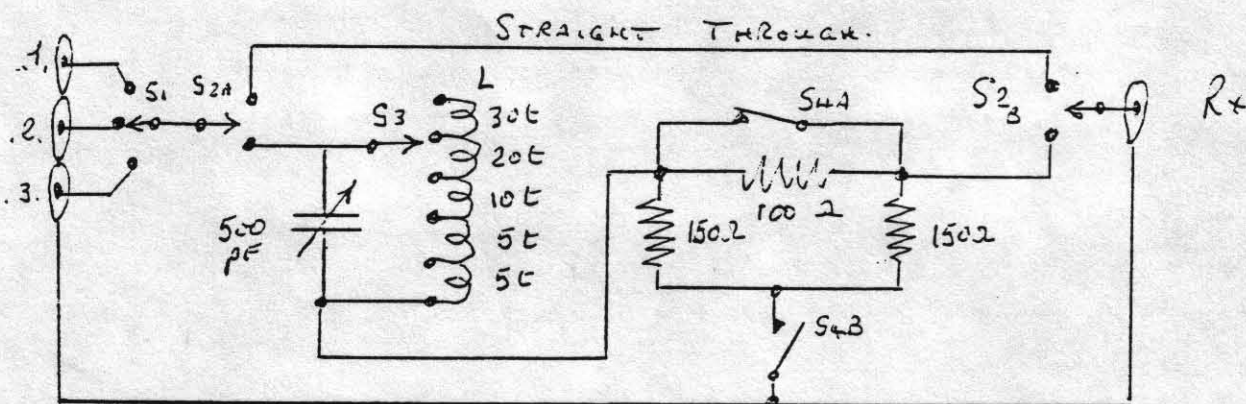
- When correctly set the needle on the 'S' meter of your Edlystone should be slightly below the zero mark with the power off. Set this with mechanical adjust screw first, then power up, when warmed up short the aerial and earth sockets together and set to zero electrically with the adjust pot. That is it.

- Directional effects, on the higher bands most types of aerials will exhibit some directional effects. Direction and degree of directivity will be a function of both frequency in use and length of aerial. Be it

an internal under wire or an external line, or anything in between these two the effects can change from an advantage to a disadvantage with a change of but several hundreds of kilocycles. For good reliable listening the SWL needs a minimum of two aerials, say one horizontal and one vertical. the two should be fed to the receiver through an ATU and it should be possible to switch from one aerial to another at will to select that which gives best results for a given frequency. Possibly two horizontal aerials at right angles to each other would be an added feature, with a three way aerial switch on the ATU. The ideal then would be three aerials fed to a three way switch into a 'PI' type ATU with a bypass switch to enable the ATU to be taken out of circuit to check its effectiveness. Of course ideally downloads to the ATU and from it to the receiver input should be in coax or screened lead. Protective diodes on the input to the ATU would be an added bonus. Instead of paying £60 or more build your own, easier than you think. See below.

THIS A.T.U COURTESY OF ROBERT  
 PYE WHO POINTS OUT THAT IT CAN  
 IN FACT BE USED IN REVERSE, ONE  
 AERIAL TO FED ONE OF THREE  
 RECEIVERS!

3 x BNC  
 AERIAL  
 SOCKETS.



S<sub>1</sub> = 3 way 1 pole.

S<sub>2</sub> = 2 way 2 pole.

S<sub>3</sub> = 6 way 1 pole.

S<sub>4</sub> = 2 way 2 pole.

L = TOTAL 70 turns, 18 s.w.g. 1" diam;

↑  
 10 db PAD SWITCHED  
 IN / OUT AS NEEDED,  
 SHOWN OUT OF CIRCUIT.

[A VERY ODD CIRCUIT! HARDLY AN A.T.U,  
 MORE OF A REFLECTOR... (G.W.)]

- A member queries this set, never having seen one for sale at the many rallies he attends. Well first off thank your lucky stars you do not have one to lug about, all one hundredweight of it! In size and front layout it is a twin to the 880, it covers from 500 to 1000 Mc/s in one Range. The tuning arrangement consists of two large front panel knobs one for coarse tuning and one for fine tuning. These tune several pounds of heavy brass cavities for both RF amplifier stage and for local oscillator. This plumbing is where all the weight comes in! I know of only two other members who have a 770S besides myself. If you do see one think before you buy, not simply because of its weight, but also because within the frequency range it covers what are you hoping to listen to? On these high frequencies, given the short, line of sight paths covered, signals will be very few and far between.

-----  
- Reradiation from IF stages. -

- If, as does one member, you pick up CB signals of one side of a QSO at or around 10.6 / 10.7 Mc/s do not assume that your RX is to blame. Do not assume the CBER is operating wrongly either. This is the IF signal, from the IF amplifier stages of his rig, reradiating & being picked up by your aerial system. The one member who wrote to me is some 50 yards from the CBER although in fact his random wire aerial points directly at the CB set and its far end is much closer. It is 'about 25 foot long' and that will make it a 1/4 wave at about 10.5 Mc/s so there is an added reason for the pickup. This reradiation at IF can travel surprising distances and I myself have identified it from a HiFi unit some hundred yards away, I can identify their choice of station on the TX band with ease.

-----  
- Effective Protection. ??? -

- It became necessary to replace the RF stage transistor on an ES10 recently and when doing so the protective diodes across the aerial input were checked out. A good move as they were found to be open circuit! Whether they had been blown at the same time as the RF stage transistor or whether they had gone on some previous occasion will never be known but they were replaced with two 1N1001 types. These are meant to protect the input by bypassing any high voltage static charges on the aerial lead in, in this case the discharge must have been high enough to blow them too. Of course nothing will protect against a direct lightning discharge and you would be lucky to have any Rx left. The idea is that by providing a path to earth for anything over a few volts then a high voltage build up

12  
can be prevented. In any case it is a good idea to put a leakage path in place permanently from the aerial lead in to earth, this can consist of a high value, say one megohm resistor, which will have no effect on the signal strength but will leak away any static tending to build up on the aerial system.

-----  
- Story of an 840A. -

- I have often come across sets more or less cannibalised or vandalised by well meaning but ignorant members of the 'twiddler' brigade. This was a prime example. From past experience in other matters I was wary of it's owner who was a workmate of mine. The set had belonged to an uncle of his now departed. As senior engineer in charge of an electronics department he was only in his twenties but had all sorts of qualifications attesting to his knowledge of electronics. But give him a job and he was lost without the schematic to go with it. No experience of puzzling out for himself what something was supposed to do. Anyway come this day and he asked me to look at this radio left to him by his uncle. 'It has these valve things in it.' It was an 840A, looking quite nice externally, it had obviously been well treated over the years. He had quite happily removed the case to poke around in it but had given up when 'I got this damned awful belt from it'. He was lucky to be still there as it is an AC/DC model and the chassis can be at full mains potential if wrongly connected. He had quite at random twiddled the RF & IF cores and preset condensers as he admitted when asked. But do you realise it is years since valve theory was taught at college? His knowledge of the subject was zilch! Anyway darn had got this set as I discovered when it had been stored in a garage for several months. Green mould in several spots was proof of this and from the white powdery deposits on the rubber seals of the high volts electrolytics it looked as though these too needed replacing. When I asked how much he envisaged spending on it he said 'well no, its a favour,' coming from one whose spare time occupation is watching the idiot box day and night this is too much', I explained that several evenings of MY spare time would be taken up in repairing this and the added cost of components meant it would be an expensive job. I returned the 840A saying 'no Thanks' and for several weeks it lay there under his desk, until a head office order came to tidy the place for a VIP visit. I had given no thought to the 840A but then the owner came over saying 'will you give me £10 for this as is, otherwise it goes in the skip.' I was about to say yes when I thought of his previous approach to me & his attitude. I first offered £5 and then agreed to split the difference. It became mine for £7.50 and was taken home for repair and refurbishment. Apart the electrolytics it was necessary to swap out the 0.1 and 0.01 paper type condensers and one of the U1F12 valves

In the IF stage, this had a cracked base, all too common when somebody has tried to pull out a BPA type from a rusted socket. Somethings has to give and usually it is the glass pip on the valve, not the springy socket. All components came to £6 at a local rally, except the valve which came from my stock. Cleaning repairing and alignment came to one weekend and several evenings. The worst problem was the IF cores which had to be carefully taken out and replaced with new. In return for this I now have a new looking 640A. It has one idiosyncrasy, which only shows up after some 2 or 3 hours of use, a slight change in tone, increased treble, which is almost certainly due to a change in component value with heating. This can be dealt with next time I have it opened up. For an initial cost of £7.50 plus £6 it has not been an expensive second receiver and now shares pride of place with my 750 on the operating table. Mark Tane.

-----  
 - A Consensus from Members Letters. -

- From eight letters dealing with 640 restorations it has been possible to compile the following list of items which have needed to be changed, & if you are considering a restoration project on a 640 then it might be a good idea to at least check all of these, if not simply swap the lot. C8, C9, C10, C20, C21, C22, C23, C34, C41, C44, C53, C54, C55, C56, C57, C62, C65, C70, C71, C64, C47, C72, C61, C63, C73, the low and high voltage electrolytics will have dried up causing loss of capacity and high AC impedance. The paper dielectric ones will have become leaky due to ingress of moisture. Screen and anode resistors tend to go high and R1 through R11 should all be treated as suspect. Funnily enough R10 crops up in each letter !

-----  
 - SPERICS. -

- I have been taken to task by a member for suggesting that an Avo ought to be the instrument of choice for work on valve type receivers. This, as opposed to a modern digital type of meter. My main reason for advocating this is that all the service sheets for these valve models quote the volts readings at various key parts of the circuit as taken with either an Avo or similar meter such as a Weston or Taylor meter. The readings as quoted in the manuals for our 'hollow state' equipment will bear no comparison to those we would get if using a solid state DVM. The differences can be quite extreme at certain points of high impedance, viz; AVC circuitry, audio drive valve anode, grid circuits. a few examples taken on an 640A will show that a solid state DVM would put the actual circuit readings way outside of the specified tolerance.-

POSITION.	WESTON.	AVO40.	LCD DVM.
V4 Anode.	13v.	4v.	22v.
V1 Screen.	12v.	3v.	19v.

14  
The Weston is a 1,000 ohm/volt meter, the Avo 40 is a 500 ohm/volt meter and the DVX is an oldish model 1 Merohm/volt meter. Since the manual allows a plus or minus five per cent tolerance on given voltage readings those given in the last column for the solid state meter would be very misleading indeed.

- Flaking metallic coating from an EB34 valve on a 640, the 'S' meter & noise limiter valve, caused uncontrollable instability. What is termed motorboating. A replacement EB34 was an instant cure. As an experiment the duff EB34 was sprayed with several coatings of 'nickel screening compound' from an aerosol, as used to QRM proof computer plastic cases. It was left to dry out and then replaced in the 640, the belligerent valve was now as tame as the new one. A tip to remember for other similar valves which used metallic coatings, i.e. the EF39. Several months on, the new coating shows no sign of cracking or flaking.

- If the auxiliary supply plug is not fitted on the 740, socket on the rear of the chassis, the internal supplies will not be linked through to the HT & LT lines of the receiver. If no plug is available one can be made up from the old base of an octal type valve. Alternatively the set can be opened up and permanent links can be soldered into place on the socket pins under the chassis.

- C43 must be a mica or ceramic type. Not a paper insulated condenser as was found on a recently repaired 840A. The Hunts type 0.1 mF which had been substituted here was a paper type and since it was leaky the grid volts on the output valve V5 were up to 12 volts.

- On a 940 the cathode volts on V9a should be 2.3 volts, on a 20,000 ohms/voltmeter with a plus/minus tolerance of 5 percent. On the 940 that was being repaired we found only 0.2 volts. Changing V9 made no difference to the reading, a check on C102 showed that it was almost a full short circuit, a 25 mF- 25volt replacement was fitted. Cathode volts were still low at 1.8 volts. Checking R59 showed it had gone down to 2.1 kilohm, a replacement 3.3 kilohm, 1 watt brought the cathode volts up to 2.4 , as close as need be !

- On a model S504, the AF gain control could not be turned up more than one quarter without the onset of severe howling, positive feedback. This was traced to a corroded through screening braid, at the point where the braid was soldered to chassis at the pot end. All that remained was a messy green mould powder. Was it a case of acid based flux having been used ? Renewing the braid pigtail and resoldering to chassis at this point was an effective cure. Servisol and a 1/4 inch brush were used to remove all trace of the green mould.

- On the same S504 incorrect 'S' meter readings and ineffective AVO were found to be the result of a dud C9, this is a paper type 0.1 mF



condenser in the bottle of V4. It actually gave a reading of less than 20 ohms when tested out of circuit !

- No BFO on a 750, this was finally traced to a 47 kilohm, R41, in the V2 anode circuit. This gave a reading in situ of 200 kilohm, when removed and checked again it was over 400 kilohm. Incidentally R35 in the 'S' meter circuit is variously either 68 or 100 ohms. Going by the serial numbers available the early production models had 100 ohms. It makes no difference to the 'S' meter operation or readings which value is used.

- Please, Please do not use a 6V6M (for metal) in the output stage of your 504, 556, 640, 659 models. Pin 1 on the valve base is used as an earthing pin for the metal can, on the valve socket it is used as a tag point and you can get a shock by touching the valve when the set is on.

- In early 1966 the Stratton catalogue listed the following current production models, 880, 940, 8400, EA12, 770R II, 770U II, 990S, 990R, 950/4, 970/7, & EC10.

- Some 'internal' info from a former Edystone design engineer, - the 912 was a prototype of which only three were made. the 935 was a prototype for the 940 series only two were made. the 840 Yark II was made in but two examples and the production version became the 8400.

the 890 was a single range, 70 to 90 Mc/s model but he cannot recall who it was made for. can anybody ?

the EK20 was a prototype some say to a marconi design, others say for an amateur bands only model, prototypes were built and sent to Chelmsford, the trail ends there. This is from Dan who, as he says, is still quite happy with his 989 !

- The 710B or All World Six, could be run from either AC mains or from an external 6 volt vibrator rack. It is a broadcast version of the 710 with no BFO but with push pull EL12 valves giving 4.5 watts of audio.

- A plumber would be a useful friend if you anticipate a rebuild of your 770S receiver. This companion model to the 880 - bothas regards shape, panel design, and size/weight, tunes from 500 to 1000 Mc/s in the one range. The RF and 'LO' tuned circuits are not the usual LC type but consist of tuned cavities, heavy chunks of machined metal.

- At a recent E & B stall at the local rally, ( E & B as in bring and buy not bed and breakfast ! ) there was a tatty looking 770R, the price asked was £125, Not very surprising that it was still there at 1.00 PM. At a nearby stall a trader had several fair looking 770R and U models at a more realistic price of £45. A lesson in the need to observe for somebody.

- If you use an 840A with 'phones and not the built in speaker, a very common fault is that over the years R3 will go high from its 200 kilohm

specified value to almost double, don't ask me why but it has been found on several of my receivers and was brought to mind by a letter from a member in S. Wales recently whose 840A had the same fault. In several cases when used in this way, mainly on 'phones, the primary of the out-put transfo had also gone o/c.

- On a 940 if R74 & R75 are found to be burned out and open circuit a prime suspect is C109, the 50 mF Electrolytic which, if leaky, will pass sufficient excess current to exceed the 6 watt rating of the two resistors. C108 should also be checked at the same time.

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- Members' Queries.-

- Blown RF stage transistor on a 960, second time this has happened the last four years. This transistor is an OC171. The 960 is used at this QTH with a home brew 40 watt CW transmitter. It sounds to me as though there is some RF getting into the input stages of the 960 on transmit. Fit reverse connected 1N4004 diodes across the aerial to earth terminals on the 960. Check that coupling from your transmitter PA to the aerial is correctly matched too.

- A noisy and unstable BFO on this same 960 was last year traced to a worn 50 kilohm pot; a replacement pot; was fitted. ( must be 'linear'). The owner had spent several frustrating hours on this before realising it was the pot.

- How to correctly tune the IF rejector trap on any model having one, Set to nearest possible frequency say 500 or 550 Kc/s, set a signal generator to the IF, say 465 Kc/s, and using just enough input to give a reading on an AF output meter, tune the filter core to a position giving minimum output. On a 960 the coils in question are I7 & I8, one is above chassis the other is below chassis.

- Why does the stabilised HT on an S750 read 165 volts and not the 150 quoted on the circuit sheet? This is almost certainly a dud VR150/30 stabiliser valve, V11. Measure the volts across R18, a 2.7 kilohm wire wound resistor. It should be about 85 volts, if not replace the V7 valve and check again.

- The replacement RF gain pot is giving abnormal levels of gain at the lower end of its travel. Odds are you have put in a non linear type of pot, maybe logarithmic tracked. Replace with a wire-wound linear pot.

- Excessive hum in an 840A, when it has been on about an hour. Try replacing the electrolytics in the smoothing circuit. Do not simply put a new one in parallel with the old, disconnect and remove the old condenser.

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17

- The new owner of this 358 was lucky in that he bought it from the first civilian owner after it was demobbed from a soon to be scrapped mine laying Royal Navy boat. It had been in good condition then but by now looked quite pathetic with several extra unexplained holes in the front panel, generally poor paintwork and a much dented case. His knowledge of radio was minimal although he was a good electrician. The decision was made that I would do as much of the servicing as was outside his ability and he would assist whilst learning about his S358. Luckily it had come with the 390A power unit and so we were saved the job of putting together a PSU. Electrical performance was hopeless & when warmed up all we could hear was 'motorboating'. After explaining from a block schematic what each valve did, what each large component was for, and a little very basic valve theory to put him in the picture properly a start was made on the repair job itself. A full visual check both above and below chassis. Nothing untoward there on top of the chassis except a large plaque of metallic coating missing from V3 an EF39 valve. From my personal experience I knew that this could be the cause of the instability, (motorboating.) I swapped this valve for another EF39 from my junk box, not new but known to be working. Powering up the S358 again the instability had gone. But still little or no output. Using the built in check meter and the listing of voltages given in the manual it was apparent that the fault was in V3 stage and so as a double check on V3 it was exchanged with V1, another EF39 but with the same result as before. The set was upended on my table and a check made on the components of that stage, all around the valve pins. All resistors and condensers were there as a check with the 358 circuit diagram showed. all condensers were disconnected from the circuit and checked for capacity and leakage on a Hunts Bridge and one was changed, the resistors were checked also on my Avo 40 and it was soon found that the Kathode bias resistor was reading about 18 Kilohm way out of spec; it was chopped out of circuit and re-checked when it was found that the actual value could be changed from about 15 Kilohm when cold to almost 60 Kilohm when warmed with a soldering iron. A new one was fitted and the needle on the check meter was now in the good part of the scale. A piece of hookup wire was connected as aerial and the set was powered up again, this time we got results ! Not brilliant but much better than before. Upended again and a check made on all the waxed paper type condensers, eventually 8 were changed and then an Avo check on all resistors in the receiver was done, 2 more had to be swapped being way out of spec; the set was now very lively and so a check was made on the IF transfos, since my Advance sig gen is not one renowned for accuracy a simple check to verify that the IFs were

correctly peaked was done, then attention was transferred to the RF stages & local oscillator. Being a plus in coil set and with only 2 coilbacks available for the medium wave and what used to be called the 'trawler band' this was not a long job. Little was needed apart some slight trimming and the 358 was pronounced okay circuit wise. Attention was paid to the metal work. The holes were filled in on the front panel with a proprietary metal filler and smoothed down, it was decided that the new paint job could wait awhile as its new owner was keen to put it to 'listening' use. A fifty foot length of hookup wire was supplied to him for an aerial and off home he went with his new toy. Several months later he is a keen & avid addict, the paint job has been put off indefinitely as it will mean him being without a receiver ! His last words were that it could wait till he got his hands on a second Eddystone, preferably an 840A.

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- SFERICS, One member says that since he has increased C41 on his 840A to a .05 mF he finds the AVC better able to cope on fading which he believes to be due not to the strength of the wanted signal varying as to that from an adjacent signal which Hijacks the AVC ! His words not mine.

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- SFERICS, Colin has one of the 730/1 model bought recently from Anchor Surplus, having known and used this model whilst in the army he does know what performance it is capable of, when in good nick. Not being satisfied with the performance of his, although assured that it had been tested before sale Colin bought a set of new valves for it. He says the change in sensitivity has been such that he now uses it for his main receiver and the 630 has been put back as a standby.

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- SFERICS, Remembering the controversy over the Lightning strike on York Cathedral I am wary about the next members letter, still why not ? The member had suffered from the unwanted attentions of a local CB type who was obviously using a 'linear' after his legal rig, the interference had gone on for some time, being picked up even on the domestic Fm system. Coming home one evening last month he found that the monster chimney mounted CB aerial was no more, the chimney had gone too ! High, gale force winds had carried away the brickwork of the chimney down to roof level and the remnants of CB aerial were now spread all about the gardens. Divine Justice ? Simple accident ? who knows, at least this member now has QRM free reception for a while, and a sense of satisfaction too.

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1946

# Views of part of **EDDYSTONE** factory



On the left we show a view of the assembly lines in one of our production shops. Constant supervision ensures that the high standard of efficiency synonymous with Eddystone is maintained at all stages.



On the right is a scene in another of our workshops where Eddystone products are on the production lines. Every component is carefully tested before use. Every set, after manufacture, goes through a special inspection department scientifically equipped with the most up-to-date Testing Equipment.

## STRATTON & CO. LTD.

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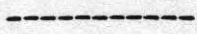
ISSUE  
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ACROSS. 1,causes resonance. 3,level indicator. 9,greek or valve theory. 11,town-like pepper. 13,rally location. 14,QRX. 16,enemy in S.E asian war. 17, his or hers. 18,vacant in Israel. 19,necessary for a sked. 23,what non ECG SWIs suffer from. 24,AC/DC model. 27,ranges on a sixforty. 29,kind of concise dictionary. 30,guess at when you'll get there. 31,abbreviation for country in 16 across. 32,vertical whips end this way. 33,ideal aerial support. 34,what,not whats,sounds like it. 35,they used the S358 in WW II. 37,Orassis first name. 38,plays soccer. 39,an educated guess. 42,a mini successor to Jones plug. 43,lack of smoothing. 44,weighty money. Hallicratters prefix. DOWN. 1,in one word beacon. 2,red. 3,pro model. 4,he runs the show. 5,local NASA. 6,group of countries. 7,car worlds equal to our Eddystone. 8,All world six. 10,between two points. 12,digger,not Aussie. 15,an important ratio. 20,widow needs a lot to buy 29 down. 21,governing body for dragsters? 22,upmarket in model range. 25,core matter. 26,it shelters 1 down. 29,1930s model. 33,stopper. 34,enemy in WW II. 36,power unit. 37,best time to listen for diggers. 40, unwanted mixing. 41,and.

- A 670 Repair Job.-

- This 670, not 670A, used a selenium type metal rectifier and if you have never been around when one of these blows then consider that you are very lucky. The smell is so horrendous that evacuation is the only course. This happened during the early part of last summer in a hot weekend, after 45 years of use one cannot complain at its failure but that smell ! In the early days of 405 line TV servicing I recall that 12 months was considered good going for a selenium rectifier in certain models. Knowing that my chances of any exact replacement were nil I decided that a modern silicon diode, suitably rated, would have to be fitted. The 670 was left for a whole week in the garage in order that the pong could have time to dissipate. The following weekend a circuit was drawn up to replace the dud with another diode whilst leaving the selenium one in place. A 1N4007 diode was wired in series with a 150 ohm 2 watt resistor was wired in, the clipped off leads from the selenium rectifier being extended to allow mounting the new diode and resistor behind the old. C60 was left in circuit across the two new components and a 1 Megohm 1 Watt was also put across C60. As it was thought possible the two smoothing electrolytics could have been damaged they were replaced with exactly sized 50 and 32 mF units rated at 350 volts. When measured at point 'S' the HT volts reading was only marginally above that in the table given. Whilst the 670 was open on the bench the much silvered dial bulb was also replaced and various points were lubricated, both ends of the tuning condenser, the pointer mechanism and spindles. All valves checked by substitution and only the frequency changer was found to be below par. One point not often appreciated about this model that great care was taken over the AVC circuit and in fact two levels are provided, the higher level going to the V1 & V2 circuits and the lower level to the IF amplifier V3. For this to function correctly C49 must be beyond reproach. I decided that a .01 ceramic would be fitted here. C57 in the tone oct; is across the push-pull output transfo and this was also swapped for a .047 polyester type. Some cleaning of scale, dial glass and the chassis were the last jobs and now the 670 was at the end of its first major repair and refurbishment in 45 years. Previous jobs had in fact been limited to replacement of a valve or dial bulb. I do still have most of a set of new replacement valves bought over twenty years ago and not yet needed.

Mark Bates.



- Joined E.U.C but no Eddystone yet ! -

- So many members who write in when joining and say that owning an Eddystone is still but a dream. John Montague -Lock writes that 'I can remember as a young lad standing outside a local radio shop which had a display of Eddystone receivers, beyond my pocket. Maybe now that I am older I can at last buy one and make a young boy's dream come true.' Philip Cohen Says ' the Clydesdale Supply Co had always a good display of fine Eddystones and as a boy I lusted after the 740 or 750 etc; well outside my means.' These two examples are so typical of my own personal experience of the late 1940s and 1950s, when in fact as a teenager I travelled down to Euston en route to Lisle St that Mecca of Surplus stores for my first S358. No B.R. then but courtesy of L.m.s and I do mean courtesy. For those of you still wanting to acquire that dream receiver I can only suggest avid and immediate scrutiny of the small ads in P.W, S.W.X, and Radcom. Or why not place an ad yourself. The following dealers do occasionally have them in stock so why not ring them NOW;-

- Centre Electronics, Yardley, Birmingham.
- A.J.H. Rugby.
- Anchor Surplus. Nottingham.
- Birketts , Lincoln.

If all else fails do like we all do, start haunting the local rallies with cash in your pocket. But you have to get there early these days.

- Weary but still Active.-

- The 358 was priced at £45 O.M.O but still unsold by 3.00 P.M. possibly the thought of lugging it plus coils plus PSU away was a little daunting. I was able to knock it down to £35 and with some help get it away to my car. Whilst it was as stated working the actual performance was abysmal. Various Heath-Robinson mods had been done or attempted, maybe perpetrated is a better term. Having got it on the bench and stripped a thorough clean with Hoover followed by a stiff brush and turps allowed me to see more of the 358 and less grime. Several holes had been drilled in the front panel to fit alien controls and various components under chassis were obviously not original, all these alien parts were removed as a first step. The holes in the front panel were smoothed off and filled with 'liquid metal' then left to set. The whole front panel was then removed leaving controls and switches hanging from their leads. the panel was smoothed down and re-sprayed, then left to dry off over a full week. A new dial glass was cut and fitted to replace the cracked original. The meter glass too was broken but no way could I contemplate cutting one of these. Eventually a replacement was found



on a similar meter in the junk box. Holes drilled in the sides of the case were treated as the front panel and the whole case was re-sprayed to match. Re fitting the panel came next and was a pig of a job, as one control went in another came out of its hole! Circuit repairs came next, a 6F6M had been fitted in place of the 6V6 and so that went and the bias was changed back to its old value. Some mods to the aerial input sockets had to be undone and put back to spec; not too bad a job as I had both the circuit and photocopies of the component layout to guide me. It looked as though the AVC wiring had all been ripped out and this had to be replaced. Given the age of this model I made a trip to R.S. and bought a good stock of decoupling condensers and resistors as I had decided to replace all of them. It was an expensive and time consuming decision but I started with the output circuit, tested that, working back a stage at a time to the aerial inputs. Three months of evening and weekend work later it was finished. Not without my having made and corrected several silly bloopers. The re-alignment was straightforward since the exact procedure for doing this is easy to follow in the manual. Now repaired reassembled and working my S358 is a joy to look at and to use. It won a club award for 'best restored receiver'. Cash cost including purchase price is around £75 but of course no price can ever be put on the time spent on the job. I used one in the M.N in WWII convoys and the memories come rolling back as the signals come rolling in. Maybe a sign of old age ? Stewart.

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 - A.R.R.I Handbook. 1953. -

- Brian, one of our long time members has bought a copy of this at a recent rally for the sum of £3.50. It is he says a mine of info and circuits for valve users. There are many circuits for add on external devices which he can use with his 750. He has already built and is using with great success the 10 metre convertor, as described on page 120, last winters construction project ! Next job will be either a clipper/filter as on page 112 or the so called Selectoject as on page 114. There are many more in this volume & what is more a full chapter of valve data. Being 1953 vintage all the basic theory is also valve related. These books are often on sale for a few pounds at rallies and are a good buy for either the construction projects or simply for nostalgia reading.

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 - Non-Directional Beacons. -

- If you are a collector of these then the current 'Nautical Almanac' or even a year old copy will be of great help in loca-

then. It gives a recommended reliable distance for reception but as we all know this can be multiplied by a factor of five or ten when they are simply being used for Dx-ing purposes. Marine beacons are usually two letter IDs with chains of five or more on a common frequency, their transmissions being time multiplexed. The aero beacons are mainly three letters calls and use unique frequencies at least in their geographical area. This is not always so and I am always being caught out by the exceptions ! Some foreign aero NDBs are two or one letter IDs. In USSR, or what ever it is now called, there is an infamous one on 730 Kc/s in the middle of the medium wave broadcast band. Contrary to what many think it is quite often possible to get a QSL card or letter from the agency or dept; which is charged with operating the beacon. This is especially so if you can provide a cassette tape of the actual off air transmission and if you are well outside of the normally advised operating area. I have had QSLs from Poland, Morocco, Spain, Portugal, France, Holland, Norway & Iceland. At home I have several from RAF airfields operated NDBs, From FB the Flamboro' Head Lighthouse and even the Consol navigational beacon on 318 Kc/s.

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 - Upgrading very early S.640 models. -

- Mods to be done on the very earliest of 640s to bring them up to the spec; of later versions are few and easily incorporated, they are as follows:-

1. A 22kilohm 0.5 watt resistor across the standby switch to keep reduced ET on at all times, mainly for oscillator stability.

2. A 500 uF condenser, mica or polycon, across V2 heater pins directly on the valvesocket.

3. Replace C52, a 0.1 mF, with a similar value mica or polycon. The original is a paper type liable to become leaky with age.

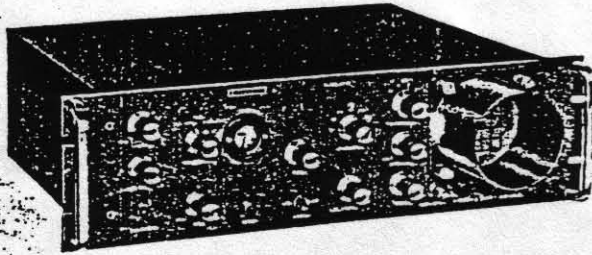
4. Replace C63, a 25 mF, 25 v.w. electrolytic with a 25 mF rated at 50 v.w.

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 Thats it for this issue, hope that it is a merry and fun filled Xmas Season for allof you, that you get an EA12 in your pile of parcels, and that you are allowed time off to do some listening over the holiday. Hints, Mods & stories are coming in but if yours is not in this issue, be patient it may be in the next. If you cannot wait to months for the Crossword solution then send an SAE. From Kathy and I have a happy holiday, 73,

Kathy & Ted.

# Eddystone

## PANORAMIC DISPLAY UNITS



### Frequency Coverage (*intermediate frequencies*)

- EP14 : 5.2 Mc/s (1 Mc/s bandwidth) and tunable 6.2 to 60 Mc/s.  
 EP15 : 100 kc/s (30 kc/s bandwidth) and tunable 400 to 800 kc/s.  
 EP17R : Fixed input at 5.2 Mc/s.  
 EP20 : Fixed input at 100 kc/s.

### Sweep Rates

- Four selectable speeds are available:—  
 EP14 and EP17R : 5, 10, 20 and 40 sweeps per second.  
 EP15 and EP20 : 0.2, 0.4, 0.8 and 2 sweeps per second.

### Sweep Widths

- EP14 and EP17R variable from 3 kc/s to 1 Mc/s.  
 EP15 and EP20 variable from 100 cs/ to 30 kc/s.

### Resolution

- EP14 and EP17R .. 2 kc/s at optimum settings.  
 EP15 and EP20 .. 50 c/s at optimum settings.

### Sensitivity (at full gain)

- EP14 and EP17R 20 microvolts for full deflection.  
 EP15 and EP20 25 microvolts for 1 cm deflection.

### Common Features

The *display* is given on a 2½" diameter tube, of medium or long persistence. An *attenuator* acts on the input signal and is calibrated in 10 dB steps over a range of 60 dB. Input impedance is 75 ohms. A separate gain control is fitted. Other controls are sweep width; scanning rate; centering; brilliance; focus. The units can also be used as "wobblers" for alignment purposes. Operation is from standard AC mains, with a consumption of 55 watts. A blower fan is fitted to prevent undue temperature rise. Dimensions EP17R and EP20 approximately 16½" × 5½" × 15". (Rack mounting EP14 and EP15 19" wide). Weight 36 lb.

To go with receivers already in use, of Eddystone or other make, there are four panoramic display units, two with characteristics suitable for wide band operation, with medium resolution, on very high and ultra high frequencies, and two with fine resolution for narrow band operation on low to high frequencies.

The first units referred to are the EP14 and EP17R, the former having tuned input to match a wide range of intermediate frequencies, whilst the EP17R has a fixed input frequency of 5.2 Mc/s, as used in the Eddystone 770R and 770U receivers described elsewhere in this Catalogue. Otherwise the electrical specifications are practically identical.

Similarly, the EP15 and EP20 units will operate successfully with the majority of HF receivers. The EP15 has tunable input and the EP20 a fixed input frequency of 100 kc/s.

Brief details of the specifications are given opposite and full information is available in separate folders. It should be noted that frequency converters are offered (see page 12) for matching receiver intermediate frequency outputs to panoramic unit inputs cover wide limits.

