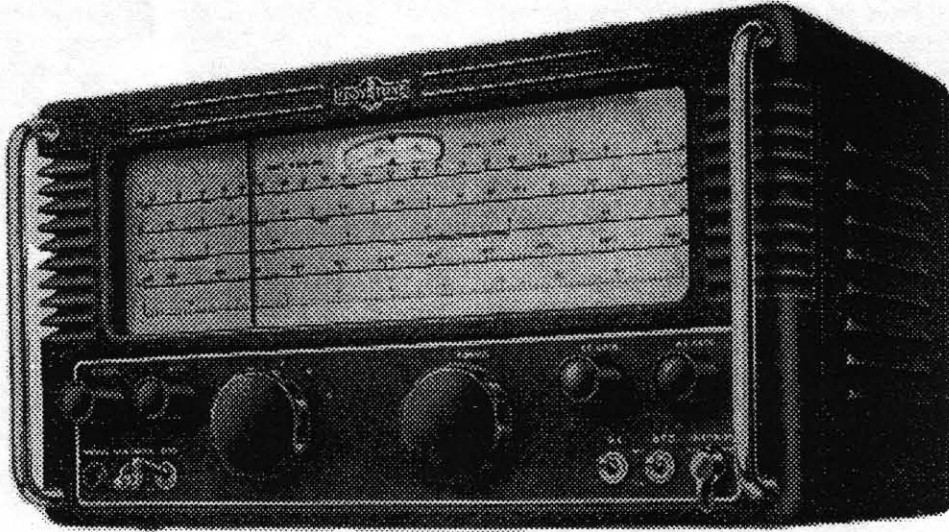


# Eddystone User Group Newsletter



Issue No: 57

October 1999



Featured Model

## THE EDDYSTONE MODEL "750"

- A non profit newsletter for Eddystone Users
  - Compiled and edited by Ted Moore
- Information quoted from Eddystone Literature by kind permission of Eddystone Radio Limited

Membership and General Enquiries to:  
Eddystone User Group  
c/o Graeme Wormald, G3GGL  
15 Sabrina Drive  
Bewdley  
Worcestershire, DY12 2RJ  
Tel: 01299 403372  
e-mail: [eddystone@nomis.co.uk](mailto:eddystone@nomis.co.uk)

Enquiries for Spares and Manuals to:  
Dave Simmons  
Windana House  
North Aston  
Bicester  
Oxfordshire  
OX6 4HX  
Tel: 01869 347504

## FRONTIS

September for those of us in the broadcast equipment business means IBC, the International Broadcasting Convention, now held in Amsterdam. For many years it was held in Brighton, but ever increasing demand for more exhibition space and hotel accommodation meant that eventually it moved overseas. Amsterdam is a very good place for a large exhibition and some 40,000 plus broadcasters descend on the city for a long weekend of seminar's and exhibits. ( If you think that is large, the National Association of Broadcasters in Las Vegas attracts 100,000 visitors). Much of the show is software and studio products, but the main themes in the halls with the transmission equipment manufacturers was digital terrestrial television. I have no doubt that what has started in the US and UK will eventually sweep the world as people realise that you can squeeze more channels into the same frequency bandwidth as one analogue channel. The analogue will be switched off and the frequencies sold off for mobile telephones or whatever we call them in those future days. Why bring this up in the EUG newsletter I hear you ask, well what was noticeable by its absence was much reference to digital radio (DAB). The UK and a few European countries have systems in place, but where are the receivers?. The only ones I have seen are very expensive and not generally available in the shops. Could DAB turn out to be a techno-turkey?. If they can digitally process 6MHz of bandwidth for a tv channel and sell a set top box for £200 or less, why can't they come up with some cheap chips which can process 2MHz of bandwidth?. With the encouragement of the government, Eddystone invested £3m in DAB technology so that it could be a success for UK industry. And the rest is history as they say.

The reviewed set this month is the Stratton's S750. This was first reviewed in the EUG Newsletter No 12 (April 1992), but a lot of water's gone under the bridge since then – and a lot of new members have come on the scene. So we make no apology for returning to the model for a closer look. First announced at Radiolympia in October 1949, it was introduced in 1950. It was the first of the 'slide-rule' Eddystone's and also the first double-conversion receiver presented by Stratton's; it was quite a technical innovation.

This time we have reproduced more original technical information (courtesy of Simon G8POO), always a useful guide. The 1950 price was £59.10s, a very competitive figure for the specification and barely half the price of its rival sibling, the 680X (£106), although it did creep up to £78 by the time it was withdrawn in 1960. The Marconi Company adopted the model for marine use, badged as the HR100.

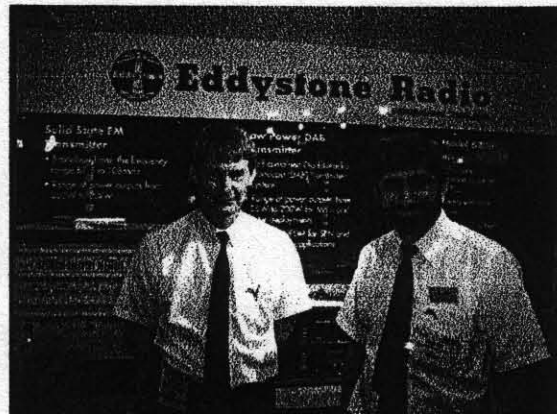
From Dr Fritz Haab HB9HM, Switzerland July 1952. " I am the proud owner of an Eddystone 750 double superhet which I like very much. Its sensitivity, selectivity and image ratio are FAR SUPERIOR to any of the same or higher priced receivers on world market today. It is much better the world famous XXXX because of the complete absence of images on ANY amateur bands. Many of my friends are envious, because the y already own American sets." Can't be bad, can it.

I bumped into Matt Parkes on Megahertz stand at the IBC, he said they were very busy with some high power transmitters for the Far East. Thought you might like see what he looks like.

All the best 73's. Have a good read

Chris Pettitt  
GOEYO – Patron  
[Chris@g0eyo.freemove.co.uk](mailto:Chris@g0eyo.freemove.co.uk)

Matt Parkes, General Manager (l)  
and Gurnam Aujla, Systems  
Engineer (r) at IBC







# ISSUE No. 57

presented

by

**Ted Moore**

WELL, here we are with October nearly over, Summer Time gone and the Medium Wave DX season already upon us. And the file for the Christmas issue is beginning to fill up with goodies for seasonal reading.

Last Issue featured the Mini Amateur Station from ESWM #4 of the late 'thirties. So far only one letter has come to me about this item. If anybody's built one, found one, or is thinking of building one please let me know so that we can report back in the Newsletter. I know that construction is becoming a lost art, but, believe me, the satisfaction achieved is quite enormous. Get the tool-kits out and report what's happening in the world of E.U.G./D.I.Y.

I see that Graeme has been getting some Press Releases from Megahertz Communications, the new owners of Eddystone Radio. There's one on page 27 of this issue and it describes an interesting project in state-of-the-art development of T/V broadcasting. A tape-free environment indeed! Whatever next... You can see why I'm still going on about a cut-off date for our REAL period of interest. It looks as if we shall have to limit the sales of manuals to the pre-push-button era of Eddystones. Believe me, those for the later ones are like telephone books. In fact, the 958-series are like door-stops. The chances of full-photocopies are just about nil. If anybody wants an original one of these Dave Simmons has just got a few left. I don't actually think we have a copy for the 6200; the Company is still selling those for £80!

I hear from Les Crompton, Sales Manager at Eddystone, that Megahertz sold a brand new Satellite News Gathering vehicle to a Portuguese company at the Amsterdam Convention. Apparently they took it along on spec and it was bought off the peg! How times have changed. Les is going to send us some more pictures of the Eddystone stand for the Xmas Newsletter.

This month we've had to split the Members' Adverts into two to fit them into the space available; look on pages 7 and 12.

Several members have asked recently about transformer rewinds for their Eddystone mains trannys. Here's the name of a firm which is worth trying when your favourite Receiver is terminally ill: 'The Majestic Transformer Company', 245 Rossmore Road, Poole, Dorset BH12 2HQ. Tel: 01202 734463. Why not give them a call?

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### Mains Supplies

It may be that, because this is not a readily visible peril, the fluctuations in the AC mains supplied to our equipment is not considered to be of much importance.

Some observations undertaken by one member over a three month period may give the importance of this matter more credence. Valve equipment may be more tolerant of such 'blips' in the mains supply but even here if your equipment has silicon diode rectifiers in the power supply then beware, you could lose not only the diodes but also the mains transformer. This could also be the reason so many of the modern switched mode psus go 'down'.

During the months of February, March, and April of this year Robert had his domestic AC mains supply monitored for him by the Supply Company. He was later provided with a copy of the readout and was astonished to discover that even 100% over voltage spikes were present. Now just think about that, a 100% overvoltage of the 230 volts AC supply means an RMS voltage of 460 volts and a peak voltage of 650 volts !!!

Whilst such transients or 'spikes' may last but fractions of a second, this is long enough to destroy semiconductor devices such as rectifier diodes. Shorted rectifier diodes put raw AC on the electrolytics, which give up the ghost and themselves short out. VOILA ! a shorted transformer secondary and pretty rapidly an overheated mains transformer. (One EUGer recently paid £37.50 to have his 940 mains transformer rewound).

The tabulated results of the three months monitoring programme make surprising reading, q.v. -

87	of	25	to	50%	over	volts.	
35	of	50	to	75%	over	volts.	
28	of	75	to	100%	over	volts.	
9	of	100%	plus			over	volts.

The survey had been done as a result of frequent complaints by computer owners in a small area. Power supply failures being the most common problem.

An all thermionic valve receiver would no doubt have been able to ignore these 'spikes' although even here the risk to a transformer primary might have existed.

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### NiCads for an EB37

If one fits ordinary, equivalent size, nicads into the battery box of an EB37 then one is reduced to operating with just 8.2 volts in lieu of the 9 volts available from normal new alkaline or leclanché batteries. This may not worry some listeners but in Alan's case he has noticed that his receiver is more prone to drift when he is on range 1, usually listening on the 15 Mc/s broadcast band.

He has recently been using his receiver with the mains psu in



situ and finds that the drift is no longer there. Some experiments showed him that whereas the zeners in his EB37 were still 'zenering' to provide the stabilised 6 volts when fed with 9 volts, they only just operated with 8 volts, and below this figure they had little effect.

Alan likes to use his EB37 whilst camping and had managed with nicads for several holidays in the past, with the resultant drift on range 1. This time he decided to try a different approach. He discovered that a PP9 layer type battery would just slide into the space between the upper pcb and the chassis, occupying the space where the battery pack intruded into the receiver case, and a bit farther in to the right of the tuning gang.

The push on PP9 connector was attached to the four way receiver connector and taped over. The PP9 was taped up to prevent the metal case from shorting out on the PCB component tags. The battery pack was replaced with a similarly sized rear panel of paxolin which was screwed into place. Tests showed that the PP9 kept it's voltage over a much longer period than either alkaline cells or leclanché cells and its cost was much less. No drifting problems were experienced during the full two week camping holiday, in fact the PP9 did not begin to show signs of voltage drop until some four weeks had elapsed.

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#### AC/DC Models

This past hot summer has seen several letters about the amount of heat generated by models such as the 840A or 670C, fine on a winter's eve in the garden shed 'shack' but not so good on a midsummer day in an upstairs bedroom type 'shack'. This EUGer found that the excess heat generated by operating his AC/DC Eddystone receiver was unacceptable, after all some 50% of the power taken by this model was simply going to heat the dropper resistor ! Not exactly an economically viable situation in these days of 'E.C.' (ecologically correctness).

The junk box produced nothing suitable but a local Rally did. The item in question was a 50 watt rated isolation transformer with a dual voltage secondary for either 120 or 240 volts from a 240 volts input. This was a toroid type transformer, double wound, with flying leads and hardly suitable as was for use with his receiver.

The solution was to attach an input cable and plug with a small 'domino' connector, ditto a two way output lead. The whole transformer was then 'potted' into a plastic container which had formerly held a brand of high protein supplement. Holes in the lid allowed passage for the two leads. The potting was done with a proprietary brand of potting compound obtainable from RS Ltd.

After leaving the potted transformer to set for a full two days it was then connected to the 230 volts mains with a small light bulb as dummy load. The test period of several hours showed no apparent temperature rise in the unit and the output voltage had held steady at 112 to 115 volts.

The receiver was now connected and powered up after having been adjusted to the required 110 volts tapping. Over a whole Saturday

afternoon's operation the temperature of the outside metal case changed only slightly and that corner spot above the dropper resistor was no longer 'hot as hell'. Several months of operation in this manner have proved the efficiency of the dropper/isolator transformer.

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### Dud Bypass Condensers

An EUGer who has read and listened to the debate on whether to swop all of these at one go, or whether to just wait for one to go down and then swop that one alone has written in with his findings.

Several of his Eddystones have in the past required the odd one or two to be changed in order to keep up the performance, those Red encapsulated ones seem to be a common cause for failure yet many of these show on test as still being perfect ! Ivor says that he has owned and operated a National HRO of pre WW II vintage and has only had to swop some of the bypass condensers as they go duff. A recent purchase was of a similar model HRO of 1944 (lease-lend) vintage. This had very poor performance overall and when opened up it was found that ALL of the paper type bypass condensers had been swopped by a previous owner for those Grey, plastic encapsulated Radiospares type of 1955-60 vintage. Every single one of these showed up some degree of leakage and all had to be swopped. This set had been bought with an alien psu of WW II vintage which gave 270 VDC on load. This is far above the required HT for the HRO-M and may have contributed to the state of the condensers.

The best decision would seem to be that in future a preliminary check will be made on any new (but old) equipment that is bought. If just the odd condenser shows up as leaky then swop it, but leave the rest in situ. If many show up as dud then swop 'em all. Usually if one buys new modern condensers which are rated well above the type required, i.e. if you need replacements for oldies rated at 400 VDC then buying modern ones rated at 600 VDC you will get something approaching the same size, but liable to last well into the next century. Ivor.

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### Radio Four Ad Infinitum

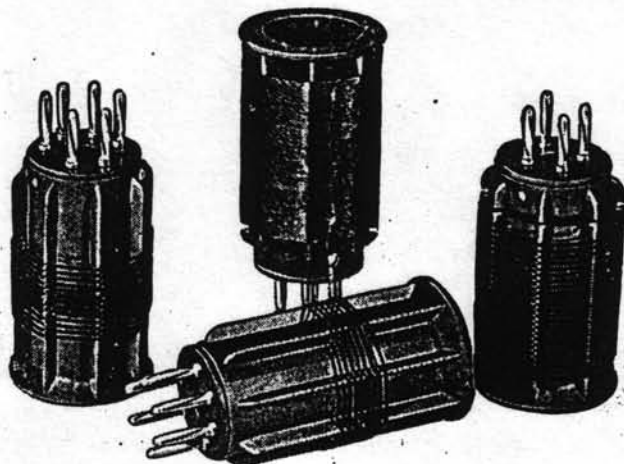
Having installed an EC10 at his QTH near Leamington this EUGer found that he was 'plagued' by spurious signals from the QRO R4 transmitter at Daventry. They appeared at several places on the lower ranges and not always at multiples of 198 Kc/s either. He was not getting this effect on his 740, nor on his 1830 receivers when using the same forty-odd feet of outside wire. Moving the end of his 'wire' from one tree to another so as to change the direction from East-West to a more North-South direction made no difference at all. Dissing the outside ground earth wire did almost eliminate the problem. Looking at the circuit for his EC10 the only possible culprit appeared to be those twin back to back diodes across the input aerial and earth connectors. Sure enough, dissing them from the aerial socket cured his problem, but what about protection ? A club member suggested a wave trap tuned to 198 Kc/s across the aerial and earth terminals,



# EDDYSTONE

page 5

## Low Loss Interchangeable Coils COVERING 9 METRES TO 2,000 METRES.



Our coils are of the highest efficiency, and first-grade workmanship. Using D.L.-9 high frequency formers, matched inductances, and H.C. enamelled wire. Helically slotted pins ensure full surface contact. Windings are soldered to pins, which are rivetted and cannot work loose. The approximate wave-ranges of the coils are for a 160 m.mfd. tuning condenser, and allow for average circuit load.

### FOUR PIN TWO WINDING. CAT. No. 932.

Type	Metres	WINDING TURNS AND INDUCTANCES.		Code	PRICE
		Primary	Grid Inductance		
BB	9-14	3	2 $\frac{3}{8}$ 0.50 $\mu$ H.	ACBB	2/9
LB	12-26	2	3 $\frac{7}{8}$ 1.08 $\mu$ H.	ACBE	2/9
Y	22-47	4 $\frac{1}{2}$	8 $\frac{3}{4}$ 3.62 $\mu$ H.	ACYE	2/9
R	41-94	9 $\frac{3}{8}$	23 $\frac{7}{8}$ 14.24 $\mu$ H.	ACRO	2/9
W	76-170	15	35 45.0 $\mu$ H.	ACWO	3/3
P	150-325	25	92 0.188 mH.	ACPI	3/6
G	260-510	40	138 0.420 mH.	ACGO	3/6
BR	490-1000	30	315 1.90 mH.	ACBR	4/6
GY	1000-2000	140	630 6.98 mH.	ACGY	4/6

### SIX PIN THREE WINDING. CAT. No. 959.

Type	Metres	WINDING TURNS AND INDUCTANCES.			Code	PRICE
		Primary	Grid Inductance	Reaction		
6 BB	9-14	1 $\frac{1}{4}$	2 $\frac{3}{8}$ 0.51 $\mu$ H.	3	EXBB	3/3
6 LB	12-26	2	3 $\frac{7}{8}$ 1.07 $\mu$ H.	3	EXLIB	3/3
6 Y	22-47	4 $\frac{1}{2}$	8 $\frac{3}{4}$ 3.62 $\mu$ H.	4 $\frac{1}{2}$	EXYEL	3/3
6 R	41-94	9 $\frac{3}{8}$	23 $\frac{7}{8}$ 14.13 $\mu$ H.	9 $\frac{3}{8}$	EXRE	3/3
6 W	76-170	10	35 45.0 $\mu$ H.	14	EXWO	3/9
6 P	150-325	42	92 0.188 mH.	35	EXPI	4/6
6 G	260-510	90	138 0.428 mH.	40	EXGO	4/6
6 BR	490-1000	200	315 1.53 mH.	80	EXBRO	5/-
6 GY	1000-2000	300	630 7.05 mH.	140	EXDOY	5/-

### SIX PIN COIL BASES FOR CAT. No. 959 COILS.

For above baseboard wiring. D.L.-9 insulation, low self capacity, one piece sockets, positive electrical contact.

CAT. No. 969.

Code ESAF.

PRICE .. 2/3

For under baseboard wiring. D.L.-9 insulation with special ribs to reduce leakage between sockets.

CAT. No. 964.

Code ESAF.

PRICE .. 1/3

The four-pin coils, Cat. No. 932, have standard valveholder fittings.—See page 10.



this was made up from a mica trimmer and an unknown value of RFC. When resonated the problem had gone completely, so he still has his protective diodes in place. They do perform a useful function and ought not to be removed to cure a problem with spurious as mentioned. There is nothing esoteric about a wave trap. One mica trimmer of @500 pF and a suitable Inductance copes with really large RF signals.

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### Issue 56 Feature

The Amateur station featured in the last issue brought a response from Dave who used to build a lot of his own goodies in the '30s and '40s. At that time there was a complete dearth of ready built commercial stuff for amateurs and SWLs. Most made do with Gov't Surplus units either modded to suit or just as they came. In Dave's case his own memories cover mods to such items as the 1154/55 Tx/Rx units, including the building of a dual voltage psu to feed the hungry monsters. He also has fond memories of the VHF 440/450 Strattons units which needed to have the Tx inductances re-fitted before use. Clydesdales had to remove these before selling the unit but happily supplied the part separately for half a crown ! One of the restrictions placed on the sale of much of the transmitting gear was that it had to be de-activated.

Another model remembered by Dave was his 358X, the first ever receiver which he had owned with a crystal filter for narrow band working. It was a revelation to somebody who had previously existed without. The one problem with his S.358X was that he had to turn off the HT before swapping over the coil packs - he kept forgetting !

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### FETS and the 640

Jim has recently bought a 640 which has been modded to utilise three FETs type 2N3819 in the front end. He was warned that it had been modded but was surprised to find upon opening the lid that both V1 and V2 had been removed and paper stickers marked with a big red X stuck over the valve sockets.

It is evident that a few resistors have also been changed but apart the FETs wired into the circuit inside the coil box the under chassis view differs little from an ordinary 640. The operation of the set appears to be as good as might be expected but not having an original 640 alongside to compare Jim cannot say more. He has no plans to de-mod the set although this could easily be done as none of the changes are irreversible.

The output 'bottle' which ought to be a 6V6G has been swapped for a 6J5, one of the metal can types by RCA. This, apparently, was often done to reduce power consumption and gave more than enough power for 'phones use. These mods appear to have been made to reduce the load on the mains transfo which according to Graeme was pretty heavily loaded under normal conditions.

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Turkish 770R

A letter from a non-EUGer in Ankara this. Carl tells me that he is a USAID worker out there and has heard of EUG over the Internet. He has recently acquired a slightly battered and deaf 770R which does work but needs much TLC before it can be put to use in his home shack - in Troy, N.Y State.

The peculiarity of this 770R is that all front panel markings are printed in Turkish, only the Model/Serial number plate at the rear of the chassis is in English. The set is a rack mount version without any case but has been pretty well protected whilst in the junk shop by being partially wrapped in plastic film. All valves are present although several are manifestly of non-original manufacture.

Carl enlisted the aid of a local bank manager cum amateur operator to translate into English the Turkish control markings. The partial manual which accompanied this set is in English but lacks the schematic and several pages.

This is a new one for me although I had heard that some 770R models had been bought by the Turkish Government.

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Digital Voltmeters

The price of these test meters continues to fall so that there is little excuse for not having one in the shack. Problems do arise when using one of these to compare HT or bias voltages in your valve receiver with the given voltages in Handbook tables. It need not be a problem if one thinks about the conditions to be found in such circuits. The tables usually cite voltage readings as taken with, say, a 1000 ohms per volt analogue meter such as an AVO. The DVM will have a much higher impedance and will not present any appreciable load on the circuit to be tested, as would an AVO hence voltages measured will be higher.

If you consider an analogue meter with an ohms per volt rating of 1000 then on the 250 VDC range it will have a resistance of 250K ohms. This may therefore be approximated by putting a 250K resistor across the meter terminals whilst testing, in practice a preferred value of 270K would suffice. Jim.

● *ADVERTS...*

FOR SALE: New Valves in original undamaged boxes. £5 for two inc p&p. (Bank notes OK) 6H6GT, 6X5GT, 5Z4GT, 6AT6, 6AU6, 6AL5, N78, ECH42, EZ41, OA2. Peter Lanksheer, 292 Racecourse Road, Invercargill, New Zealand. E-mail: peemel@clear.net.nz

WANTED: Eddystone EB35, 850, 770S and 960 receivers. Have various sets to swap or will buy. Phone Dave on 01869 347504 evenings 6 till 9. Answerphone during day. (Bucks)

EXCHANGE for 670C: I have the second prototype 990R in very nice clean condx. Ser. No. DEV/PP/0002 marked in Mc/s not MHz! AGC faulty. Works fine on manual. I am seeking a nice tidy 670C which need not work so long as it is nice and clean. Call Graeme G3GGL on 01299 403372 (Worcs). *(OR WILL PAY CASH FOR 670C!)*

WANTED: Still seeking an Eddystone Model 1000 or 1001. Please help if you can! Contact Martyn Lindars (Crewkerne) 01460 76143.

Re ATUs/AMUs in Issue 55

Peter writes in anent the item on one correspondent's plethora of DIY ATUs. The plea is for more info on the types and the circuits for these ATUs.

The problem here is that so often the letters do not contain such info. Usually because the writer assumes that we all know that the majority of such circuits are simply customised versions of the basic 'Pi' or 'L' circuits. Either in their unbalanced (usual) or their balanced configuration.

There is very little one can do to really change such circuits apart from slight changes in L or C values to improve 'Q' at specified chosen parts of the range. Maybe more or less switched positions on the Inductance, a bypass switch to enable comparison with or without the ATU in circuit may be added or not.

Those multi- functional ATUs are often lifted almost exactly from books such as the ARRL or RSGB Handbooks, q.v. One very good book with construction details for several ATUs is Pat Hawker's "Technical Topics". Possibly out of print now but the 1985 edition is often available from your library.

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Cleaning Fluids

Again from Peter, and again from Issue 55. The use of Carbon Tet being no longer P.C. what should we use ???

Well my Mum was a fervent advocate of soap and water for EVERYTHING, and yet soap these days is said to harm the skin ! Anyway I know that the wrinkly Hams of the 1930s used to wash their crystals in soap and water. Honest, I have seen it done, and they worked afterwards.

Seriously though Graeme's suggestion for the use of Maplins 'AF Spray' may be the best bet of all, yet I am told that one EUGer has used Iso-propyl alcohol successfully for years. Another EUGer uses the same meths that his ballet dancer daughter uses to harden the skin of her feet !!! Probably from the same bottle he meant, but not that meths which had already been used on the feet.

The use of such as nail varnish remover is to be discouraged Peter, whether having glycerine added as Graeme suspects, or not, the stuff is very highly flammable - ditto petrol.

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WANTED !

A plea from Peter - on 0131 332 3030 - for the following Manual/schematic. Please can some good soul lend him a copy of the



manual for the Heathkit Solid State Voltmeter model, IM16. The manual will be returned after copying or Peter will defray costs if you prefer to copy and send to him. Somebody out there must have this manual so come on, help another member. Ted.

- - - - -  
S881 Cabin Tuner

David has now acquired one of these to go alongside his other Eddystone, a 940. This version has no Marconi name or model anywhere on it just the model / serial label at the rear which says S.881, number DEV 0002. So here goes David with what I know of this model. Yours is evidently the second of two development versions made for in house testing, number DEV 0001 went to Marconi for evaluation on 12.3.1954. Yours may have been retained at West Heath for further tests, and later disposed of to a member of staff for peanuts.

Yours was to schematic BP843 and the first to go into production for Marconi and to be so marked was the S881/1 to spec; BP865, this became Marconi Model Type 2232A. Yours has ranges of 30 - 12.8, 13 - 5.8, 2.75 - 1.2, and 1.23 - 0.52. The Marconi version was slightly different as it has 30 - 10.4, 10.6 - 3.7, 1.45 - 0.52, and 0.38 - 0.15 Mc/s (not MHz). Next variant was the /2 which had increased output of 2 watts on 110 VDC operation and 3 watts output on 220 VDC operation, the coverage was the same as the /1 version. It became the Type 2245A.

The last known variant was the /3 which was to BP890 and was the Type 2273A, this had different ranges as 10.6 - 3.7, 3.8 - 1.4, 1.4 - 0.48, and 0.38 - 0.15 Mc/s. All Variants had the 'brown ripple finish' as has yours. Hope that info helps you David, as I have not one iota more here. Do let us know about your ongoing restoration project with this model. Ted.

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S.680X Variants.

There were not many changes to this model throughout its production lifetime. No suffix numbers at all. One variant had crystal control using B7G crystals and was to an Amendment Number 1114, another had chrome carrying handles fitted and was to Amendment Number 1196, then there was the rack mount version without a cabinet and with a MUSA coax socket for the aerial input. This last one was to Amendment Number 1261. No BP numbers are to hand for these changes. Hope this satisfies your curiosity Peter. Ted.

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MIMCO Type 2232B

This was basically a 670C model badged as a MIMCO set and was designated 670C/1 by Eddystone. It had the same frequency

coverage as the standard 670C receiver. Okay Alan ? Ted.

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Variant S770S

There was no suffix variant to this UHF model just a small batch made to an Amendment Number 1440 which had a crystal controlled BFO fitted, the range remained the same at 500 to 1000 Mc/s. Ted.

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Noise Measuring Set 31A

Despite your info Peter there was no difference between the P.O. version (S.975) and the Eddystone version (S975/1), except of course for the badge. Ted.

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S.958 Problems.

Jim McGowan is having problems resetting the scale cursor adjustment on his 958 after the set has been rebuilt. Seems that the cursor adjust knob does not work at all. PLEASE, if any EUGer out there has a 958 and can help Jim can you contact him on 01708-340304 (Romford).

Best I can do for you Jim as I do not have a 958 here to compare with your given info. Hope you get it sorted pronto. Ted.

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eddyspare@onet.co.uk

This is the website for contacting Dave Simmons in re his supply of spares for Eddystone models.

He is having some problems as many of these spares are not identified in any way and he is still attempting to catalogue many of them. He has neither fingerplates nor IFs for the EB/EC series. These incidentally may have been a 'bought-in' item so one EUGer tells me. Bobby says that he has seen exactly the same IFs marked as Wearite manufacture. If this is so then it does widen our hopes a little. Can any EUGer help here ?? You can contact any of us, me, Dave, or Graeme with your info about these IFs.

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Strange 358 ?

Charles has bought a B34 which is the RN version of the



S358X excepting the fact that it has acquired a trimmer condenser brought out to a front panel control via an extension rod with universal joints at each end. This is not a Strattons flexible extension and so the mod may be a RN one not a Factory mod. It may have been an aerial trimmer. Also there is a NL mod fitted, an EA50 diode valve wired in from the top of the detector. This was probably because in these sets when used aboard ships with radar there was a continual problem with 'bips' from the radar. I have no prior experience of any 358 modded in this way but then I have seen many other 'one-off' versions of this and other models done by RN or RAF personnel.

Charles mentions that the set still has some of the apparently original valves fitted, i.e. ARP34, ECH35, 6K7G, War Dept 6K7G, Admiralty NR48, Cossor OM5 and Air Ministry T52.

Charles is now looking for a set of coils for this 358X as all he has at present is the Range A coil for 22-31 Mc/s. PLEASE if you have some spare 358/358X coils contact Charles on 01246-567164, Thanks. Ted.

#### S.504 Purchase

Stewart, a new member, has bought himself a 504 AND diecast speaker for the inclusive price of just £80. Not bad at all considering that I know one EUGer who paid £50 for just the diecast speaker !!!

Stewart also mentions that he knows something about the NATO designations, but not all. From his years at Marconi he knows that the first group 5820 is definitely 'RADIO', the second group denotes the country of origin and so 99 in this case refers to the UK. This regardless of manufacturer. He cannot go further, the meaning of the last group is what we all need to know. Is it just the contract number for any one model - as I believe ?

- - - -

#### New EUGer

A welcome to ex Royal Signals Norman who used to operate an All World Two after being invalided out of the service. Cost him £4.10s and worked well, until he succumbed to temptation and swapped to an AR88LF. Stay with us Norman, you may yet go back to an All World Two. You ought to have had your ESWM number one from Graeme by now. Ted.

#### Piccolo Again

From Brian in Canada we have the news that he has found a source of micro switches over there for his 830. From Alan here we have the same info that he has been able to buy the requisite item from RS, no mods needed. So all we need now is a source for the filter crystals. TRY SALFORD ELECTRICAL INSTRUMENTS says one

EUGer as they supplied the crystals to Marconi. Ted.

- - - - -  
Improved Everyman S.W Receiver

Popular ? Well maybe since two of our members claim to have had one of these, one each that is. This was one of the last of the TRF sets made by Strattons and I have no personal knowledge of it.

The article is lifted directly from the ESWM 4 so quality may not be all we are used to. The wide range covered by it, and the listed stations that could be heard on it say much for the quality of this 4 valver.

It would be perfectly capable of resolving the SSB signals heard on the bands today and the sensitivity would rival, or exceed that of many superhets. Ted.

- - - - -  
Those Eddystone Coils

Now that replica formers are available I have had several letters asking for winding data for the original coils, very vital info for those contemplating building replica sets. The sheet in this Newsletter gives ALL of the info that I have, so best of luck to those brave souls who are attempting such replica models. Don't forget to let us all know how you get on. Ted.

- ADVERTS -

WANTED: Eddystone 870, green if possible, any condition acceptable. Also Meccano crystal receiver model RS1 or RS2, and/or any Meccano spares to assist in making one! All replies answered. Peter Lupino, (Surrey) 01372 454381 or 0374 128170 anytime.

WANTED: Old Eddystone 750 for spares. I have a junky one and need another to make one good one. Call Chris (Watford, Herts) 01923 250673.

WANTED: Stewart Moore at 'Megahertz' (Eddystone's new owner) is restoring a vintage car. He needs these radio items to complete it:- Pye Telecom AM 'Reporter' (c.1951/3), and EKCO TMB272 Portable TV/Radio Set (c.1955/6). Call Stuart at home (Cambridge) on 01223 834185 or E-mail him at the works QTH: StuartM@megahertz.co.uk

FOR SALE: Eddystone 770R Mk I in nice condx and GWO. Great for listening to 6, 4 and 2 metre amateur bands or for monitoring aircraft & marine traffic. You could simply use it for FM radio in the shack. NASA had one & so should you. £85.

Model 840C fully refurbished and stove enamelled in correct colours. Looks and works like new; £200. Eddystone 730/4 having had same treatment; £350.

Eddystone 830/7 - probably the best of the valve sets. This one looks like it just left the factory. £450.

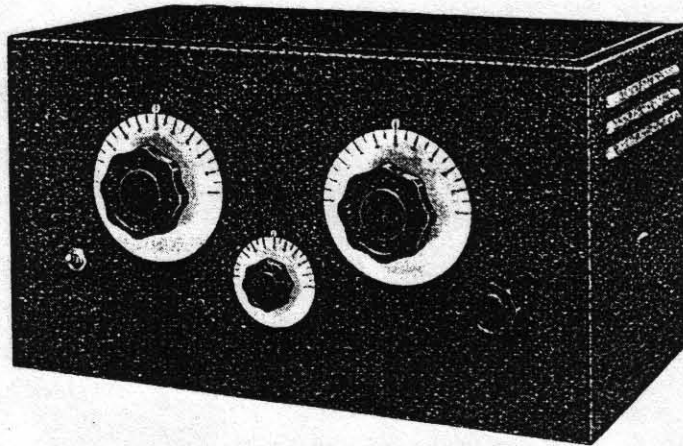
Eddystone Test Set Model 40A in good condition and working order, £140.

RCA AR88 in rare blue finish. Good condx & working well when last used. Too heavy for me to lift. £100. Some of the above may seem costly when compared to most adverts but they have had a great deal of time and money spent on them to make them absolutely right. Call Simon G8POO on 01434 633913 for details.



## THE IMPROVED EVERYMAN SHORT WAVE RECEIVER.

FOR BATTERY OPERATION. 9.85 metres to 2000 metres.



The Completed Receiver.

This receiver will find favour with the short-wave experimenter who is looking for a set which does not present the technical difficulties necessary to obtain satisfactory working from the more complicated and expensive shortwave Superheterodyne. At the same time although this Receiver is simple to construct and put into operation it gives a splendid all-round performance and has the professional appearance of the latest communication type sets.

The circuit has been based on a previous "Eddystone" model which has already achieved a World-wide reputation for performance and reliability. It comprises an aperiodic high frequency valve, a screened grid detector and a two-stage audio amplifier section. The aperiodic high frequency circuit is fitted with a specific purpose in mind. The stage does not in itself afford much degree of gain but it ensures completely stable operation with freedom from blind tuning spots and hand capacity, and a smooth consistent reaction control. It prevents re-radiation on the aerial when regeneration is applied so that no interference is caused. It also enables much greater gain and selectivity to be obtained from the high magnification screen grid detector stage.

The first audio stage is resistance coupled and is followed by an L.F. transformer. The band-spread method of tuning makes the receiver easy to handle and facilitates the thrill of long distance reception on the short wavebands.

A standard Eddystone panel No. 1122 is used and the baseboard is made from 5 ply plywood. It is raised 2½" by means of two side supporting battens. The baseboard is covered with a thin sheet of polished aluminium which is easily perforated with a sharp pointed tool when the parts are fitted into place.

The Receiver will bring in many American, European, Far Eastern and other long distance shortwave broadcast and amateur experimental stations at good loudspeaker strength and quality. It tunes from 9.8 metres to 2000 metres and covers all popular wavebands including the Empire transmitters at Daventry, such stations as Rome, Moscow, Berlin, Pittsburg, Schenectady, and also ships at sea, coast stations, aircraft, trawlers, police and medium and longwave broadcast. Further, the set can be used for receiving morse signals which puts at the owner's fingertips many more interesting stations.

### BATTERIES.

A 2 volt battery is used for low tension supply, the Exide DFG or larger capacity being suitable. High tension should be at least 120 volts and can with advantage be increased to 150 volts. Low tension current consumption is .5 of an ampere and high tension 8 milliampere at 120 volts. The L.T. battery is connected by two spade terminals and the H.T. by two wander plugs. Grid bias to the last two valves is automatically provided so no grid bias battery is needed.

## IMPROVED EVERYMAN SHORT WAVE RECEIVER (continued).

## CONSTRUCTION.

The photographic view of the baseboard clearly shews layout of the components and the general wiring positions. This, in conjunction with the circuit diagram on the next page makes the construction quite straightforward.

The assembly comes next and for ease of wiring it will be advantageous to tin or give the connecting points a coat of solder before the parts are fixed in place. Lay out the components as shewn in the photograph and proceed to fasten them down. It should be noted that the coil base and ceramic reaction pre-set condenser are mounted on insulating pillars and the two tuning condensers on insulated adjustable brackets. The top and underside fixing holes of the T.C.C. condensers must be scraped to give sound contact with the aluminium on the baseboard and one tag of each of these condensers is bent over and soldered to its own case. Three metal spacing washers are needed between the panel and 50,000 ohm and .25 megohm potentiometers and here again the panel must be scraped clean so that they make good contact with it.

The aluminium base covering is bent at right-angles over the front of the baseboard and clamped between that and the back of the metal panel. The lower part of the panel should be scraped clean to give good contact with the aluminium.

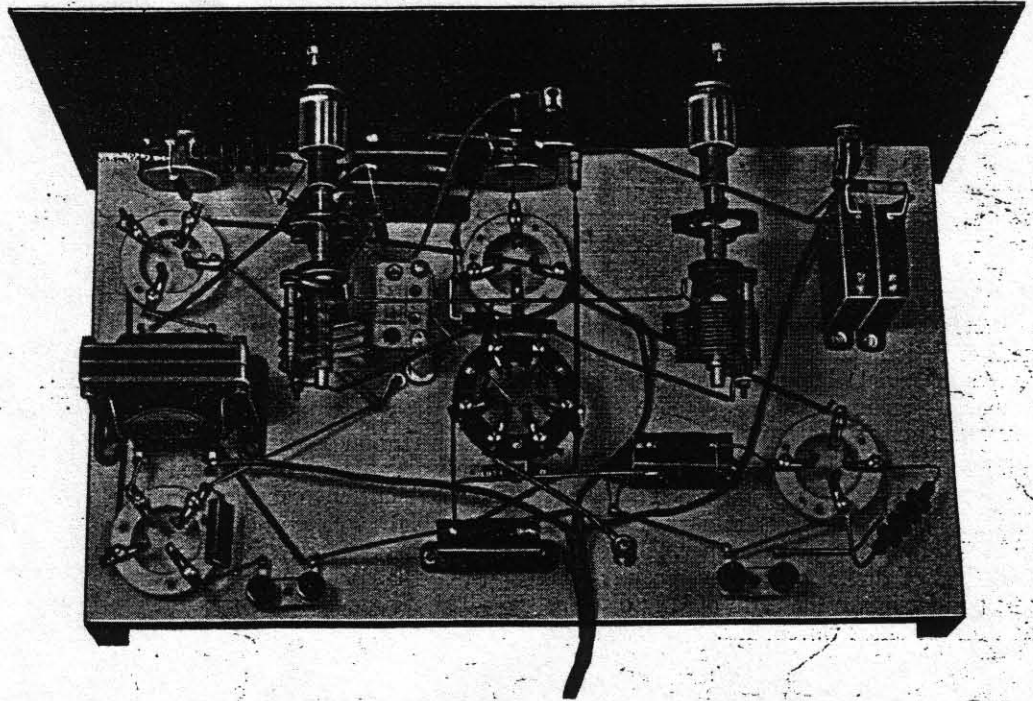
Be sure in wiring that all joints are strongly made. One poor or high resistance joint can adversely affect the performance or alternatively

may give the set a very high background noise level which is most undesirable.

A front view of the panel shews the bandset and bandspread condenser dials, the reaction control in the centre and the volume control on the right. On the extreme left is the master switch by which the receiver is switched "on" or "off." The aerial and earth terminals are at the back of the chassis immediately behind the bandset condenser. The output terminals for telephones or loud-speaker are those nearest the AF4 low frequency transformer. The high and low tension batteries are connected through the flexible lead which is fitted with two spade terminals for L.T. and two wander plugs for H.T.

## BANDSPREAD TUNING.

As shortwave signals are difficult to tune when one large capacity tuning condenser only is used this receiver has two condensers in parallel, the principle being to connect a tuning condenser of very small capacity in parallel with the large tuning condenser so that equal movement on each condenser will cover considerably different sections of the band. The large condenser is for coarse tuning, or bandsetting and the small one for the vernier or bandspread tuning. In the Improved Everyman Receiver the bandset condenser has a capacity of 160 mmfd and the bandspread 18 mmfd. With this arrangement in use tuning is remarkably easy with signals well spread out and well apart from each other on the bandspread scale.



Baseboard photograph showing component layout and wiring.



IMPROVED EVERYMAN SHORT WAVE RECEIVER (continued).

OPERATION.

After checking wiring, insert valves, tuning coil and connect up batteries, aerial and earth and loudspeaker. The set is then switched on but before it can be brought into use the correct setting of the ceramic reaction pre-set condenser must be determined. This is done by turning the reaction control potentiometer on the front panel approximately three quarters clockwise. The pre-set condenser is then adjusted until the receiver is just oscillating. After this setting has been decided, variation of the potentiometer will give sufficient control of reaction.

Commence working the receiver with the bandset, bandspread and reaction controls at zero and the volume control at least half-way. Then slowly increase reaction by turning the control in a clockwise direction until at a certain point the set will commence to oscillate; this will be easy to detect as a low "rushing" sound will be heard. Tuning is then carried out with the bandspread condenser in the usual manner. Throughout the whole tuning operations the reaction control should be so adjusted that the set is always just in the oscillating condition. The reaction control should never be turned any more than is necessary for the first reaction sound to be heard.

Probably the first signals to be heard will be morse code transmissions, a series of dots and dashes of high pitched note. With the set in the slightly oscillating condition previously mentioned telephony signals will also be heard as a high pitched whistle similar to the morse signals with the difference however that as the tuning is varied the note will appear to consist of a double peak signal with a silent point in the centre. To receive the telephony clearly, leave the set tuned to the silent point then slacken off the reaction control very slightly until the set is just out of oscillation. Afterwards retune a little if necessary and the speech or music will be quite clearly heard.

It simplifies the operation of the receiver when searching for stations to keep it in an oscillating

condition but it must be remembered that clear telephony can never be heard while the receiver continues to oscillate.

To obtain the highest selectivity the maximum amount of reaction should be used and volume decreased if necessary with the volume control.

EDDYSTONE PARTS.

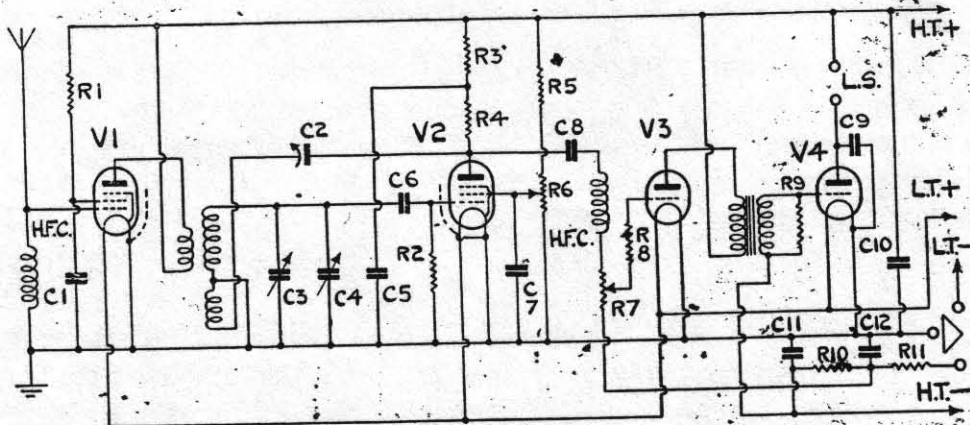
	Price
4 4-pin Valveholders No. 949 at 1/5d. each	5/8
1 6-pin Coil Holder No. 969	2/3
2 H.F. Chokes HFC, No. 1010 at 2/- each	4/-
2 Terminal Saddles, No. 1046 at 1/- each	2/-
5 Insulating Pillars, 1 1/2", No. 1029 at 4 1/2d. each	1/10d.
2 Flexible Couplers, No. 1009 at 1/6 each	3/-
2 Adjustable Mounting Brackets, No. 1007 at 1/6 each	3/-
1 160 mmfd Microdenser, C3, No. 1131	6/-
1 18 mmfd C4, No. 1094	3/9
1 Cabinet and Panel, No. 1034	18/6
1 Knob, No. 1086	9d.
1 Knob and Dial, No. 1099	2/-
2 S.M. Driving Head with Knob and standard 4" Dial, No. 1115 at 10/- each	20/-
1 6BB Tuning Coil 9.8 to 21 metres No. 959	3/3
1 6LB " 12 to 28 " No. 959	3/3
1 6Y " 20 to 49 " No. 959	3/3
1 6R " 40 to 96 " No. 959	3/3

Coils for further ranges are available.

MISCELLANEOUS PARTS.

6 T.C.C. 1 mfd type 65 Condensers C1, C5, C7, C10, C11 and C12	
1 Ferranti A.F.4 Transformer	
1 N.S.F. 50,000 ohms Potentiometer R6	
1 " .25 Megohms R7	
1 Dubilier 0.006 mfd Condenser Type, No. 691, C8	
1 " 0.001 " " No. 690, C9	
1 " 0.0001 mfd " " No. 690, C6	
1 Eerie 20,000 ohms 1/2 watt resistor, R3	
1 " 40,000 " " R5	
1 " 100,000 " " R1	
3 " .25 megohms " " R4, R8 and R9	
1 " 400 ohms " " R10	
1 " 200 " " R11	
1 Dubilier .001 mfd Fixed Condenser, Type 690	
1 Cyldon 140 mmfd Trimmer Condenser Type C2	
1 3 point on-off switch	
2 Valve Top Connectors	
1 Eerie 1 megohm 1/2 watt Resistance R2	
1 Baseboard 15 1/2" x 9" x 1/4"	
2 Corner Pieces 9" x 1 1/2" x 1/4"	
Wire, Screws, Tags, etc.	
1 Doz. Washers for Potentiometers	
1 sheet aluminium 15 1/2" x 9 1/2" x .012"	
1 4-way Battery Cable	
Approximate cost of miscellaneous parts	£2 16 6
Valves required :-	
2 Osram Z21 4-pin metallised Valves V1 and V2	
1 Mazda HL2 metallised Valve V3	
1 Mazda P220 Valve, V4	

This Receiver is available, assembled, wired and tested, complete with valves and coils 9.8 to 96 metres. Fitted in metal cabinet and ready for use £10 45 0



Theoretical circuit diagram. Improved Everyman Short Wave Receiver.

## EC10 MkII - SERVICE NOTES AND SELECTIVITY IMPROVEMENTS

Presented by J. Duckworth

I had almost almost given up finding an EC10 MkII after a year's search, so when I saw one at the October NEC, I jumped at it, warts and all. It was very well used, had a home-made power supply permanently installed, and even after haggling cost me as much as an original condition 'good one'.

I know this because Murphy's Law swung into action within a couple of weeks of purchase. Out of the blue I had two offers of unmolested boxed originals. But that's the way it goes. At least I had no compunction about using my shabby one as a test-bed for better things (q.v.).

### FIRST RESULTS . . .

Switching on *did* produce results on all bands but with a 'thin' sound at very low volume, so I opened it up. First impressions weren't encouraging . . . The PC boards and chassis were splattered with dots of white emulsion. A previous owner had evidently abandoned it as he painted the ceiling! Closer inspection showed that things might not be that bad. Apart from a new volume control, a Pioneer loudspeaker and the aerial input circuit rewired for 4mm sockets, the rest was very dirty but original.

Voltage measurements in the AF department showed no reading on TR7 (preamp) emitter and an abnormally high voltage on TR8 (driver) base and emitter. A touch of the soldering iron cleared the TR7 dry joint and restored normal voltages. The volume perked up but not by much.

### THE HEART OF THE PROBLEM

The bias resistors were not responsible for TR8 high volts so I yanked the transistor out and found it had gone low resistance between collector and base. I had a brand new OC81 in my 'warehouse' waiting all of 25 years for this opportunity and sure enough it did the trick. I now had full output from the AF amplifier and an RF performance which improved with a full alignment.

So here was a set with a performance representative of the superior multi-waveband SW portables of the late '60s. But not selective enough to hold its own for serious work on the crowded SW broadcast bands of today (my angle on the hobby). It was a little short of sensitivity also, making it difficult to pull in my early morning favourite, Radio New Zealand.

### A LITTLE EXTRA . . .

So bearing in mind the 'not so collectable' state of this set, I decided to design a small module of extra gain and selectivity. This could then be inserted between IFT1 output and TR4 input to improve matters, but making no non-reversible changes to the PC boards or the front panel.

*continued >>>>*



Figure 1 shows the version I finally settled on after much experiment. It's made up as a small module on a 1"x1.25" board mounted on the component side of the existing one. B+ and B- can be connected to resistor ends on the top, but three small holes are drilled for the input and output wires to connect to the PC board below.

It uses a low cost 'Murata' 4KHz ceramic filter offering a very good performance for just over £2. To achieve a perfect 2K-ohm match, a BC212 transistor and BF224b fet are used on the input and output sides; their respective high collector and gate impedance's not shunting the 2K resistors. The BC212 adds at least 12 dB or 4x extra gain above that needed to compensate for the 6 to 7 dB filter insertion loss.

This, along with the improved selectivity, allows the EC10 to resolve weaker signals with poorer neighbours and in fact makes the set so lively that the RF gain control can actually be used to 'throttle back', particularly on the 41 and 49 metre bands, rather than being permanently 'flat out'. The fet is used as a source follower, transferring the signal at low impedance to TR4 without adding any more gain.

#### HOW TO DO IT . . .

Some delicate surgery is needed with a craft knife to cut the track joining IFT1 secondary tap to TR4 base and then to isolate the earthy end pin of this secondary from the 'island' joining R20, 21 and C53. This is to allow the new module input to connect to IFT1 base tap and its output to TR4 base. Then the existing bias components are also joined to TR4 base with a short link, but less C53. New bias components, the 22K and 3.3K, along with a 0.1 cap are then connected to the earthy end of IFT1 to bias the BC212. This sounds complicated but a study of the EC10 MkII diagram along with fig 1 will make it clear.

As the filter is at 455KHz as opposed to the existing 470, a complete new IF alignment must be done. This is no problem. Sweep the sig gen slowly through the pass band until the 455 peak is found, then line up the existing IFT cores on it. The RF circuits will then need to be tweaked once more.

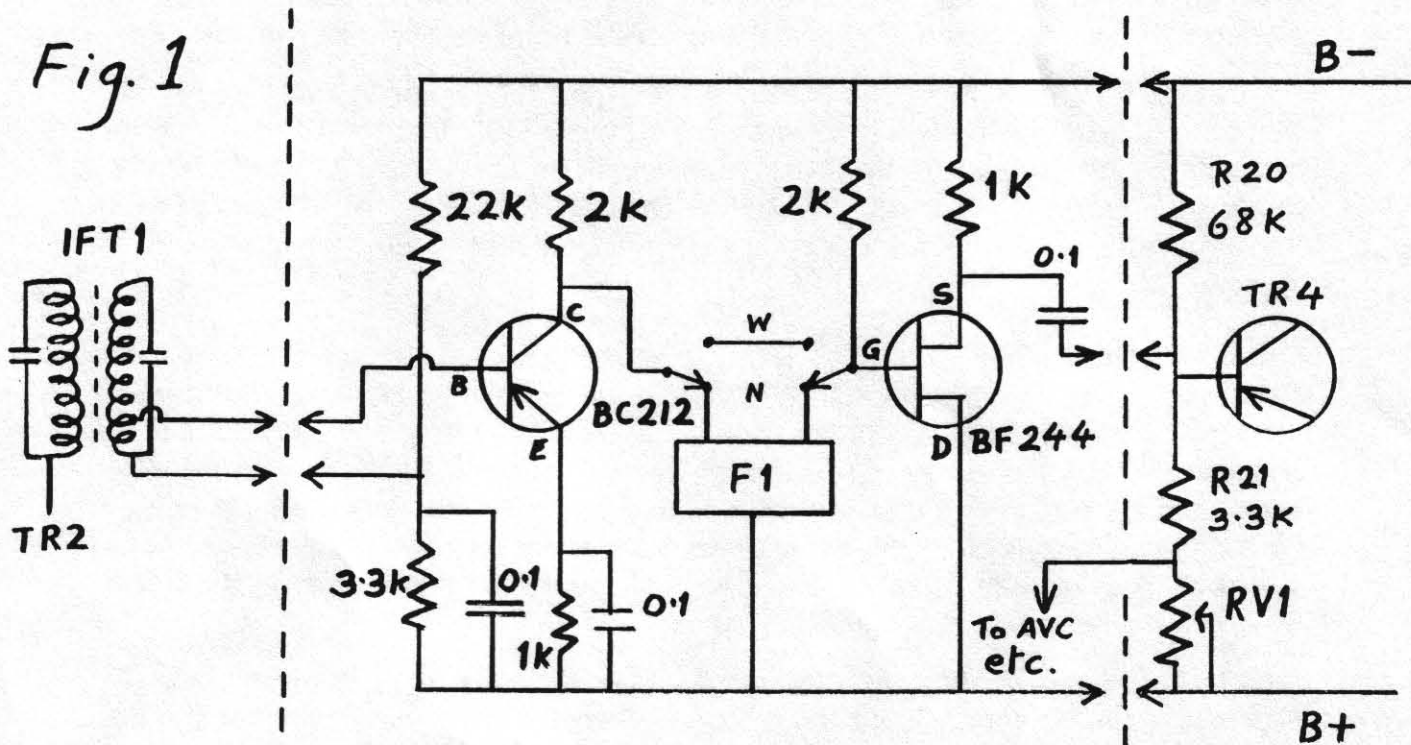
#### A FURTHER OPTION . . .

The standby switch on the front panel can be used to select 'wide' or 'narrow' after disconnecting its two existing leads. Fig 1 shows the take-off points to switch out the filter. Doing it this way is not very good practice, i.e. having the 455 kHz IF signal running to the front panel and back, risking noise pick-up and instability. However, the combination of the relatively low 2K impedance and a mini 4-way screened cable (earthed at the PC board end) makes it feasible and it's nice to have the better fidelity available in the wide position when the extra selectivity is not needed. No extra marking was made on the front panel.

A higher performance 'Murata' 4KHz filter is available for around £7 (10kHz bandwidth at 60dB down rather than 15KHz). This works very well and is interchangeable in fig 1, but the £2 one makes a good enough improvement to the EC10. After all, we don't have an 830 look-alike or feel-alike as a result of the above mods, just a higher performance receiver in a small package with scale resolution, etc., unchanged. (But it does get Radio New Zealand much better!)

*continued >>>>*

The module construction technique followed that promoted by the Rev George Dobbs, G3RJV, in P.W. i.e. mounting everything on the copper side of the PCB which provides a very stable ground-plane with HT connections, etc., soldered onto small 'islands' glued onto the copper surface. However, it must be stressed this project is only for experienced constructors. I'm not recommending a novice to start hacking around his pristine and highly collectable EC10. In my case I felt I had little to lose in its 'spare set' condition . . . Happy constructing!



NOTES.

- \* Module components between the dotted lines connect between IFT1 and TR4 as shown.
- \* Filter F1 is 'Murata' type CFW455IT.  
Higher spec/more expensive is CFG455I.  
Both obtainable from BONEX, Tel: 01753 549502.
- \* BC212 and BF244 are Texas Instrument types.  
BC212 P-type silicon transistor 200MHz FT.  
BF224 N-channel junction fet - many equivalents.
- \* Possibility to switch filter out for wide/narrow arrangement using 'Standby' switch. See text.

*(Although the Author has carried out this interesting project using an EC10 MkII, there's no reason it shouldn't be applied to an ordinary EC10 ('Mk I') - Graeme.)*



# NOTES ON RECEIVER SENSITIVITY

By Anthony Richards

## A few thoughts about the Front End

There has been no improvement in receiver sensitivity, at H.F. anyway, since the 1920's. Any receiver worth its keep is sensitive enough to get down to the noise. On 7MHz almost any set will require 20dB of attenuation inserted anyway, because of the noise generated by out of band signals. More on that in a moment, but whilst fettling a simple WS18 receiver the other night I was astonished at its ability to reel in virtually every South American country within about ten minutes on the 40 metre amateur band with just a few feet of wire as an aerial.

For those of us with valved transceivers such as KW's, a good way to test sensitivity is to operate the rig into a dummy load, set the RF and AF gains to maximum and twist the 'drive' control until you hear a peak in the 'sharsh' noise. It will be quite marked on 160 and 80, less so on the higher frequencies although it should be still audible. What this means is that the receiver can hear the noise generated by the dummy load resistor at room temperature - a pretty severe test. Another test is of course to compare weak signals on your Eddystone with those received by a modern 'black box', you may be surprised to find that the Eddystone will hear signals that new sets cannot hear, although the 'S' meter should be disregarded.

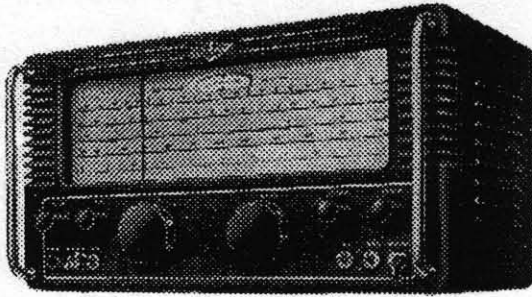
Now, why do we need attenuation before we can hear the weaker signals through the noise on 7MHz? First we must realise that *no* receiver ever built is immune to overload. On 7MHz our input circuit is looking into 50 ohms from the antenna or ATU. This damps the tuned circuit heavily so it is hundreds of kHz broad. Just above and below the amateur band are broadcast stations running up to a megawatt into a rhombic aerial, either beaming in to Europe or laying down a big signal from the side lobe of the aerial. If any one of these signals can overload the receiver, usually the first mixer or even the first RF stage, then every signal entering the receiver front end beats with every other one *and* with the receiver oscillator. The result is noise with maybe the odd very big signal peeping above it. Early solid state receivers were far worse than their valved predecessors (up to four times worse in fact - just compare the valved Eddystone 940 with the solid state 960!) and it was several years before solid state receiver designers seriously got to grips with the problem.

*continued >>>*





This month's featured model:-



## Eddystone 750

BY

SIMON ROBINSON G8P00

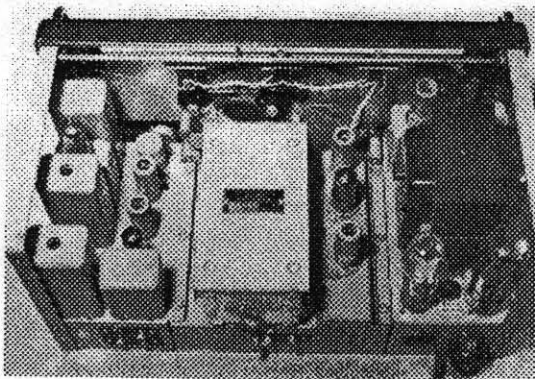
The Eddystone 750 is a set that is often forgotten unlike the 680X, 940, 830 etc... however you may be surprised to learn that it is actually capable of excellent performance on the short-wave bands. The simple reason is that it uses the double conversion technique featuring a first I.F. of 1620 kc. This results in high image rejection as opposed to the normal 455 kc I.F. common at the time.

We last looked at the 750 way back in EUG number 12 and thought it was time to revisit this top performer.

The 750 is a double-conversion superhet with variable selectivity. Externally it is normally supplied in black crackle finish and could have optional extras such as a diecast speaker, 'S' meter and angled mounting feet. The design incorporates the familiar horizontal scale providing excellent readability of frequency and is built to Eddystone's usual rigid standards.

The set covers from 480 kc to 32 mc in four bands, 32-12 mc, 12-4.5 mc, 4.5-1.7 mc and 1465-480kc. You will note that this gives continuous coverage except for a small gap near the first I.F. frequency.

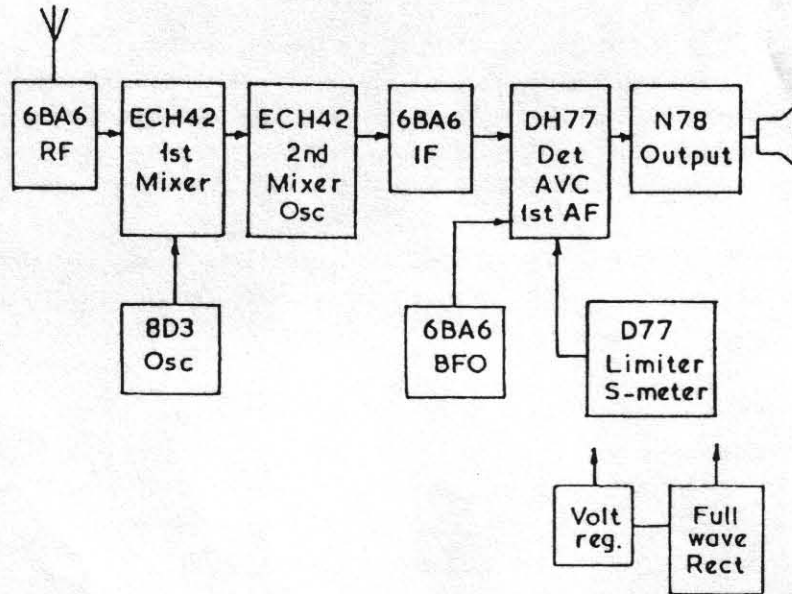
Sockets are provided at the rear for either a balanced or end fed antenna plus an 'S' meter socket, external supply socket, connection for a speaker and finally an external sound source such as a gramophone pick up. A hinged lid facilitates access to the upper chassis. The entire outer cabinet can of course be removed easily as with most Eddystone sets.



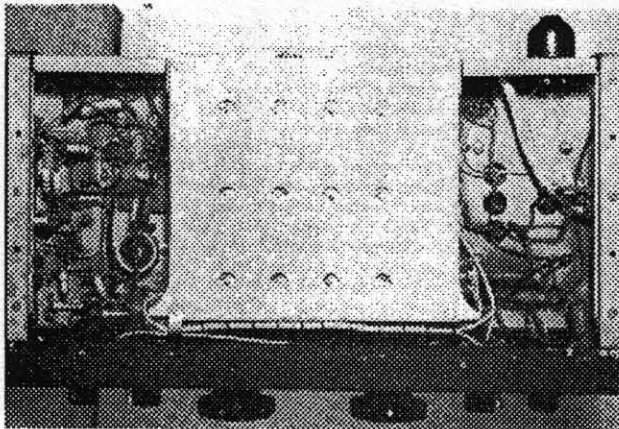
Top view of the 750 showing the neat arrangement of main components. The power supply unit is to the right whilst the I.F. and audio stages are to the left.

The R.F. deck is located centrally on a solid diecast base which results in very good stability after an initial warm up period.

Front panel controls are R.F. gain, BFO pitch, band selector, tuning, I.F. gain and audio gain. A noise limited, BFO and mains switches are also provided, as is a standard headphone socket. Constantly variable selectivity is a very useful facility and for use with a transmitter there is a 'send' switch, which leaves just the heaters alight. The flywheel tuning is a delight to use as always and gives a useful 150:1 reduction with a logging scale for accurate resetting of frequency. This makes tuning the amateur bands a real pleasure.



The above block diagram shows the simple design of this remarkable receiver and the full valve line up is as follows: 6BA6 R.F. amp, ECH42 1st mixer, 8D3 oscillator, ECH42 2nd mixer / oscillator, 6BA6 85kc I.F. amp, DH77 detector, AVC and 1st A.F, N78 A.F output, 6BA6 BFO, VR150 regulator, D77 noise limiter and 'S' meter driver and finally a 5Z4 full-wave rectifier.



Bottom view of the receiver showing tidy layout and fully screened R.F. coil box unit.

The performance of this set is wonderful for it's time as all gain stages are adjustable. Eddystone quote 2<sup>nd</sup> channel (or image) rejection at 40dB for 30mc and obviously this is much improved at lower frequencies. Many inexperienced listeners think that they have a deaf set when first using one with good 2<sup>nd</sup> channel rejection. They do not realize that their last receiver



was actually passing unwanted stations through it's I.F. stages giving the impression of much more crowded bands.

As the 750 was produced well before single sideband became the rage you will need to use the tried and tested tuning method for SSB on this receiver. Back off the R.F. and I.F. gain controls then turn up the A.F. gain to almost maximum. Leave the A.F. gain alone and use the R.F. and I.F. gain controls to limit the strength of SSB signals to the detector. Carefully tune in the desired signal and adjust the BFO pitch for best-received audio. This radio actually receives SSB rather well using this technique.

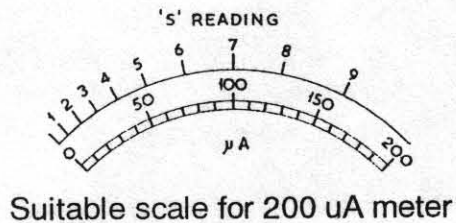
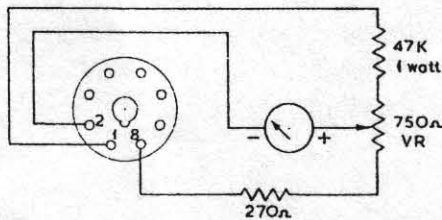
An 85 kc second I.F. allows much more selective LC tuned circuits to be used for filtering. Well-known manufacturers such as Drake used this technique in the 1970's to great advantage.

So there you have it! If you can find a 750 in nice condition, get a manual from Dave Simmons and spend some time putting it back to Eddystone's original alignment. It is unlikely you will find one in pristine working order due simply to the age of the set but a little TLC and common sense goes a long way.

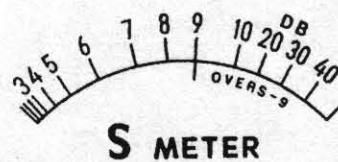
### Add an 'S' Meter to your 750 - or any other suitable valve model -

Obtaining an original Eddystone 'S' meter is not that easy and you may well pay as much for the meter as you did for the receiver you intend to plug it in to. Well the EUG is at your rescue with a simple design that anyone can construct to provide 'S' meter facilities. Please bear in mind that 'S' readings are very subjective and unless you have access to accurate calibration equipment or a calibrated receiver, they are likely to be subjective at best.

I was intending to show a photograph of a finished unit however on speaking to various members they all had their own ideas for suitable enclosures. Construction is therefore left up to the individual and is not critical.



The above circuit is for a 200 uA meter using scale shown at top right. If you use a more common 500 uA or 1 mA meter you will need to experiment with 1 watt resistors or a wirewound potentiometer in series with the '-ve' meter connection.



Try this scale with 500 uA or 1 mA

# EDDYSTONE POLICY

*AFTER SIX YEARS OF GLOBAL WAR BRITISH INDUSTRY STARTED TO SETTLE DOWN TO A WORLD WHICH WOULD NEVER BE THE SAME AGAIN. STRATTON & Co Ltd PUBLISHED THE FOLLOWING NOTICE IN "PRACTICAL WIRELESS" MAGAZINE FOR JULY 1946 UNDER THE HEADING:*

## "A STATEMENT OF EDDYSTONE POLICY"

- Stratton & Co., Ltd., West Heath, Birmingham, makers of the well known "EDDYSTONE" SHORT- AND ULTRA SHORTWAVE RECEIVERS, TRANSMITTERS AND COMPONENTS, have pleasure in announcing that they are now commencing to deliver components and in the near future will be in production with a new Communications Receiver - the "504".
- Priority is at present being given to Overseas orders and the "556" Receiver (for Export only) is on the production lines. Limited supplies of components for the Home trade will be evenly distributed to accredited Registered Dealers throughout Great Britain.
- In addition to the new model "504" Communications Receiver there will be a wide range of hf, vhf and uhf components and new editions of the popular "Eddystone" shortwave Manuals and ultra shortwave Guide. Developments are in hand to cater for the needs of all branches of the shortwave field - the Listener, the "Amateur" Experimenter and the Specialist Expert - and we shall always be glad to co-operate with Manufacturers in producing parts for Set and instrument construction. Watch the Technical Press for further announcements of "Eddystone" Radio Products . . .

**STRATTON & Co. Ltd.  
EDDYSTONE WORKS  
ALVECHURCH ROAD  
WEST HEATH  
BIRMINGHAM 31**



# RADIO RAMBLINGS

*Gottings from my Notebook*



By

Graeme Wormald

G3GGL

## BACK ON MY TRAVELS . . .

In September I paid my annual visit to the northern Borders, staying with Ron G8URU and visiting Simon G8POO. Ron is re-learning his Morse to get on the HF bands with the new Licence. (I see that around 100 'M5' call signs have been issued since they started at the beginning of August.)

Like many others he passed his RAE donkeys years ago and then stuck at 8 wpm on the key. This discouraged him but his interest returned after the Class 'B' licence was introduced. After a period on Two Metres he lost interest in the transmitting side (can you really blame him - no disrespect intended).

## OPERATING /P ON THE FIRST SUNDAY . . .

Isn't it curious how the CEPT regulations (or whatever) now make hams use the suffix /P (portable) when operating away from the base QTH . . . This used to be reserved for use when you were working from a field or a mountain top. It seems silly to use it when you're sitting comfortably with a roof over your head, sipping hot coffee and running on 230v AC. Once upon a time we used to call that /A operating (alternative address). Ah, well.

In preparation for his M5 ticket Ron recently acquired a remarkably mint (17 years old) Trio TS-530S. The price was considerably less than that asked for the latest black boxes. It has the advantages of digital display, phase-locked stability, valves in the final, knobs on the controls, nine-band coverage and no microprocessor! And it has an output variable from one to a hundred watts; just right for the new Licence.

I use the same rig myself at the home QTH and commend it to any aspiring Class A/B members, together with its very similar sibling, the TS-830S. The matching ATU, the Trio AT-230, is a worthwhile accessory to use with a wide range of aerials.

I arrived in Cumbria to find Ron had already erected a '5RV. The next day was the "First Sunday" and we put out an EUG CQ call on an eighty-metre band which was rapidly closing down. But the result was a successful four-way QSO with EUGers Colin G4HNN, in Worcestershire; Chris G3XFE, in Watford and Ralph G4EBL, in Herefordshire. So we launched HF operation from Ron's QTH . . . but we're still waiting to hear from our first EUG M5er!

## MOST IMPORTANT INFO FOR 770 MK II OWNERS . . .

While I was examining Ron's very clean and tidy 770R Mk II VHF set (recently acquired) I noticed a curious little knob thing sticking out of the IF output co-ax socket. (I have a Mk I model which doesn't have an IF output socket.) *CONT>>>>*

I asked Ron what it was and he explained it was a shorting plug which, when removed, had a disastrous effect. We did a test and found that an S9 signal was reduced by no less than FIVE S-points!!

The IF output (for an EP17R panadaptor) is derived from the top end of the mixer anode IFT, by the simple expedient of lifting the .01 decoupling condenser from earth and feeding it to the output socket. An 82 ohm resistor is shunted to earth to stabilise it. But this blocks the path of the .01 decoupler and damps the circuit. The shorting plug is a custom-made accessory, obviously factory fitted, BUT IS NOT MENTIONED IN THE HANDBOOK.

We visited Simon in Northumberland who has a 770U Mk II (the UHF version). This also had a shorting plug in the IF output socket . . . So check up, all you 770 Mk II owners, and if your shorting plug is missing make one up pronto. They use a standard British domestic (Belling-Lee type) TV co-ax connector which is widely available. The improvement will amaze you!

### DISASTER STRIKES . . .

Whilst enthusing about the superb state of Ron's 770R he mentioned that its only vice was a great stiffness and poor action of the scale adjuster. On close examination it seemed to be bent. Yours truly slipped a steel tube over the knurled knob and applied a little sideways pressure. No effect. A little more pressure. The knob snapped off. Was my face red!

We extracted the rest of the 'camshaft' . . . (Remove the glass and tuning scale first; it's quite easy.) It was clearly beyond repair. So a quick call was made to EUGer Dave Simmons, keeper of the world's largest stock of vintage Eddystone spares. As usual the Ansafone replied. I left a message describing the requirement; I must admit more in hope than anticipation. Two days later the postman delivered the exact item: it works perfectly. Many thanks, Dave, for saving my reputation!

### A LITTLE REMINDER . . .

Whilst speaking of Dave, I'd like to mention his stock of coils (inductors, wound goods, or whatever you like to call them). He's got many of these but they're mainly loose, some with unknown colour codes in the form of dots, and some with nothing to identify them. So it's no use asking him for a band 3 mixer coil for an 840C (for instance). You need to send him the offending item so he can try and match it up. In fact this goes for most small components. Stratton's were renowned for mixing and matching components during the life of a set.

### THOSE FICKLE SUNSPOTS . . .

I haven't read QST regularly for years. I used to work about 200 yards from the Birmingham City Reference Library, one of the best in the Kingdom. Among many items of interest they keep QST, usually a month late but better late than never.

I've been banging on to all and sundry for the past year about the virtual absence of any half-decent sunspot effects, such as an overflow of DX on Ten and Fifteen metres.

*Continued >>>>*



Well, last month I was called by a member who regularly visits Portugal, where they have QST on the bookstalls (lucky devils). He tells me they're now forecasting a two-year delay in the sunspot peak . . .

In the last EUG Newsletter our Patron, Chris Pettitt G0EYO (former MD of Eddystone Radio), was telling us about his R208 (1944 anti-aircraft comms Rx) - 'Sputnik Special' from his early days. The R208 was also one of my early loves, but it wasn't

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## Megahertz Communications to Build Midi TV, South Africa

*Cambridge, England 9/10/98*

Cambridge-based Broadcast Systems Integrators, Megahertz Communications Ltd, have secured the contract to design, equip and install a state of the art, automated news studio and transmission facility for Midi-TV, in Cape Town, South Africa. The contract for the brand new station is worth in excess of £2 million and is scheduled for completion by early 1999.

Midi TV is the brand new and long awaited free-to-air terrestrial TV channel in South Africa. Work has already begun, and Midi TV has been successfully on air with a temporary system since 1<sup>st</sup> October 1998. It is scheduled to be fully operational by the end of January next year.

As part of the philosophy to create a tape-free environment as far as possible, all short form media is to be stored and played out to air from ASC disk servers, with DVCPRO-50 VTR's being retained for feature-length programs. Newsroom automation is to be handled by Nexus Newsmaker, with a Newswire Open Media system providing an integrated newsroom facility.

In the newsroom, journalists will be able to preview video material at their own workstations via a low-resolution link to the central news server. An integrated editing system will enable them prepare cut-only EDLs which can be exported to the video servers. Final transmission edits are to be produced on Newsflash editing stations.

Dave Stewart, Midi TV's Director of Engineering commented,

"We chose to go with Megahertz on this project due to their advantage in being able to offer us the right combination and flexibility of equipment, with an extremely well thought-out system design based on our own particular operating requirements. By not being tied to one overall equipment manufacturer allowed us a very open platform for future expansion and long term upgrade path."

<http://www.megahertz.co.uk/PressRelease/pressrelease.htm>

28/05/99

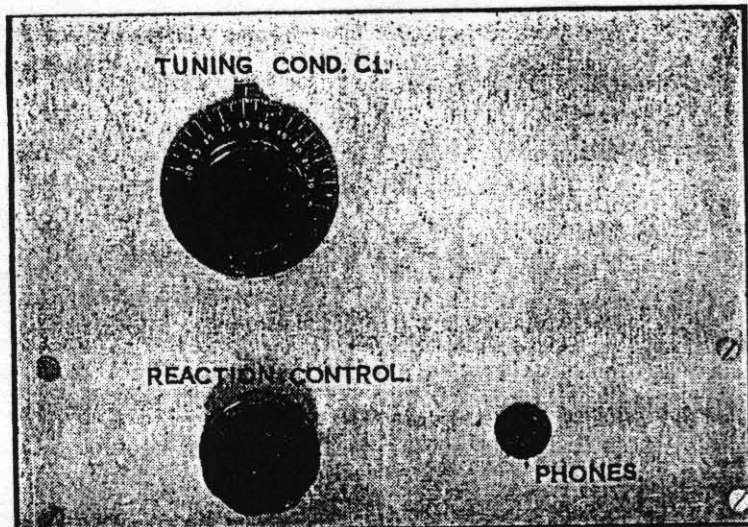
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called the 'Sputnik' in those days because the Russians were still to launch it! It covered ten to sixty megs (5 to 30 metres) in three bands and was my first VHF Rx (28 Mc/s used to be called VHF in those days!). And boy! Did it perform on Ten metres in the 1947-8 sunspot peak! I think that's really what got me hooked on ham radio after my early efforts with homebrew and BCLing (broadcast listening).

I still remember hearing G2BUX working Stateside on Ten. He passed his details for direct QSLing and gave his name as Flight Lieutenant Mike Faraday. "Any relation?" queried the American station. "Yes," replied Mike, "he was my great-grandfather." I'll bet he didn't know great-grandad would end up on the back of a £20 note! ●

## "EDDYSTONE SPECIFIED"

Jerry Walker, G5JU, was Stratton's "constructional project boffin" who bombarded the radio hobbies press with constructional projects specifying Eddystone Components. This month's offering was published in the "Short Wave News" for April, 1951 and uses the 'new' miniature plug-in coils (as rare as hen's teeth these days).



### The Short Wave News ONE-VALVER

By J. N. WALKER  
(G5JU)

**T**HIS little receiver is about the simplest type it is possible to build (excluding a crystal set), yet, by the careful choice of components, it is capable of a surprisingly good performance. Many different types of station can be heard on it, including amateur, short wave broadcast and commercial radio-telephony, some at good strength and some a thousand miles or more distant.

The cost has been kept as low as is possible with consistent results and the batteries used with the receiver will give many months of service before requiring renewal.

The constructional work is small and many points have been explained in some detail to assist those whose knowledge of building radio sets is limited. Whilst it is not necessary rigidly to adhere to the design as published, it should be followed quite closely to ensure results equal to the original receiver.

#### The Parts List

On Page 415 you will find a list of the parts (including values where necessary) required for the receiver. Where items by specific manufacturers are mentioned, you will do well to make sure you obtain the recommended part. Where no particular make is given, it is only necessary to choose a component by a well known and reliable manufacturer.

There are several types of fixed condenser. It is immaterial whether C2 and C3 are moulded mica or silvered mica (those in the photograph are of the latter type).

The purpose of C4 is to prevent noise when the reaction control is rotated and its value should be large. The capacity specified is  $.5\mu\text{F}$ ., a size easily obtainable but it may be increased to  $1\mu\text{F}$ .,  $2\mu\text{F}$  or even more. If difficulty is found obtaining a paper type, an electrolytic condenser can be employed but then care must be observed to connect it the right way round (red end to screen of valve).

A value of 220,000 ohms is given for the reaction control and this is the most suitable. Again, if difficulty is encountered, it is permissible to employ a potentiometer ranging in value from 50,000 ohms to 220,000 ohms.

#### The Chassis

The foundation of the receiver is a small metal chassis. The size does not matter providing it measures at least 4" by 5" which is the minimum to accommodate the main components. The chassis in the photograph is an Eddystone diecast one—the word "diecast" means it is moulded from molten metal and not made up from bent sheet metal. This process gives a strong rigid chassis but of course it costs more. One advantage of the chassis illustrated is that it leaves room for the addition of further valves and components, should you decide at a later date to improve the receiver.

#### The Panel

Some sort of panel must be provided, to act as a support for the tuning dial. A piece of brass or aluminium a little longer than the chassis and about 6" high will do nicely. If metal is not available, the panel can be made of plywood or hardboard. In this case a connection must be made between the chassis and a tag fitted below one of the driving head fixing nuts.

#### The Tuning Dial

Tuning on the short waves is a very different matter to tuning in medium wave broadcast stations. It is almost impossible to tune in a station by means of a knob fitted directly to the condenser spindle and a slow motion dial becomes essential. The dial specified has a reduction ratio of 10 to 1 and a diameter of 2 inches. A larger dial with a diameter of  $3\frac{1}{2}$  inches is available and is to be preferred if you can afford it. If this larger dial is used, the panel height must be increased by two inches.



### The Valve

Probably you already appreciate the differences between the various types of valves—triode, pentode, tetrode, etc. For this receiver, we require an RF pentode or tetrode but it is difficult to specify any particular one because so many suitable types exist. There are the two volt valves, with either four pin or octal (8 pin) bases and, if no objection arises to the use of a two volt accumulator (a so-called dry type or an unspillable is quite suitable), the Mullard KF35 octal base valve is a good choice.

However, it will usually be more convenient to use a valve with a 1.4 volt filament, heated by a single dry cell, the latter being capable of giving many hours intermittent service. Of the octal 1.4 volt series types DF33 (Mullard), 1N5 (Brimar) and Z14 (Osram) are suitable.

To provide a point to point wiring diagram, one particular valve base must be decided upon. The tendency today is to turn to the miniature type of valve, which has a number of advantages over the older type, and the B7G base has been chosen. The valve actually employed is a Mullard DF91 but the Brimar 1T4, Osram W17, and Mazda 1F3 are direct equivalents and may be used without any change to the receiver.

### The Tuning Coil and Condenser

In a set of this kind, two important components are the coil and the tuning condenser. Both must be of high quality if worth-while results are to be achieved and the Eddystone types chosen are, in addition, thoroughly reliable.

The coil type 706/Y is recommended for a start since it covers two amateur bands and a number of short wave broadcast bands, so making fairly sure something of interest will be

received at almost any time of the day or night. Additional coils in the same series can be added as desired and a wide range of frequencies thereby covered.

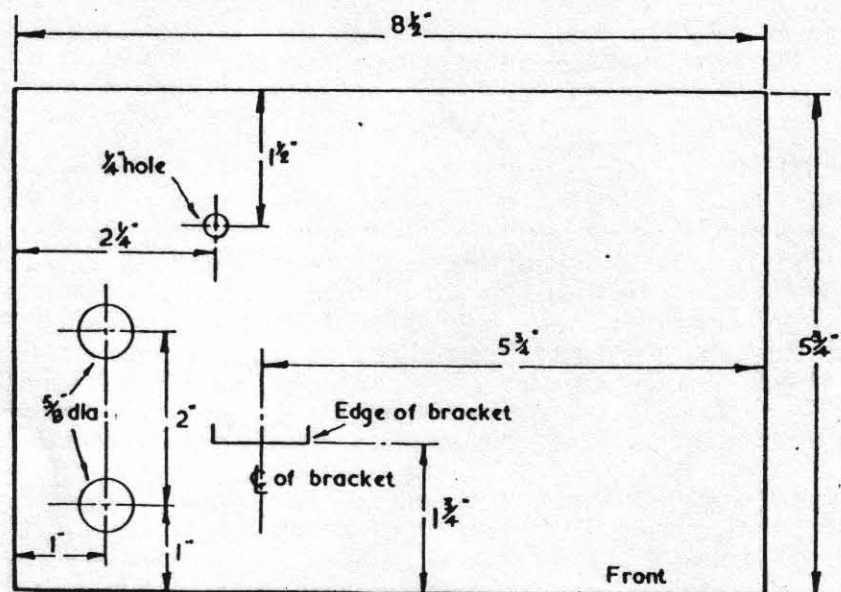
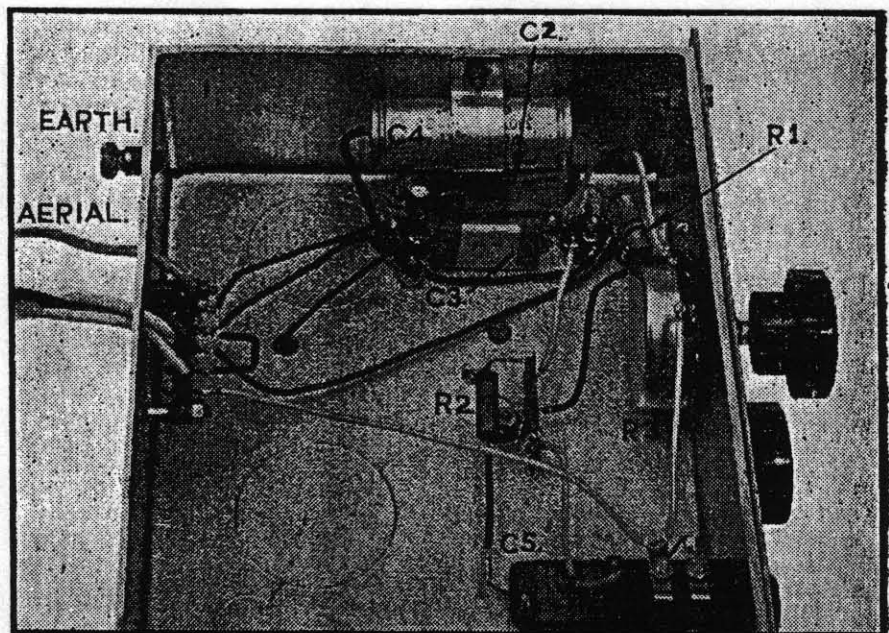


FIG. 1 (A): PLAN OF CHASSIS SHOWING LOCATION OF HOLES. INTENDING CONSTRUCTORS ARE ADVISED TO ADHERE CLOSELY TO THESE PLANS.



UNDERSIDE VIEW OF THE RECEIVER CHASSIS.

### Reaction Control

Space does not permit a discussion on the relative merits and demerits of the various systems of reaction control which might be used. The method chosen is that of varying the screen grid voltage and is satisfactory in every way.

### Construction

How easy, or conversely how difficult, you find the construction depends on how much experience you have had with this sort of work and on what tools are available. It is possible to make all the holes with a handbrace, drills to clear 6BA and 4BA, and a small half-round file. If you are buying the drills, ask for sizes 32 and 25. Materials for carrying out a small amount of soldering are required, also some 6BA and 4BA nuts and bolts (a dozen of each will be sufficient) and some insulated wire. For the latter, plastic (PVC) covered 20 gauge tinned copper wire is suitable.

Should it be that you have had no experience at all of drilling and soldering, it will be wise, if you can, to enlist the services of an experienced friend to assist you with the work. But lacking such help, you should still be able to make a good job of the receiver by following the instructions and the wiring plan closely. And one golden rule—take your time over each operation. Do not hurry in a desire to finish the construction quickly as such action may well mean "more haste, less speed".

The actual placement of the parts is not critical but the plan drawing of the chassis Fig. 1 (a) acts as a useful guide. If you should happen to make a mistake in the drilling of a hole, and have to alter slightly the position of a component, it will not matter much, except for the possible disfigurement of the chassis.

The holes for the coil-base and valveholder are made as follows. Mark off with a pair of compasses on the floor of the chassis the outline

of the hole. Pencil will not show up well and the mark should be inscribed with a sharp metal tool—an old dart is good for this purpose. Keeping *inside* the line, drill a number of 6BA holes around the circumference. The spacing between the holes should be as small as possible consistent with the drill not slipping. The centre piece of metal can then be knocked out by lightly tapping it, after which the hole is filed smooth and made to coincide with the marked outline. The component is placed temporarily in the hole, noting from Fig. 3 the exact position of the contacts, and the 6BA fixing holes marked and drilled. Further holes are made for the mounting bracket and for the moulded mica condenser C5. A  $\frac{1}{4}$  inch hole is required for the lead from the tuning condenser to pass through the chassis.

Two 6BA holes for fixing the tag strip are required in the rear wall of the chassis and below them a  $\frac{1}{4}$  inch hole for the battery cable and a 4BA hole for the aerial lead. It is well also to fit a 4BA nut and bolt to act as an earth terminal. Do not fix any items in place until later.

Turning to the panel, Fig. 1 (b) gives details of the holes to be made. Should you employ a smaller panel, only the length should be shortened and most details still apply—obviously a new position must be found for the telephone jack. Proceed to make all the holes using the technique outlined above for the larger ones. Then with the bolts provided fix in place the slow motion driving head. Bolt the metal mounting bracket to the chassis, fit the tuning condenser and attach the flexible coupler to the spindle of the condenser. On bringing together the panel and chassis, the spindle on the driving head should fit easily into the coupler—some adjustment of the tuning condenser in the bracket slot may be necessary. Line up the tuning assembly and mark off on the front chassis wall points to coincide with the fixing holes already drilled in the panel. Also mark the outlines of the holes for the reaction potentiometer and the telephone jack. Make these holes, after which the panel can be permanently bolted to the chassis. The dial is fitted to the slow motion head and the grub screws in the flexible coupler tightened, after ensuring that the dial reads 100 with the condenser vanes fully meshed.

By the way, you will have noted a telephone jack is used to take the plug usually fitted to telephone leads. This is much the most convenient method but, if you wish, the jack can be replaced by a strip of insulating material such as paxolin, with suitable terminals or sockets on it, mounted at the rear of the chassis. In either case good insulation is necessary and a jack without an insulating bush cannot be used.

### Assembly and Wiring

All parts can now be bolted into position

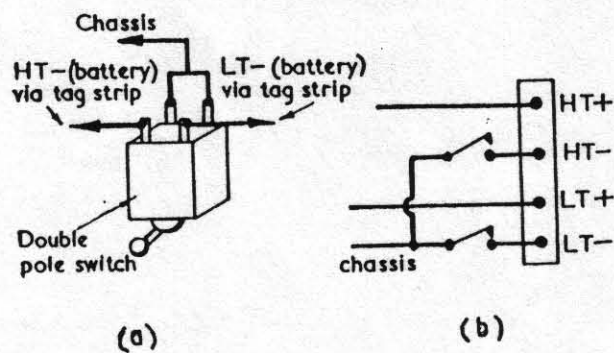


FIG. 2: SWITCH WIRING, PICTORIAL (a) AND SCHEMATIC (b). THE TWO SEPARATE SWITCHES SHOWN IN (b) ARE ACTUALLY THE TWO POLES OF A SINGLE SWITCH.



ready for wiring up. The tag strip on the rear chassis wall is spaced away with 6 BA nuts. The tubular condenser C4 may present a little difficulty in mounting as the lead-out wires only cannot be relied upon. A small strip of metal shaped to suit the particular condenser used should be bolted to the side of the chassis as shown in the photograph.

It is desirable to make some of the leads short but with others the length does not matter. All you need to do is follow carefully the point-to-point wiring diagram Fig. 3 which is provided as an alternative to the schematic diagram Fig. 4. It may make things easier if coloured wire is employed for different parts of the circuit—for example, red for the HT leads, brown for LT and green for tuned circuit.

The HT and LT connections are brought to the tag strip from whence is taken a four-way cable going to the batteries. This cable is made by plaiting together four flexible PVC wires, three or four feet long. To avoid any possibility of confusion, the LT leads should be black (negative) and yellow (positive) and the HT leads blue (negative) and red (positive).

The contact between the tuning condenser bush and the metal bracket may not be good electrically so a wire is soldered to the large tag, taken down through the chassis and soldered to a tag below. If a non-metallic panel is used, the metal dial must be earthed to the chassis in a similar way. It is difficult to solder several wires to a single point, hence two different tags are used, as indicated in Fig. 3.

#### Aerial and Earth

The subject of aerials is too great for treatment here. For the time being, put up an aerial as much in the clear as possible. Even an indoor aerial will bring in a lot of signals but an outdoor one is of course better. The aerial should not be too long—thirty to forty feet is ample. Run the aerial lead directly away from the receiver so that the hand or body is not close to it.

A good earth, with a fairly short lead, will be an asset but if the lead has necessarily to be too long, it may be better to do without it. When you have the set working, try it with and without an earth connection and decide for yourself which way gives the better results.

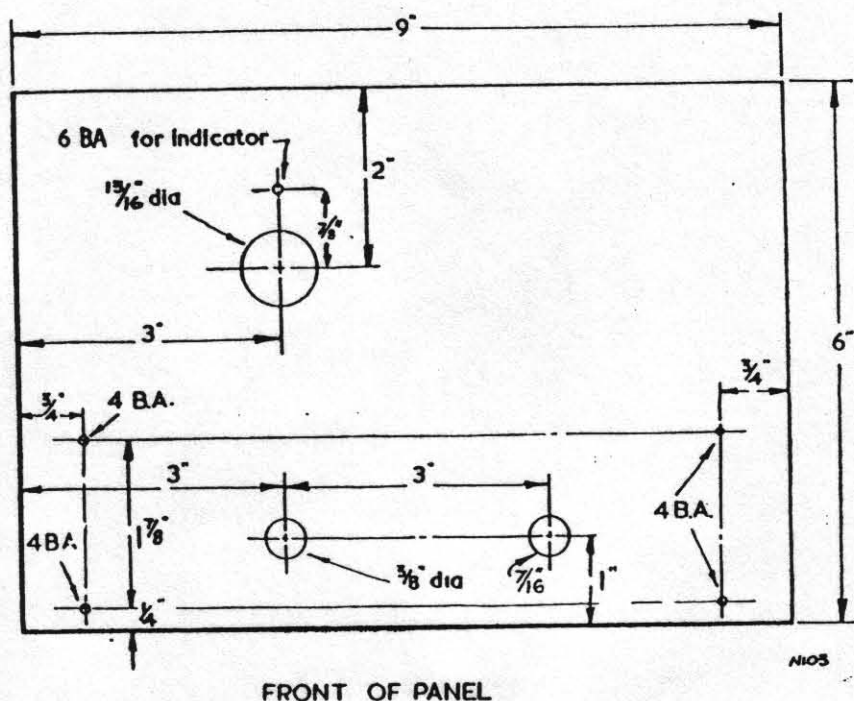


FIG. 1 (b): PANEL DRILLING DETAILS.

#### Testing

Before inserting the valve (which operation, by the way, should be done very carefully) and connecting up the batteries, go over all the connections systematically to make sure no mistake has been made and no wires omitted. In particular, check the connections to the valveholder. When satisfied on this score, connect the LT cell and look for a faint red glow along the filament of the valve (this will be visible only in a poor light and at certain angles). Finally plug in the telephones and connect the HT battery. The latter should not be more than 90 volts and good results will be obtained with 60 volts.

To begin with, the knob controlling the potentiometer should be in the extreme anti-clockwise position. Upon gradually advancing it, a point will be reached where a faint rushing noise can be heard—this is the commencement of oscillation. In passing, it may be mentioned that the receiver should be used in a quiet room, else the weaker signals may be missed.

On rotating the main tuning knob, many signals should be audible. Most of them will be CW—that is, morse signalling either by hand or at high speed by machine. For CW reception, the valve is allowed to remain in the slightly oscillating state but for telephony the reaction control is backed off a little—maximum sensitivity will be found at the border line point. Due to variations of aerial loading,

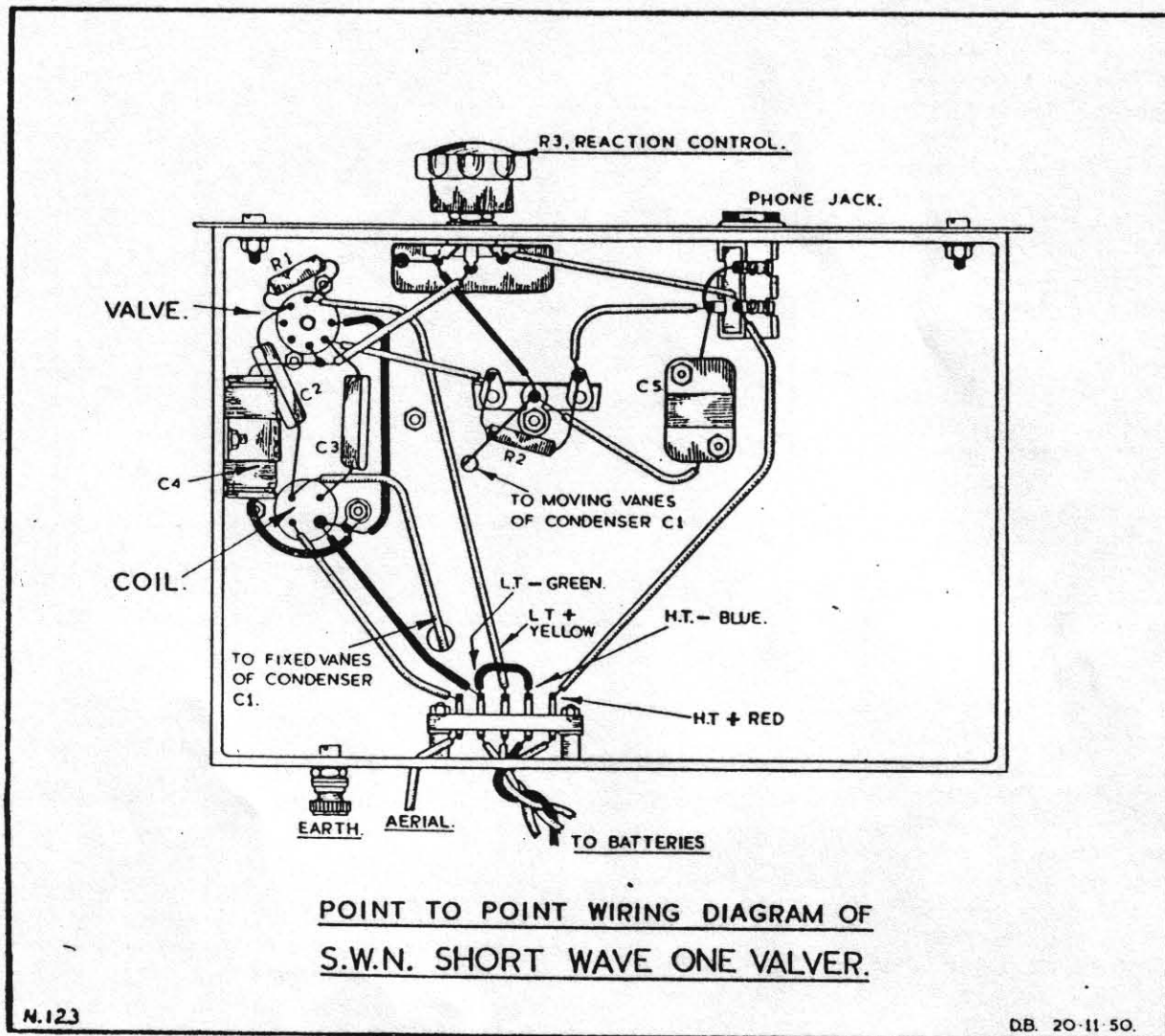


FIG. 3: POINT-TO-POINT WIRING DIAGRAM FOR THE ONE VALVE RECEIVER.

oscillation will not be constant over all parts of the dial and adjustment of the reaction control will be necessary.

Advancing the reaction control too far will reduce the sensitivity considerably and may also result in a squealing noise in the telephones which indicates audio (as well as RF) oscillation. At some points, it may be a little difficult to obtain oscillation and if this happens at places which coincide with broadcast or amateur frequencies, the aerial should be shortened or lengthened by a few feet. Another method of overcoming the difficulty—that of using a condenser in series with the aerial—is dealt with later.

#### These You May Hear

Certain frequency bands are allocated to short wave broadcast services and in the coverage of the "Y" coil you will find the following near the dial indications given:-

16/17 metre band (17.8 Mc/s)	6°
26 metre band (11.74 Mc/s)	35°
31 metre band (9.7 Mc/s)	53°

The strength of signals will vary according to the distance and power of the transmitting stations and other factors but some will be remarkably strong—the Swiss station HED6 comes through well.

As mentioned earlier, two amateur bands are included. The forty metre band will be found near 97° and the twenty metre band around 22°. In both the broadcast and the amateur bands, stations operate with but small separation and careful tuning will at times be necessary to bring in a station clearly. A strong station is liable to spread to some extent.

As you may have read, short waves do not behave in the same way as medium waves. Conditions of propagation vary with the time of day or night and with the seasons of the year. At one time you may find many comparatively loud signals coming from distant points, at another perhaps only European stations will be audible and at yet another (usually late night or early morning) few or no stations will be heard. To delve further into this interesting business



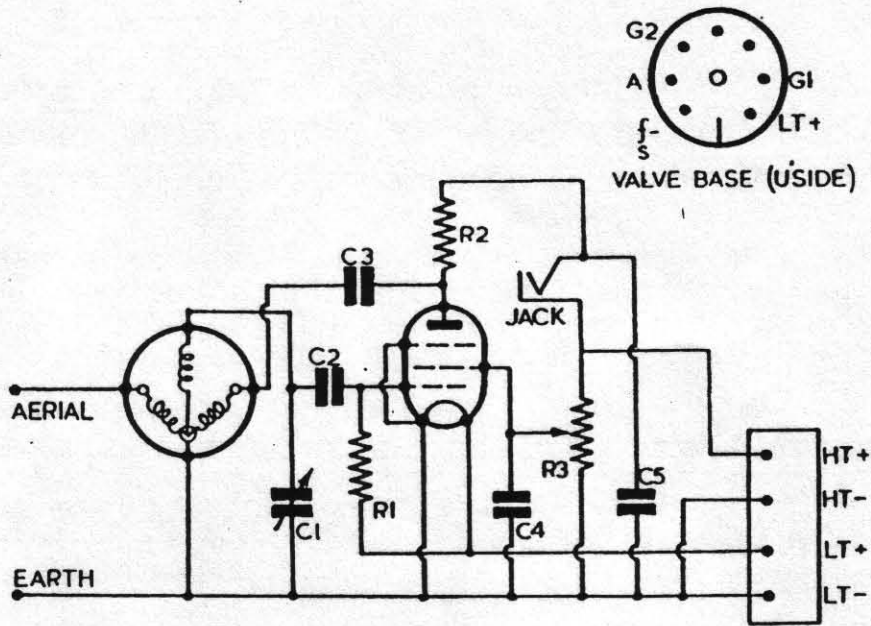
of short wave propagation and for information on the many stations to be heard, you are recommended to read "How to Listen to the World" and "World Radio Handbook" by O. Lund Johansen, "These you can Hear", "Op Aid" and of course, the regular Broadcast or Amateur articles in this publication.

**Possible Improvements**

You will appreciate that the receiver has been made as simple as possible and a number of improvements can be made. One is the fitment of a switch to isolate the HT and LT battery when the receiver is not in use—as it is, both batteries should be disconnected. The way this switch is wired is shown in the accompanying diagram Fig. 2. Note that a double pole, single throw type of switch only is suitable (*Bulgin* type S266 is one).

It can be mounted on the front panel in any convenient position.

Another refinement is the addition of a small variable condenser in series with the aerial lead—this is particularly worth while if the aerial is rather long. Without it, difficulty may be experienced in obtaining smooth oscillation over



NIOI  
FIG. 4:  
SCHEMATIC  
CIRCUIT  
DIAGRAM.

the whole of the dial. One side of the condenser goes to the aerial and the other to the receiver. Variation of the capacity will eliminate "dead spots" in the tuning range. An *Eddystone* microdenser Cat. No. 580 is suitable. If mounted on the chassis, an insulated bracket is necessary.

Finally, when you have thoroughly explored the range given by the "Y" coil, you have simply to plug in another coil (e.g. the 706/R) in the same series to obtain a completely different frequency coverage with many new stations to be heard.

**S.W.N. ONE VALVE RECEIVER**

**List of Parts and Component Values**

- |   |   |
|---|---|
| 1 Diecast Chassis Cat. No. 643 Eddystone              | 1 B7G Valveholder BM7/U McMurdo                 |
| 1 Tuning Condenser 140 pF (C1) Cat. No. 586 Eddystone | 1 Potentiometer 220,000 ohms (R3) (see text)    |
| 1 Slow Motion Dial Black 2" Cat. No. 597 Eddystone    | 1 1/2 watt Resistor 2 megohms (R1)              |
| 1 Flexible Coupler medium Cat. No. 529 Eddystone      | 1 1/2 watt Resistor 10,000 ohms (R2)            |
| 1 Mounting Bracket Cat. No. 708 Eddystone             | 2 Fixed mica Condenser 100 pF (C2, C3)          |
| 1 Coil Base Cat. No. 707 Eddystone                    | 1 Fixed mica Condensers .001 uF (C5)            |
| 1 Coil 706/Y Cat. No. 706 Eddystone                   | 1 Tubular Paper Condenser .5 uF (C4) (see text) |
| 1 Knob Cat. No. 529 Eddystone                         | 1 Tag Strip 2 or 3 way (to hold R2)             |
| 1 5 way Tag Strip Cat. No. 649 Eddystone              | 1 Pair Telephones 2000 or 4000 ohms             |
| 1 Valve DF91 Mullard                                  | 1 Telephone Jack (type P72) Igranic             |
| (equivalents are given in text)                       | 1 LT Cell 1.5 volts                             |
|   | 1 HT Battery 90 or 67.5 volts                   |
|   | Wire, Nuts and Bolts, Metal for Panel.          |

Don't forget the Date

**VHF CONTEST**

SEE PAGE 406

## "IN PRAISE OF EDDYSTONE"

In June's Newsletter we presented a page of unsolicited testimonials which I had found at the Factory before Christine retired. This month we offer some more stunning appreciations from the same source.

FROM: PORT DIRECTORATE, BASRAH, IRAQ. 23rd FEBRUARY 1953.

"A number of your Receivers type Eddystone '680' are in use with the Wireless Department of the Port Directorate and are giving good service on the Aeronautical traffic."

FROM: Mr D.P.Morris, 148, TEVIOT STREET, INVERCARGILL, N.Z., SEPTEMBER 1953. "I am the proud possessor of an Eddystone 659/670 receiver. Conditions here are very different from those at home in Sussex - our nearest neighbour is Australia, 1200 miles to the west. The interest among my many friends is amazing. The set has been put to some difficult tasks but the demands have been adequately met. Here are some examples of Medium Wave DX:-

5AL Alice Springs, Australia, 1530kc/s, 30 watts, 2200 miles.

KGA Spokane, Wa., USA, 1510kc/s, 50 Kw, 6500 miles.

JOKR Tokyo, Japan. 950kc/s, 10 Kw, 5000 miles."

FROM: MR W.J.FORD, TORONTO, CANADA. 20th April 1954.

"I received one of your Eddystone 750 communications receivers the other day and was amazed at the workmanship and quality. Having come in contact with practically all American made sets including RCA, National, Hallicrafters and Collins, both for civilian use and armed forces, I can truly say that I have never seen a receiver so well engineered, both electrically and mechanically, as your Eddystone 750."

FROM: CAPT. C.H.BODELS, S.S.RAMA RAJA, CALCUTTA, INDIA.

10th JULY 1952. "I brought a '640' Eddystone Communications Receiver out here with me in 1948, it has never failed, the same valves are in it, and it still looks like new, thanks to British workmanship (built to last)."

FROM: The British Broadcasting Corporation, Broadcasting House, London, W.1. July 1954. "...concerning your new Model 730: I can tell you that our operations staff at Tatsfield (monitoring station) commented very favourably on this receiver."

FROM: Mr R.Tasker, St Kitts, British West Indies. 5th FEB 1953. "Your Eddystone 670 has given extremely satisfactory service."

FROM: MR.C.J.WHITE, M.V.'LA PAMPA', PHILADELPHIA, USA. MAY 1952 "You may be interested to know that since we left England for New Zealand via Panama we have had the B.B.C. General Overseas and Pacific Services without a break every day. The Eddystone 670 has not given the slightest trouble and the frequencies marked on the dial are 'Spot On' on all bands."

***DON'T THEY SOUND GREAT! More Praise Next Month - Graeme***



# The Pre-History of Eddystone

**It's quite remarkable how, in the history of an industry, the roots can often be traced back to an apparently unrelated event. In the case of Eddystone Radio it is well recorded and in this, our first episode of the Company's history, we shall see how the firm undoubtedly owes its existence to General George Washington and the Emperor Napoleon Bonaparte!**

THE CITY OF BIRMINGHAM, England, in the County of Warwick, derives its name from the proliferation of the yellow-flowered broom shrub in that part of the countryside, as do the adjacent townships of Castle Bromwich and West Bromwich. It is the same shrub which, under its Latin name of *planta genista*, gave the name 'Plantagenet' to the ruling House of England in the twelfth century.

BUT IN THE TWELFTH CENTURY the village of Bermingham was no different from countless other tiny hamlets which made up the broad countryside of the old kingdom of Mercia. Not in the same class as the cathedral cities of Warwick, Coventry, or Worcester. And therein lay its secret . . .

WHEN HENRY THE EIGHTH fell out with the Church of Rome in 1532 he declared himself to be Head of the church in England. He dissolved the monasteries and assumed authority over the great cathedrals. Church and politics were now indivisible for the next 300 years.

IN ORDER TO BE ACCEPTED into the great craft guilds of England, based in the cathedral cities, it was necessary to belong to the Church of England. But more and more men of letters were embracing dissenting churches, such as Puritans, Quakers and Baptists. They found it impossible to establish themselves in the traditional towns and turned towards a new centre for England: Birmingham.

THE NEW TOWNSHIP was on high ground, averaging 500 feet above sea level, and was on well-drained sand and gravel. There was plenty of space and the air was healthy. It was centred in the midst of coal and iron. The newcomers thrived and, unfettered by hidebound restrictions, developed newer and better ways of making things.

BY THE EIGHTEENTH CENTURY the best gunsmiths in England were established in the town. When the American War of Independence was fought against George Washington's separatists (1774-83), King George's Redcoats were armed with Birmingham-made muskets. England may have lost the American Colonies but Birmingham was established as the workshop of the world. Craftsmen flocked to the rich new town.

DURING BRITAIN'S WARS WITH NAPOLEON (1803-15) the government again turned to the skills of Birmingham's artisans for arming the troops. The resulting creation of wealth in the town confirmed its position as the metalwork capital of Britain. *ANYTHING* could be

made in Birmingham . . . there is no conceivable use of metal, from the most precious kinds downwards, which is not represented in the thousands of factories and workshops scattered throughout the town." (19th Cent. reference.)

It is no surprise, therefore, to find that when a Gloucestershire pin-maker set up in partnership with a Birmingham commercial traveller in 1860, they established their factory in that town:-

No. 7, Broad Street, Islington,  
Birmingham.

I beg to inform you that I have this day commenced  
Manufacturing Pins in Partnership with Mr. Stephen  
Jarrett, and earnestly solicit your patronage and support.

Yours very respectfully,

Charles Rainsford.

\*\*\*\*\*

In commencing the above business, we beg to state that our machinery is upon an entirely new and improved principle, and under the superintendence of one of the best machinists in the Trade. Our Manager, Mr William Law (Manager to the late Edward Holt), has had thirty years experience in the business, and you may therefore rely upon any Orders entrusted to us being executed with satisfaction and despatch.

Mr. Jarrett being also a Manufacturer of all descriptions of Jewellery, we shall be able to offer that class of Goods at prices calculated to ensure your Orders.

We assure you that nothing shall be wanting on our part to merit a continuation of any favours you may be kind enough to confer upon us.

We are,

Your obedient Servants,

Jarrett & Rainsford.

Broad Street is the main road to the west from Birmingham city centre and No. 7 would probably have been opposite the new International Conference Centre, somewhere near the Hyatt Hotel. Regrettably no picture has survived. The main business was the manufacture of pins, which were sold to the wholesale drapery and haberdashery houses and to overseas markets through the Birmingham export merchants. Stephen Jarrett also manufactured





THE FIRST EXPANSION: 48 BROAD STREET, BIRMINGHAM

cheap gilt jewellery, but this seems to have been discontinued after a period. A considerable merchandising business had been developed in haberdashery and cheap fancy goods, principally of foreign manufacture, and merchandise was also exported to the Colonies. Under the 'Free Trade' of those days (*shades of the European Union!*) it was more advantageous to purchase and sell Continental goods than to manufacture them. It was probably around the year 1870 that larger premises were taken at No. 48 Broad Street where the firm remained until 1909.

IN THE MEANTIME, early in the 1870's Charles Rainsford purchased the interest of his partner, Stephen Jarrett who then retired to Mickleton, a village in Gloucestershire. Charles Rainsford's two sons later entered the business - Charles Junior in 1879 and Edgar in 1885, at a salary of 8 shillings (40 pence!) per week. This was a very low wage even for those days (a labourer could expect about 10 shillings a week), but obviously their father didn't want the business to go to their heads! Charles Senior retired in 1896 and died in 1900. The firm was then carried on by his two sons. Charles Junior remained a director of the Company until his death in May 1939 and his brother Edgar retired at the end of 1940, after all the Company's factories in central Birmingham were destroyed by enemy bombing. What a depressing time to go! However he continued to enjoy his retirement until he died in 1951 at the age of 84.

BACK TO THE 19th Century. Shortly after the firm was established, James Jarrett, a nephew of Stephen Jarrett, joined the firm and served as the manager of the Pin Manufacturing

# JARRETT & RAINSFORD

## A Family Concern

ORIGINAL FOUNDERS : 1860



STEPHEN JARRETT



CHARLES RAINSFORD



JAMES D.  
JARRETT

Manager  
till 1910

MANAGING DIRECTORS : 1898



CHARLES RAINSFORD, JR.



EDGAR J. RAINSFORD

### The Successful Team 1860-1940



Department for no less than 52 years. In the early days he was a tower of strength to the business. He wasn't a partner but he was most conscientious and zealous for the welfare of the firm. He never failed to be first in at the office and when the staff arrived he would be sitting on a high stool at his desk. He also kept the wages book and handled the cash. The petty cash was kept in a linen bag and he used sometimes to hand out coppers for tea money if the staff worked late in the evening. He would produce the cash reluctantly and say "How long is this tea business going on? No firm can stand it for long.!"

SOME OF the old records were found in the wreckage after the blitz, charred round the edges but still readable (in parts). These show the growth of the Company and the level of wages:

TOTAL WAGES EARNED: 60 HOURS PER WEEK (6 DAYS)

1860	w/e Nov 17th	6 employees	£7. 0s. 10d
1865	w/e Nov 18th	35 employees	£26. 10s. 0d
1870	w/e Oct 14th	47 employees	£35. 5s. 2d
1873	w/e Apr 20th	52 employees	£50. 0s. 0d.
1880	w/e Mar 23rd	70 employees	£61. 9s. 4d.

Company profits for three successive years show the ups and downs of business life:

1885	£2,058
1886	£2,296
1887	£730

THE YEAR 1898 was a notable one in the history of the Company. First because the Rainsford family turned it into a private limited company with a Capital of £20,000.

AND SECONDLY because it was the year in which George A. Laughton joined the firm as a 15-year-old office boy, having already worked for two years in a coal merchant's office. This was a far-reaching event: 25 years later George, together with his eldest son, George Laughton Jnr, was to start the wireless department which they called Eddystone Radio.

BUT THAT comes later. George Senior must have shown early promise as a capable organiser and manager because by the age of 17, in the year 1900, his remuneration was increased to 18s weekly on a five-year contract rising by 3 shillings (15p) each year to 30s weekly. A very good sum for a 23-year old in 1905. (*My grandfather Hardaker, who was a skilled metal turner in Yorkshire, was earning 24 shillings a week in 1905 - Graeme*).

AT THAT TIME the general office consisted of a room about 18 feet square with a staff of six. All letters and invoices were written by hand, the former being copied in a screw letter-press; there was no shorthand and no typewriting.

THE FIRST STEP to increase manufacturing capacity was taken in 1904 when an ancient water mill at the outlying village of Alvechurch was purchased. Machines were installed for making hairpins, with Edgar Rainsford in charge and George Laughton as assistant manager. The enterprise was a failure as the mill wouldn't work in the dry season! Eventually a gas engine was installed with a plant to make the gas . . .

NEXT MONTH WE SHALL READ ABOUT THE REMARKABLE CIRCUMSTANCES WHICH LED TO THE FOUNDING OF STRATTON & Co.

ENDIT  
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A mixed bag this issue, with less from me and more from others. The next Newsletter will be our Christmas Issue and has become traditional it will be a super bumper issue with Graeme already having a Supplement to interest and educate us all. Until then 73, Ted.

## EDDYSTONE SPARES AND LITERATURE

Don't forget that for the above items you now call:

**Dave Simmons, Windana House  
North Aston, Bicester, Oxon OX6 4HX  
Telephone: 01869 347504  
E-mail: eddyspare@onet.co.uk**

For Badges and Problems call Graeme G3GGL (see front page for QTH)

### THE SEVEN DEADLY SINS OF W/OPS



Failure to cope with fault-finding in an emergency

'TEE EMM' August 1944

(THE DATE IS 6 JUNE AND THE BBC NEWS  
OF D-DAY WAS DUE AT 11.00pm!)