

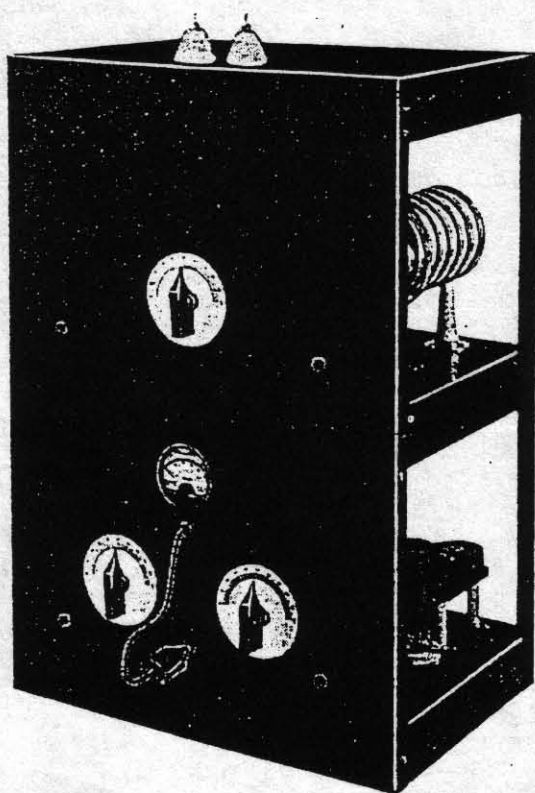
Eddystone User Group Newsletter

Issue No: 43

June 1997



Featured Model: Four Band Amateur Transmitter



Front view of completed Transmitter showing panel
lay out and rack construction.

***A non profit newsletter for Eddystone Users**

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

***Please address all mail to:**

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Bewdley,
Worcs, DY12 2RJ
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This is issue 43 of the newsletter and is the first of six issues for the year 1997/98. If you join after this issue you will get back issues for the year 1997/98. Members are now reminded that subscriptions for the current year are now due, if you fail to renew your subscription in the next few weeks then you will receive no further issues.

Subscriptions

Subscriptions are £10 per year UK and £11 per year overseas. Metals EUG badges are available at £2 each. Any remittances for subscriptions, badges or manuals must be by cheque or money order and in sterling. We cannot cope with foreign currency as the bank charges for conversion are more than the value of the subscription. Make your cheques payable to **Eddystone User Group**.

Manuals and Circuits

Copies of manuals and circuits are available for most Eddystone receivers through the EUG with discounts for EUG members. Manuals cost between £3 and £10 depending on size, and whether original or a copy. Most manuals are now copies. Back copies of all newsletters are available at £2 each post paid. Contact Graeme Wormald G3GGL whose address is on the front cover.

This issue sees the third episode of Bob King's specially commissioned autobiographical article on Eddystone and its contribution in WW2.

It was a great pleasure to see so many of you at the NEC in early May. Two new old Eddystone radios surfaced at the show, a Scientific Three Portable and a braille model 740.

Graeme was very busy during the election period and he has asked for your tolerance whilst he catches up with his paperwork. EUG does require a great deal of administration and we are very lucky to have Graeme prepared to take on this task. My thanks also go to Jim and Ted for the newsletter work they do.

The museum (more accurately a store) at the new works is going to be relocated and it is hoped that the relocation will result in a better display of our history. We had a welcome visit from visitors from the Centre for the History of Defence Electronics who are interested in setting up a virtual museum for electronics on the internet and have offered Eddystone some free pages in return for details of some of our archives. Simon G8POO has also put the EUG on the web. Watch this space as they say (or should that be watch that screen?).

Well that all from me for this issue. Enjoy the rest of newsletter and keep on sending in those letters and articles to Jim and Ted.

Chris Pettitt -GOEYO
Managing Director.
(home e mail GOEYO@compuserve.com)

- Issue 43.-

Well it soon comes around, time for another N/L and thanks for your mail. Those letters expressing surprise at how all trace of the EY11 could be lost. It can and does happen, especially when a company changes hands.

This happened with records at my last place of work when the the company was taken over by a large multi-national - skip loads of paper work was dumped and trashed. only several months later was it found that many much needed records had gone to the tip.

Some comments in the mail about the Edometer, yes there are the occasional sightings of them on sale at rallies, if you keep your eyes open for them.

Aerospace and the 770, there are some dis-believing types in this world ! There really are ! One chap writes in asking if it was an April spoof with a computer produced composite picture.

THE ANSWER STUART IS NO !

The featured model this month is the 4 Band Transmitter as was featured in an ESWM, this was a pre-cursor to today's mainly transmitter production by Eddystone. I can well recall seeing one of these in use at an out of doors rally in the '50s, it was the star of the day and operated from start to finish without a hiccup despite the rain and the variable supply produced by a Heath Robinson motor-generator which derived its motor power from a flat twin Douglas mo-bike engine !

I keep getting asked for info on those plug-in coils that the Company produced - the enclosed sheet gives just about all the info that I have on them, so get on with those replicas will you, please.

The data sheet on the 898 dial assembly is another popular item in the mail so herewith the info that I have, wasn't this the one used in that famous G2 DAF receiver ???

The Modulated oscillator, again extracted from an ESWM and something that might well come in useful in the modern workshop. If you are a DIY type then how about it ? Easy enough as a first Replica project.

Short Wave Aerials interest us all and there is no reason to sniff at the old designs. Okay they need more space than an Active Aerial such as Datong make, but the satisfaction of your having a home-made and well performing aerial is something well worth experiencing.

Ted.

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- A Recent Acquisition.-

James calls his new to him 830 by the above title. It has some points that intrigue him and so he has written asking me for some enlightenment.

First query is the use of a small microswitch that exists near to and coupled to the variable selectivity control spindle. He comments that there are several 'cut wires' connected to the contacts of the micro switch itself and I can tell him that this was meant to switch in a special narrow band filter, usually it was so that the set could be used with the famous Piccolo system.

His next point is that there are 'more pipes than in a plumbers store room. From that I know he has the /9 version of the 830 and that it was specifically designed for used with a synthesiser tuning unit.

Next point in James letter was that the set is a different size to other 830s. Yes it is, just in regards the depth of the chassis and case which take up a few more inches.

My personal opinion is that all of these extras to the normal 830 have somewhat detracted from both its performance and re;iability - just me, so no need to write in saying the spec is identical, please !

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- Your Mail, AGAIN.-

I have to say this time and time again, please don't address your mail to the factory. It makes more work for the Company and it makes more work for us at EUG. For YOU, well it does mean that your letter will not be dealt with as quickly as if you send mail to Jim - for me, and to Graeme if it is to do with EUG admin matters and subs; PLEASE NOTE THE ABOVE.

Ted.

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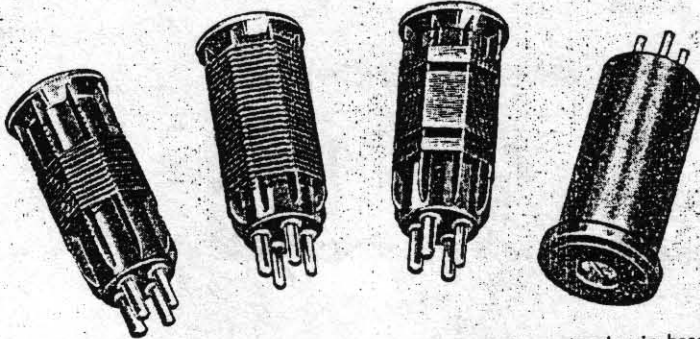
- Ferrite Aerials with an Eddystone.-

Colin has built the salvaged ferrite rod aerial from an old Roberts radio into a box with a tuning condenser. This when used with his 'tin-case' Eddystone 840 allows him to receive many of the local radio stations that he Dxes for a hobby. The advantage being of course is that he can rotate the small set top aerial box to obtain the best position for the direction of the particular station.

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EDDYSTONE

Miniature Plug-in Tuning Coils

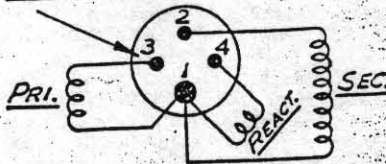


Cat. No. 706. A range of high quality tuning coils, with four pin plug-in bases. The coils are wound to close tolerances and are designed for use with modern valves and circuits. Three windings are provided, the connections being indicated below. The coils are colour-coded for quick and easy identification. Overall length $2\frac{1}{2}$ ". Dia. $\frac{7}{8}$ ".

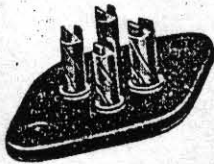
The first three types (Blue, Yellow and Red) are wound on a ribbed moulded former, the inductance being fixed. The four lower frequency types (White, Pink, Green and Brown) are wound on a former fitted with an adjustable dust-iron core, the winding being enclosed in a protecting shield. Movement of the core will affect the inductance value, hence the figures given can only be approximate.

The tuning range stated is obtained with a variable condenser of 140 pF maximum capacity. The Cat. No. 586 (see page 8) is recommended for this purpose.

PIN CONNECTIONS VIEWED
FROM FREE END OF PINS.

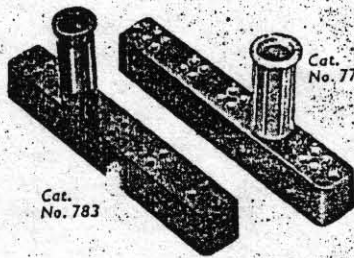


Coil Type	Frequency Coverage	Inductance Tuned Winding	Price
706/LB Blue	33 — 15 Mc/s.	.65 uH	4/3
706/Y Yellow	16 — 6.7 Mc/s.	3.45 uH	4/3
706/R Red	7.5 — 3.1 Mc/s.	17 uH	4/3
706/W White	3.3 — 1.35 Mc/s.	90 uH	5/3
706/P Pink	1.4 Mc/s. — 720 Kc/s.	300 uH	5/3
706/G Green	750 — 300 Kc/s.	1.65 mH	5/3
706/BR Brown	370 — 150 Kc/s.	6.5 mH	5/3



Miniature four-pin Socket, of special insulating material, to take the Cat. No. 706 Coils listed above. Ample clearance is afforded with a $\frac{1}{8}$ " hole in the chassis. Two fixing holes ($1\frac{1}{8}$ " apart) to take 6 BA screws.

Cat. No. 707 1/9



Cat. No. 783

Cat. No. 775

Coil Stand

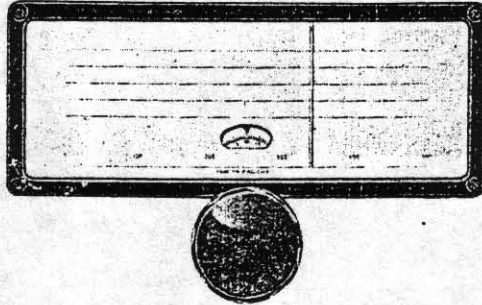
Of polished black bakelite, to take up to five spare 706 coils. Provided with holes for screwing down.
Cat. No. 775 2/6



WILDENBACHSTRONIE

GEARED SLOW MOTION DRIVE ASSEMBLY

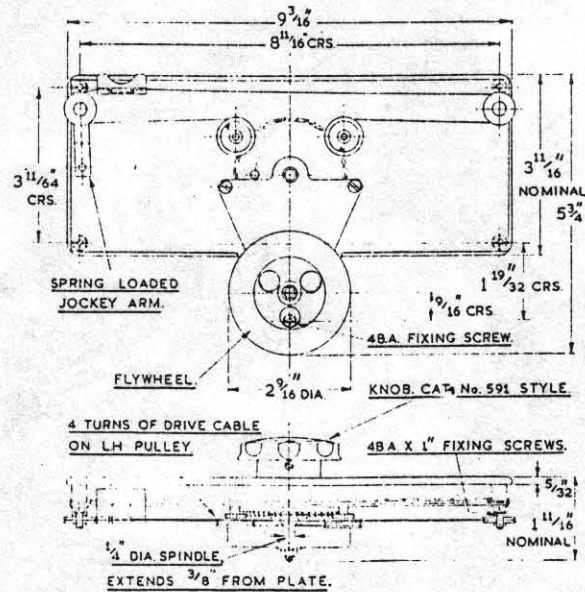
Cat. No. 898



A high grade assembly designed for receiver and instrument applications. The movement, manufactured to fine tolerances, is free from backlash, gear-driven and flywheel loaded, giving a smooth, positive drive, with a reduction ratio of 110 to 1.

The pointer has a horizontal travel of 7 inches. A circular vernier scale, marked over 100 divisions, rotates five times for one traverse of the pointer, and, read with the "100" scale on the dial, provides a total of 500 divisions. The dial has five lines to take calibration markings. The vernier dial has a cam adjustment for correct zero setting. A spring loaded jockey arm maintains tension of the pointer drive.

A diecast escutcheon, finished glossy black, is supplied and the assembly is complete with perspex window, knob, fixing screws, and mounting template. It is suitable for mounting on metal or wooden panels up to .25" thick. Overall external dimensions are $9\frac{3}{16}$ " (23.34 cms.) by $5\frac{1}{4}$ " (14.6 cms.). Weight is approximately 1 lb. 14 ozs. (.85 kilogrammes).



- HRO / AR88 / RACAL / EDDYSTONE.-

In a letter from EUGer Ron Brown there are comments re the last Newsletter item about 'alien' makes compared with Eddystone. My comments and those of an un named writer.

Ron makes his points re the above clear and I shall print them verbatim, -

"I read with interest the unsigned letter on receiver comparisons in the last newsletter. With many years of experience of working on, and owning, a wide range of valved receivers of both British and US origin, I feel that I am well qualified to make the following comments;-

a) It is not really fair to compare say, a 1934 designed HRO with a mid-50s Eddystone. The HRO is an excellent mechanical design using components and technology both of which were advanced for the period. Eddystone merely reflect the backward state of British radio and electrical design and Government mentality generated by general repression of technical advance during the 1930s, a problem not overcome until Racal came on the scene in the mid 50s.

b) The AR88 is without doubt the best designed and constructed single superhet receiver of the period 1939-1950, both mechanically and electrically. However in common with practically all other receivers of the period it suffers from poor quality components, particularly capacitors.

In general, Eddystone valved receivers are mechanically solid but suffer from poor quality British components, particularly capacitors from Hunts and Plessey (and others). Also, Eddystone receivers have no claims to electronic originality or sophistication when compared with US receivers such as the Collins 390A or even British receivers such as the RA17 and BRT400 (both the latter also suffer from poor components)".

Ron adds that despite the above he is not anti-Eddystone but that, rather, he prefers to see a balanced view presented. Okay Ron and Thanks. Any further comments on this subject ?????

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- Sherlock Wormald's latest find.-

A letter in from Graeme today relates that he has found in "Christines Boxes" a copy of the Construction Manual for the Scientific Short Wave Three, LOVELY !

It is always a thrill for me when EUGers come up with new (to us) models and especially so when we get the full gen on the set in question. In this case Graeme has unearthed a full manual in A5 format with some 16 pps, AND the date of September 1928. This means we can accurately place the SSST in the Family Tree of Eddystone models, something we cannot yet do with the recently discovered Homeland model from 'down-under'.

Eventually, when we have all sorted out and Graeme has time we shall be able to offer copies of this Construction Manual

for sale to EUGers, so watch out in future issues. I keep having to revise my own lists so those of you who do have copies of model listings please stick the info on these recent finds into your lists. By the way, the Homeland Construction Manual will also be available shortly if you want a copy.

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 - BRAILLE Models ???? -

Apparently so ! Howard Turner has in stock what looks like a Factory modded Model 740 with Braille tuning dial and bandsread, simple but amazing is Graeme's comment and I would agree BUT, how often was it done I wonder ? I am looking forward to seeing a photo of this seemingly unique 740. Can any ex Bath Tub employee shed light on this set ???

- - - - -
 - A New Toy to play with. -

My collection was always referred to as "Ted's Toys" and as Graeme has just 'obtained' an S.358 I am transferring the phrase over. This model was not only made for use on battleships amongst others, it was also built quite literally 'like a battleship' - it also weighs a bit like one as I recall from carting one home on my shoulder from Lisle Street to Euston Station and thence by train to Warrington Bank Quay, this at age 14 years. Still, no doubt about it, they did perform well.

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 - NEW, COMPLETE INDEX.-

EUGer Anthony Richards has been at it again, this time with a revised complete index of all of the past 7 years of EUG Newsletters. No doubt about it that Anthony has the Eddystone Bug. A copy is with Graeme and I am sure that he will soon be in a position to supply copies, for a small fee, to members. If the praise in my mail so far has been typical, for the last incomplete Index, then this **COMPLETE** version will please many of you. I have used my copy of Anthony's original index so much that it has now become quite 'tatty' - luckily I had a spare made.

- - - - -
 - Praise from Barry.-

Just a note which Barry sent in with his 1996-7 subs. He comments that our N/L is first on his reading list, as soon as it arrives. The other mags such as Radcom, SWM and PW get left until later. Barry mentions his preference for the older sets, well so do many other EUGers. There will be much more

on these old models in future N/Ls, and as NEW model data comes to hand I shall announce it here. Just as soon as possible copies of manuals and/or schematics will be available through Graeme.

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 - Varistor Failure.-

Recent thunderstorms may be the cause, or maybe a weekly change over from mains to diesel standby - and the resultant spikes - may be responsible. What ever it was the fact is that the Varistor in the 'protected' socket of my extension lead blew one evening recently. Not knowing why the fuse had blown I simply fitted a new 5 amp fuse then powered up again. That blew immediately and so I unplugged the 1002, the EB35 III and the cassette plug-in psu. Having opened up the socket strip I saw immediately the shiny 'tinned' patch around the varistor.

It had - I remembered - been rated at 275 volts and luckily I had a 'second-user' replacement that had been cannibalised from a decrepit portable Tv set. This was fitted and tested out without equipment being connected to the socket strip, no more blown fuses and so the sets were reconnected.

What intrigues me is a definite selenium like smell from the duff item. I well remember those horrible pongy selenium rectifiers that we used in the 40s and 50s but I did not realise these things used that particular pongy element ?? Or is it something else with a similar smell ?

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 - The Index to Featured Models.-

This Index of featured models for the first SEVEN years of the EUG Newsletter has been prepared by EUGer Anthony Richards (of Complete Index fame !). It is a single sheet add on at the end of your current Issue so that it may be detached and kept at the front of your N/L file. (the idea of Anthony, not mine).

Those seven years have passed by pretty quickly and not without some problems for EUG. Kathy valiantly coped with all the admin for those first few years but it really got to be too much for her with the growth of membership and Chris at the Factory arranged for it to be done by his PA, Pat Hawkins. Eventually it all landed on the broad shoulders of Graeme Wormald G3 GGL. Some other members have helped over the past few years, Jim Murphy is one, his photocopying and computer work have helped immeasurably. Lately Anthony Richards with his computer have brought us the Index. Thanks everybody, your work is appreciated by all of us.

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 - 13 Amp Fuses.-

A letter from Ivor to mention that he bought an 840A recently and had a quick look at the mains lead before plugging

his new trophy into the ergs socket. He discovered a nice shiny new 13 amp fuse fitted, definitely overkill for a 50 watt receiver this. He replaced it with a 1 amp fuse and it performs satisfactorily - as it should. Ivor was prompted to check out the other mains plugs in the shack and found that 6 out of 11 had 13 amp fuses fitted. Of these 6 items 4 were 'newish' and must have come so fitted even though all were very low wattage items such as scanner psus, a temperature stabilised iron psu and a flexible table lamp. No stock of fuses were available but a purchase was made of 1, 2, and 5 amp cartridge fuses and the plugs were refused with values more suitable to their consumption.

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- BBC Engineering Maps.-

Not many folk realise that the BBC Engineering Dep't publish FREE area coverage maps for ALL of their main R1,2,3,4, and 5 programme transmitters. They also provide similar maps for all of their Repeater stations. The maps are A4 sized and on thin card, directly suitable for wall mounting. The maps are handy for at a glance checking of where YOU are situated with relation to the Beeb transmitters for your area. They really are FREE except for your stamp on the letter asking for them, so go on write and ask for your copies.

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- Temperature related QRM.-

No this isn't the frigo thermostat, not this time. A recent prezzie for my shack here was a small Tandy digital thermometer with switched sensors for Internal or External temperature readings and with readout in either degrees Celsius or Fahrenheit.

All well and good, the battery was installed, the display unit mounted above the receivers and the external sensor led out to a bracket outside of the windows. No problems at all and after a trial the switch was left in degrees C and for External temperature readout. The lead between external sensor and display unit was about 6 feet long.

Listening to Europe I, one of my favourite stations for background music, I discovered an annoying long bee-eep every ten seconds or so. First thought was that it was on the signal but tuning down to another favourite, France I, brought in the same extended Bee-eep. It wasn't difficult to reason out that the only change in shack equipment was the Digital Thermometer, this was proven by whipping out the battery for a few minutes.

The sensor lead passed along the wall some 12 inches above the lead-in for the random wire aerial that comes down three floors from the roof. Re-positioning of the sensor lead some three feet away and behind the central heating pipes was sufficient to cure the QRM, it is no longer audible off-channel, and with the gain full up, on either the 1002 or

the EB35IIS receivers.

This calls to mind the QRM experienced by a neighbour when he operated the FM band of his HiFi, using just the short 'throw-out' VHF aerial wire. The QRM took the form of a buzz-saw type of tone as he tuned off frequency to go to another station, it was only audible with great difficulty whilst on frequency for a strong main station. As the signal had suddenly manifested itself Stewart guessed it had to be a fairly newish addition to the home. By a process of elimination and use of his 770R and a handheld aerial Stewart eventually traced the source of the QRM to a 'Fresh Air Ioniser' that was mains operated and used a transistor switching device to generate the some 3 Kilovolts needed for ionisation purposes. A complete cure was only effected after the device was fitted with RF chokes inside the unit where the mains lead led outside, and the fitting of a suppressor type of 3 pin mains plug.

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 - 640 Tuning Mechanism.-

This receiver uses a dual pointer system for indicating bandset and bandspread. The pointer spindles/axles are mounted concentric and after a period of disuse it is a fairly common occurrence for the lubricant to solidify inside the shaft so that tuning of the Bandspread causes twitches or displacement of the Bandset pointer. Most annoying however it manifests itself. I have had 640s for repair where most unusual lubricants have been utilised. In one case it was Butter which had turned rancid and solidified due to the heat developed inside the 640 case. In another rx some unspecified oil had been used and rusting had begun to develop - maybe it was domestic cooking oil !?!?! In both cases the whole mechanism required dismantling and cleaning with fine abrasive cloth - a piece of new, dry, green pad from the kitchen cupboard proved ideal. Lubrication with ordinary sewing machine oil was sufficient to ensure correct operation for years to come.

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 - More Members Ads - They do Work.-

Wanted urgently a nice condition model 940, please. Contact Simon G8 P00 soonest on

For Sale, - Eddystone 730/4 in good order, £65. Buyer must collect in Suffolk area. Contact Ron on 01986-894270.

For Sale,- EB35 I, not mint but very nice condition. Choose either battery box or mains psu. £85. ALSO.-

Wanted,- 960, 909A, 870A (in any condition) or mint examples of certain slide rule type valve models. Phone Anthony on 01686-630255.

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- The Scientific Three Portable.-

Is this the same, or even similar to the SSST that Graeme has discovered ? With such a similar name there may well be circuit similarities but all I have is an ancient, poor quality advert from Wireless World. I shall be sending a copy of what I do have to Graeme so that he can see what is to be made of these two like sounding sets.

Having only last year discovered that there were two completely different All World Six models, knowing now that there were two different 'Yachtsman' models, well I am leaving myself wide open here but I suspect we have two different Sci-3 models.

- - - - -
- Communications Quality Speech.-

Jamie tells me that he has improved the reproduction of his 840c when used for Dx-ing by the simple addition of a parallel tuned filter in the kathode of the AF amplifier stage.

His mod is reversible and causes no harm to the set. The idea is to fit a simple LC filter in the kathode of the output valve, that is between pin 8 on the valve holder and R37, the bias resistor. His idea being that the chosen values of 50 milliHenry and 0.05 muffs will sharpen up response at between 3 and 3.5 Kc/s. Cheap enough to try and similar to the CW filter idea used on such as the EC10.

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- A UAF41 ??? -

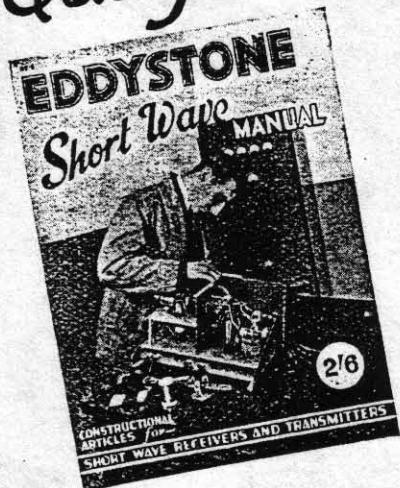
The 670 set that came down to Stan from his Dad had been in use for many years as a standby receiver, with no really long periods of active operation. When it arrived at Stan's QTH it even had the original handbook and copy of How to Use your Receiver booklet. The set did, and does work fine but the idea of a complete new set of valves is growing in Stan's mind. He checked out the circuit and found that in lieu of the better known UAF42's there are listed UAF41 type valves.

They are ALMOST a plug-in equivalent but the later '42 type has one change in the base pinouts, the kathode/suppressor pins. Have a look at the circuit and you will see what I mean. All is not lost however, and a very simple job with a soldering iron will sort out the swap.

I doubt that UAF41 types are available anywhere on today's market - they were not even to be had from Wholesalers in the late 1950s !

It is necessary to link pins 4 and 7 on the valve holder tags and then it is a simple matter of swapping to a UAF42. This info came to me from James an EUGer who has all AC/DC sets in his collection of 8 models - they have to be AC/DC as his generator supply is DC at 120 volts.

Again published — the Eddystone Short Wave Manual



This popular manual of absorbing interest to every Ham and Short Wave Radio constructor will be available at the end of October. The Eddystone Short Wave Manual can be obtained ONLY from authorised Eddystone Dealers.

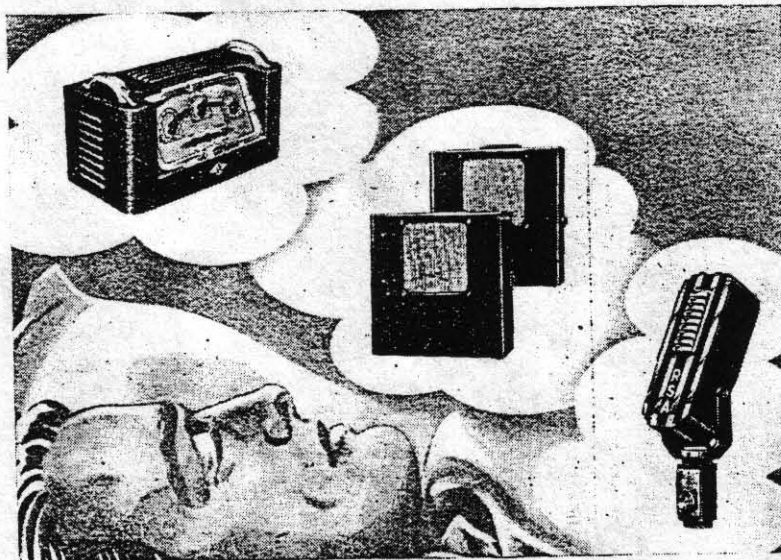
WE REGRET—A NOTE OF WARNING

It is our duty to you (and in fairness to all our registered Dealers) to be frank regarding the present supply position of Eddystone Components. In view of to-day's manufacturing difficulties (common to all) we are not finding it easy to meet the demand as quickly as we would wish. We must in the Nation's interest maintain our Export Drive thus leaving only a portion of our output for the Home Market. To avoid disappointment, order your Eddystone Components well in advance. Don't blame your dealer if he cannot fulfil your entire requirements over the counter—he is doing his best for you and we are doing our best for him. You may be sure that we, the manufacturers, are doing everything possible to increase output. Distribution of our products will be made evenly throughout the country—you may not have to wait, but if you do, please be patient.

(If you do not know your local Eddystone Dealer, we will, if you desire, send you his address. Please send postage. We do NOT supply direct.)

Published by

STRATTON & Co., Ltd., Eddystone Works, Alvechurch Road, West Heath, B'ham 31



DREAMS DO COME TRUE . . .

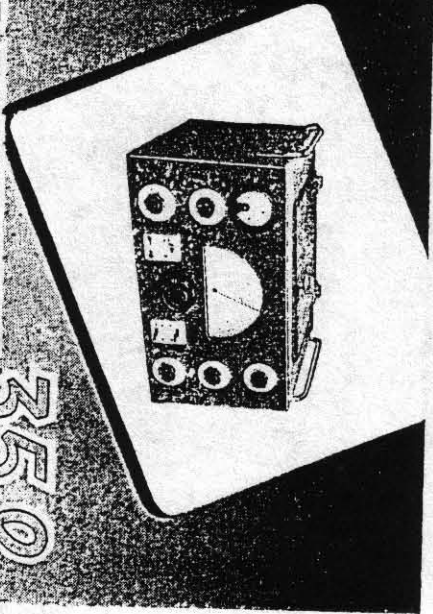
There's been nothing new for you from R.S. for 7 years now—like many others we were actively engaged on the Big Job. But in our few leisure moments we were dreaming of a new factory and a new range of Sound Equipment.

Now our dreams are coming true, we've got our new factory, and the new range is almost ready for you.

Be amongst the first to receive full details of our new equipment—write to-day.



R.S. AMPLIFIERS, LTD., REYNOLDS ROAD, ACTON LANE, LONDON, W.4. PHONE: CHISWICK 1011-3



EDDYSTONE 350X

Communication Receiver



WITH BANDPASS CRYSTAL FILTER

The advantage crystal control gives in improved rejection of interference outside the band and correspondingly better signal-to-noise ratio has been fully exploited by Eddystone designers. This receiver, at the moment, can only be supplied to holders of priority orders. **ON PRIORITY ORDER ONLY.**

WEBB'S

RADIO

The Short-Wave Specialists

Tel: Gerrard 2089. Hours of Business: 9 a.m. to 4 p.m. Sats. 9 a.m. to 12 noon
14 SONO STREET, OXFORD STREET, LONDON, W.1.

VI

6th Ed: October 1942, Wireless Serv: Jan;
by W.P. Cocking of Wireless World.

T.C.C.
CONDENSERS

SPECIALISATION
Guaranteed
DEPENDABILITY

Advertisement of The Telegraph Condenser Co. Ltd.

8009

IX

VII

A FOUR BAND TRANSMITTER FOR THE AMATEUR FREQUENCIES.

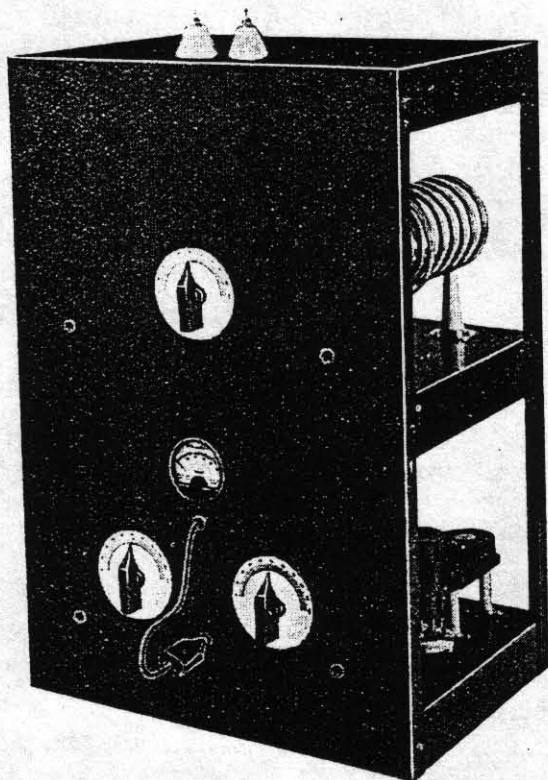
Here we have a low to medium power Transmitting Set built to achieve at reasonable cost, efficient telegraphy and telephony working on the most used amateur bands. The installation is designed around the new screened grid H.F. Pentode Transmitting Valve, which has improved features in that it is low priced, economical to use, easily excited as a driven amplifier and does not have to be neutralised.

It needs only one watt R.F. excitation. Using suppressor grid modulation it can be 100% modulated with only 1 to 2 watts audio input. This feature alone has a special appeal by the saving in cost of the usual high power modulator valve and its associated supply unit. To avoid the cost of individual meters in each valve stage a single current measuring meter is fitted with plug connection, and can be connected to a jack in each circuit.

The crystal controlled circuit is arranged to allow quick change-over from C.W. to Telephony on the 14, 7, 3.5 and 1.7 m/c

amateur frequencies. The change from one band to another being speedy and simple. To provide sufficient output to fully load the modulator an external single stage speech amplifier is recommended; a circuit diagram for this is provided.

The general circuit embodies three valves; pentode Crystal Oscillator, frequency Doubler (Pentode with control and screen grids tied together to function as triode) and the final amplifier. The three-tray welded steel rack provides a solid foundation and the completed transmitter forms a neat and presentable instrument. The power supply unit is built separately and a suitable circuit is shown. This can, of course, be varied to suit the power it is desired to use. Blue prints are available showing the top and underneath view of each tray, clearly illustrating assembly. The point to point wiring there shown makes the wiring quite straightforward. In addition there is the theoretical circuit diagram given herein. With the valves specified an input of 10-50 watts can be obtained according to licence and power unit available.



Front view of completed Transmitter showing panel lay out and rack construction.

TUNING AND OPERATING PROCEDURE.

Select crystal and coils for wave desired by reference to the table shown.

WAVE.	CRYSTAL	CRYSTAL COIL.	DOUBLER COIL.	FINAL COIL.	SWI.
160	160	160	NONE	160	OUT
80	160	160	80	80	IN
40	40	40	NONE	40	OUT
20	40	40	20	20	IN

Example (1). Wave desired, 160 metres.
160 metre crystal and 160 metre coil in plate circuit of V.1.
160 metre coil in plate of V.3.
No doubler coil, as stage is switched out.

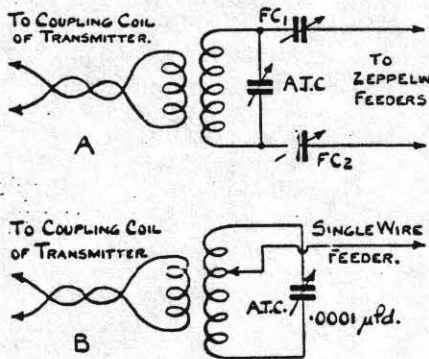
Example (2). Wave desired, 20 metres.
40 metre crystal and 40 metre coil in plate circuit of V.1.
20 metre coil in plate of V.2 (stage switched in) SW1 at rear.
20 metre coil in plate of V.3.

THE FOUR BAND TRANSMITTER—continued

TUNING.

Example (1). 160 metres.

Tune V.1 anode current meter to bottom of sharp dip by inserting the meter plug in jack marked "plate current V.1." Withdraw plug and insert in jack marked "Plate current



V.3" and tune to minimum anode current here. The Transmitter is now ready to be connected to the aerial (two alternative arrangements are shown in sketches "A" and "B"). In each case the Aerial tuning condenser is swung until maximum anode current is shown at V.3. No alteration to the final amplifier (V.3) plate tuning condenser should be necessary after tuning to minimum without aerial load and to maximum with load, as previously mentioned.

Example (2). 20 metres.

See that switch SW1 is switched to bring in doubler stage (V.2). Tune V.1 to bottom of sharp dip. A more accurate tuning point of plate circuit V.1 can be found by inserting the meter plug into grid current jack of V.2 (centre jack below meter) and tuning to maximum grid current. Insert meter plug into plate current jack V.2 and tune *very* carefully to bottom of sudden dip on the meter. Now insert plug into plate current jack of V.3 and tune to minimum current; proceed as before for aerial load. The tuning of 40 and 80 metres is precisely the same as Example (1) and (2).

OPERATION FOR TELEGRAPHY.

By inserting plug attached to morse key into jack marked "Keying Jack" and leave key open. The plate current to final amplifier should be zero and maximum on closing key (with aerial load). If the plate current does not drop to zero, re-check entire tuning operation.

TELEPHONY OPERATION.

The output from speech amplifier can permanently be plugged into the jack on the extreme end of back terminal panel. Telephony is obtained by depressing switch SW2 adjoining jack mentioned above. This automatically cuts out sending key and brings speech amplifier into circuit. The amplifier must, of course, be switched on separately.

AERIAL LOAD.

In view of the large number of different types of Aerial and Feeder systems, the transmitter utilises a 3-turn aperiodic coil coupled to the "dead" end of the plate coil of V.3. This aperiodic coil is connected to the two lead-out insulators on top of rack. From this aperiodic coil an untuned transmission line of twisted flex can be taken to whatever type of Aerial and Feeder system it is desired to use, provided that the untuned line terminates with a further aperiodic coil coupled to centre of Aerial Tuning Inductance. This is shown in sketches "A" and "B."

Approximate total cost of parts for Transmitter portion only, including valves, £16 0s. 0d.

Cost of Power Supply Unit and Speech Amplifier is extra to above.

CONSTRUCTION.

This we leave to the ability of the individual constructor, who will have the necessary technical knowledge which enables him to follow the photographs, diagrams and theoretical circuits.

A set of layout plans, with complete list of parts, can be obtained at a cost of 1/6, post free.

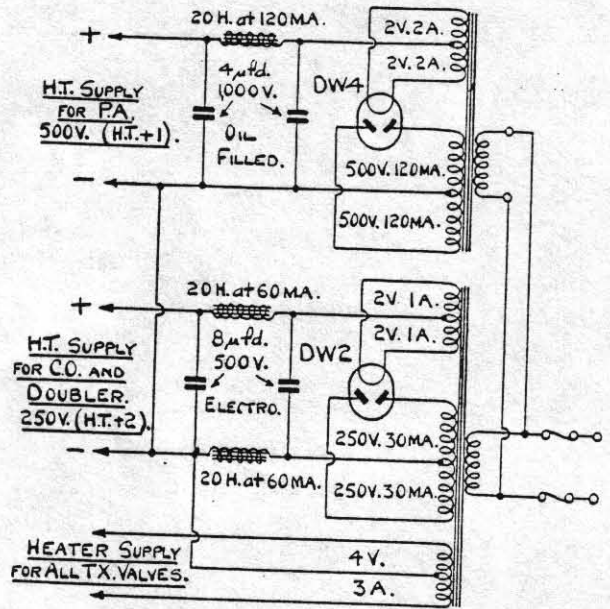
VALVES.

Crystal Oscillator - Mullard P.M.24M.
Frequency Doubler - Mullard P.M.24M.
Final Amplifier - R.F.P. 15.

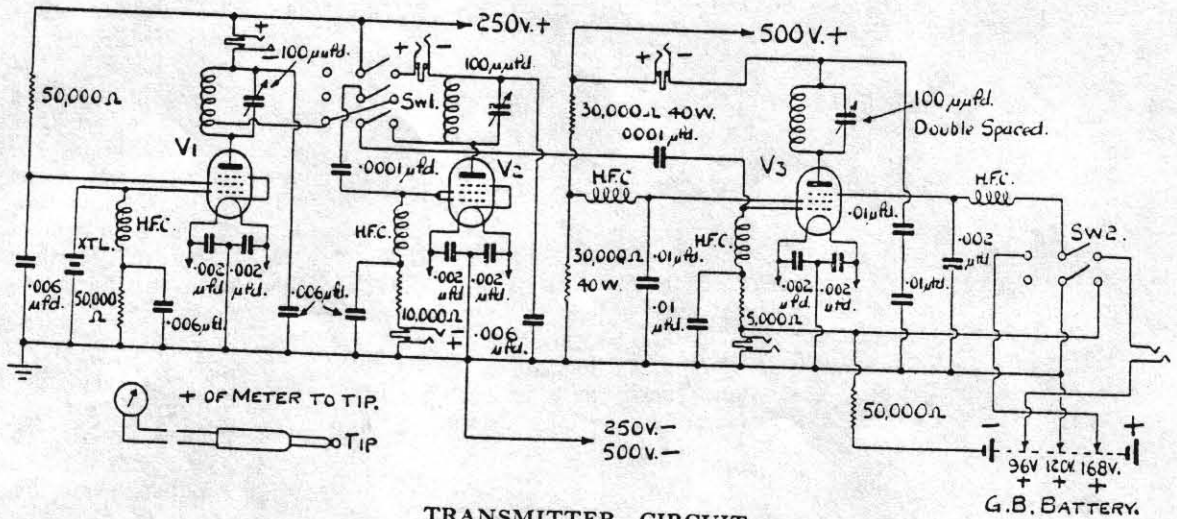
COIL DATA.

COIL	FORMER	WIRE	TURNS	TAP FROM CENTRE	WINDINGS
160 Metre X'val.	Plain. Cat. 935.	22 Enam.	63 3/4	5 Turns	Close.
40 Metre X'val.	Threaded. Cat 936	"	15 3/4	2 1/8 "	Spaced.
80 Metre Doubler.	"	"	28 1/4	—	"
20 Metre Doubler.	"	"	6 1/4	—	Double Spaced
160 Metre Final.	3" diam.	16 O.C.C.	52	—	Close.
80 Metre Final.	3" diam.	16 O.C.C.	28	—	"
40 Metre Final.	3 1/2 Copper Tube.	See Text.	16	—	—
20 Metre Final.	3 1/2 Copper Tube.	" "	7	—	—

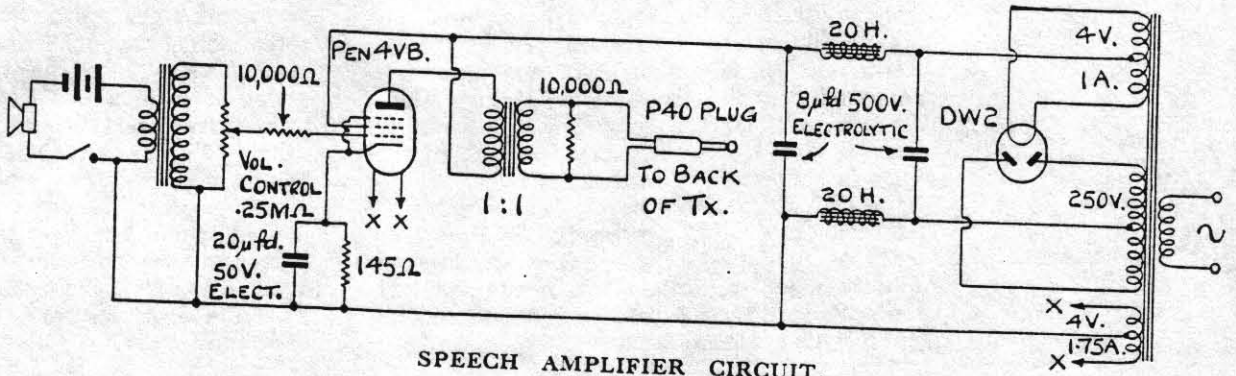
CIRCUIT DIAGRAMS FOR FOUR BAND TRANSMITTER



CIRCUIT FOR POWER UNIT.



TRANSMITTER CIRCUIT.



SPEECH AMPLIFIER CIRCUIT.

SOLDER YOUR WIRELESS SET

THIS ARTICLE WILL HELP YOU.

For noiseless and consistent short wave reception it is advisable to employ soldered joint connections wherever possible in the receiver.

Connections screwed together often become loose and cause erratic performance or noise; another point usually overlooked is that after a time oxidation occurs under locking down nuts and what was originally a good connection develops into a high resistance joint.

To secure best results all sets described in this Manual employ soldered joints, and this article is written to aid those who find soldering difficult.

Many people experience difficulty simply because the job they are working on is dirty and will not allow the solder to run perfectly on the two surfaces, or the iron they are using is dirty or not tinned.

If the instructions given below are closely followed, they require only a few seconds to carry out and when thoroughly mastered soldering will be found the quickest way of wiring a set. Furthermore, there are many occasions in the home when a soldering iron is useful.

The essentials for soldering are the iron, the solder, and a soldering flux. For radio work most fluxes are corrosive and for this reason soldering spirit should never be used. Resin is a good non-corrosive flux and resin cored solder which contains the right amount of resin to make a good joint is strongly advocated. Resin sets hard and after the joint is made can be scraped off with a pen-knife. Flux should not be left, it aids corrosion and collects dust. If ordinary solder is used a tin of good paste flux, such as Coraline or Fluxite is next recommended, and in any case a tin of one of these is wanted for cleaning and tinning the soldering iron.

If electric supply is available an electric iron is of great advantage. When once hot the current keeps it at a constant heat and it cannot overheat as an ordinary iron. To prepare a new electric iron bit for soldering, let the bit heat up, dip into the paste flux and apply solder to the end of the bit until it is nicely tinned all over. When soldering, keep the end of the bit clean and always tinned. A piece of rag for wiping the bit should always be kept handy. The bit of an electric iron should very rarely need filing.

An ordinary iron must be heated externally with a gas ring or fire. Naturally it is more difficult to keep the bit clean. In the first place warm the bit up until the solder runs easily when touched, remove any oxide from the bit end with a file, dip it into the flux and tin end of bit as before. The bit of an ordinary iron must always be kept clean and well tinned to solder easily. If the bit is allowed to become red hot the solder will burn off and the bit must be retinned. Unlike the electric iron, the bit will have to be filed from time to time.

Now, with the iron nicely warm and the bit well tinned, you are ready to solder. The two surfaces or wires to be joined together should be cleaned if necessary with a file or glass paper, if nice clean tinned copper wire is being used this is usually unnecessary. Apply the iron to each connection separately, as the iron heats each part apply the resin cored solder so that each is coated with solder, then place the two parts together, apply the iron and a little more solder and when the solder runs remove the iron, but take care to see that the two wires or parts being joined remain perfectly still until the solder becomes dull and solidifies. Your joint is then made, test thoroughly to make sure if it comes apart it isn't, and you must try again. As stated before, after a little practice soldering is quick and easy and a useful accomplishment.

Memories of Another Age - Continued

In the last two EUG Newsletters Bob King, G3ASE, described how he became a teenage V.I. or 'Voluntary Interceptor' monitoring German military shortwave morse on an Eddystone 'All World Two' receiver. Early in 1942 he was asked to put on uniform and join the Radio Security Service, all at the ripe old age of seventeen. He continued the War cracking the German radio networks and feeding the results to Bletchley Park where the Enigma code was broken. In this episode Bob describes the workings of that diabolically cunning coding engine

EDDYSTONE, its contribution in WWII (part 3)

By Bob King G3ASE

The Enigma enciphering machine used by Germany during the 1930s and 40s was developed from a freely available commercial machine and the result was considered indecipherable. The Germans are believed to have manufactured about 100,000 of these machines but to understand it fully requires a visit to Bletchley park and a detailed study of the instrument itself and the excellent video tape shown there. The Director kindly gave me permission to look closely into one of their machines.

As constructed by the Germans it was built to high engineering and robust standards. It is quite heavy and built on a diecast chassis (Eddystone would not have been ashamed of it) looking a little like a typewriter with a QWERTZ keyboard surmounted by another QWERTZ layout but with pea lamps above each letter. Above this are three apertures with a drum (called a rotor) in each window which displays one figure from 1 to 26 at a time. This rotor, a disc about 3 inches in diameter, has 26 studs in a circle on the left side wired in an irregular manner (but the same for all rotors given the same reference number) to 26 brushes on the right side. There were, in the military machines, five rotors from which three were selected for insertion into the machine. All five rotors have different wirings of course so the possibility of someone at Bletchley Park finding which rotors were in use and the wiring of these appears fairly remote. If only it had been this simple! We have hardly touched on the complexity yet.

When an operator presses a key a lamp lights up a different letter: this is the enciphered letter. If the same key is pressed again a different lamp lights up because each key when pressed rotates one of the rotors one notch. This continues until the rotor has moved 26 places when the next rotor is moved one place, in the same way as a mechanical mileometer. Let us trace the tortuous path of the current from the 4.5 volt battery to the lamp, being thankful that electricity travels along wires at something approaching the speed of light. Firstly the current goes to a plugboard at the front of the case. From here it can be directed using fly leads to another socket. It then goes to an entry/exit disc (on the right-hand side of the rotors) where it connects through a stud to a brush (a spring-loaded pin) on the right side of a rotor. Next it passes, from right to left, through the other two rotors to a brush on a reflecting disc on the left which is again wired in such a way as to return the current via a brush to a different stud on the third rotor and back, by a different path to the entry/exit disc and again following a

different path (via the plug board) to reach the lamp eventually, feeling by this time as confused as you probably are.

But this is not enough. Each rotor has a ring with 26 numbers on it (in some versions letters) which can be rotated by hand in relation to the studs and brushes so that the operator can set this ring to a certain mark before inserting the rotor. To set up ready for enciphering he has to select three rotors from five, set the rings on each to a mark (26 choices), choose the order of placing them in the machine, choose a starting position for each rotor and place up to 13 (2 pin) plug leads in the 26 sockets on the front. Now he can start enciphering and all will be well if the recipient receives the message without error and has his machine set up in exactly the same way.

If you have followed so far the worst is over for you, but think of the poor souls at Bletchley.

All operators were supplied with a chart giving details of the initial settings which usually changed at midnight. Both sender and receiver had to obey the same rules and I can't help thinking that there must have been some strong language, in German of course, when the two ends didn't agree.

A further precaution which was assumed to make the cipher even more secure was for the operator, after having set up his machine according to the list for the day, to choose a different rotor setting and of course he had to let his recipient know what his choice was.

Suppose he chose 'AAB' and pressed the keys 'AAB' which might have resulted in 'MKL' on the lamp board. This would be transmitted and the receiving operator would put 'MKL' into his machine and obtain 'AAB'. Both operators would then set their rotors to the key setting, chosen by the sender 'AAB' in the above example, and continue with the traffic. As it was important that the 'AAB' should be understood the 'AAB' was sent twice and could, for example, have produced the six letters 'MKLHBU'. The operator changed this initial setting for every message or part of a long message.

It might have been better to have sent the 'AAB' once, because the cryptanalyst now knew that whichever letter produced 'M' would also produce 'H' three letters later and so for 'K' to 'B' and 'L' to 'U'. Add this to the fact that probably only one rotor was turning, until it notched the next one, that 'A' could not produce 'A' and deciphering began to appear as a remote possibility.

Messages began with "CT=preamble=message", or sometimes the preamble was hidden in the first two five-letter groups. Hence radio amateurs who were called Voluntary Interceptors were advised to take particular care to copy these. They could be important even if the message was lost as the more preambles obtained the better the chance of finding the various settings for that day.

Of course we VIs knew nothing about this; all we copied were the 5 letter groups. We couldn't tell that the operators changed rotors; in fact we didn't even know that the Enigma machine existed. Ours was not to enquire, but to keep on taking down all we could hear of these faint signals. I certainly never tried to crack it on my own, which was as well. I don't even like doing crossword puzzles. Then with a typical Nazi trick, their Navy obtained 8

rotors to choose from. Not content with that, towards the war's end they actually put a fourth rotor into the machine. But one can imagine the consternation on all these occasions at Bletchley Park when suddenly all their efforts were thwarted; presumably it took a long time to find out why.

It is fairly certain that if the cryptanalysts had no more than this to go on it is unlikely that any progress would be made. There were however several avenues of relief. Polish mathematicians had been studying Enigma machines before the war and brought their knowledge and a basic machine to Britain at no small risk to themselves. One Marian Rejewski, a brilliant mathematician, had actually deduced the entire wiring pattern with only intercepts to go on. Further help came through careless procedure on the part of some operators. Some valuable documents were also passed to Bertrand, a French Intelligence Officer, by a German traitor (code named Asche) who was later shot. The capture of equipment from submarines and charts especially from weather reporting ships was also of considerable help.

A British radio amateur (sadly now "silent key" and who the Germans accepted as their agent) operated a transmitter, from near Barnet. Messages were sent in hand cipher to a spy ship off Norway which had a habit of passing them on to Hamburg using Enigma! What more could we ask? The RAF would lay mines and we then waited for the German authorities to report, again using Enigma, when the mines were cleared. Messages often had a tendency to contain stereotyped titles and addresses etc.

Clearly there are ways into the most secret of secrets, but don't let this give the impression that Bletchley Park had an easy time. Remember the initial settings changed every 24 hours and later more frequently.

The Germans had their enciphering systems checked and modified by competent mathematicians and engineers and declared safe. Yet there must have been some suspicions in certain places because throughout the war steps were taken to improve their security. The services which RSS dealt with became steadily more difficult to follow by changing call signs, frequency, operating times and other measures. It would have been a mammoth task to modify all the machines in use. But steps were taken to make deciphering more unlikely, such as discontinuing the repetition of the three initial rotor settings.

How did the boffins at Bletchley Park succeed? Firstly a 'crib' of some sort was required; some indication of what the message contained. Then a machine was developed from a Polish 'bomba' (known as 'bombe' in Britain) by Knox and Turing. This immensely large, complicated and noisy machine was in effect many Enigmas which rapidly searched through possible settings to reveal plain text. Such a machine is being reconstructed (1997) at Bletchley Park and should not be confused with Colossus which served a different purpose in solving high speed teleprinter type traffic. Many Bombes were in action in various parts of the country but like Colossus were destroyed at the end of hostilities.

This brief account may give some idea of the tremendous skill, devotion and heartbreak on the part of those who worked round the clock to discover what the enemy was communicating between his forces and agents. A lifelike novel is "Enigma" by Robert Harris and factual accounts can be found in "Enigma and its Achilles Heel" by Hugh Skillen, "Alan

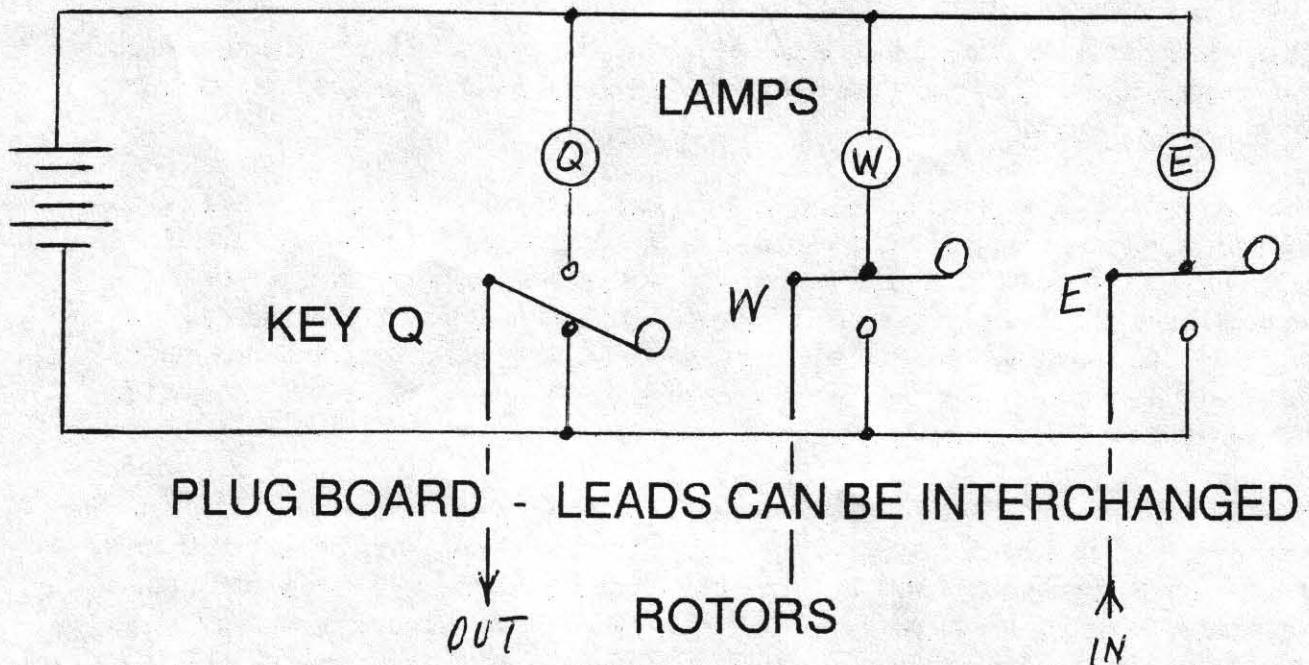
"Turing" by Andrew Hodges and "The Hut 6 Story" by Gordon Welchman (the latter is out of print but available on request from public libraries).

Two points which had puzzled me were answered on one of my visits to Bletchley. One was how the rotors could be inserted without damaging the brushes and the other was how a key press could light just one lamp.

The first was simple. A lever pulls the reflecting disc to the left and allows a shaft holding the three rotors to be removed.

The second involves a single pole double throw switch where the centre pole is normally up. One side of the battery goes to all lamps, the other side goes to the lower switch contacts on all keys. the upper key contact is connected to each lamp in turn and the centre contact (the moving one) goes to a letter on the plug board. When, say, key A is pressed, current flows via the lower and middle contact to the plug board. After following the path described above it comes back to the plugboard and goes via the relevant centre contact (of another key) through the upper contact and the lamp. (See diagram.)

But having led you astray along the Bletchley cryptology trail (which I strongly recommend you to follow by visiting the Park) I will next time return to that most remarkable receiver, and its reconstruction, the Eddystone Short Wave Two.



Key Q lights lamp E

What a devious machine! But it's back down to earth in the next Newsletter as Bob describes how he started listening again the thermionic way. Don't miss his return to yesteryear with Eddystone in our August edition.

RADIO RAMBLINGS by Graeme - G3GGL

FIRST of all I must Crave Your Indulgence, as the Bard says. Due to a multitude of causes things are running a bit slow at the EUG Admin Office. Personal factors have removed a lot of my spare time to look after the Office (the XYL has been laid up since the end of April); subscription renewal time has loaded us with mail; many of you have taken the opportunity to order literature at the same time; it's the holiday season at the factory, and Christine is very busy doing handbooks for the Company! So what I'm asking is - please don't worry if you find your cheque isn't cleared; it will be all in good time. And please allow a little longer than usual for handbook orders. Sometimes we can do it in a couple of days, but some are taking several weeks to get through. Eddystone Short Wave Manuals are OK, we have some in stock. Many thanks...

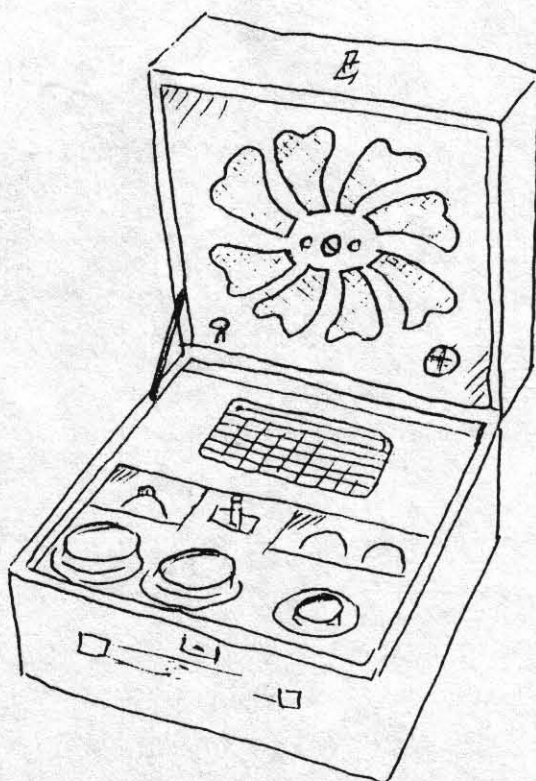
BOOK REVIEW... Since 1923 the American Radio Relay League (the US equivalent of the RSGB) has published the ARRL Radio Amateur's Handbook every year without fail. Generations of hams on both sides of the Atlantic have called it their Radio Bible; generations of professional design engineers have used it as a reference. Valve buffs prize the earlier copies highly and editions from the 1940s and 50s are eagerly sought. Also eagerly sought but almost never found are copies from the 1920s and 30s. But help is at hand: an American publisher, Lindsay Publications Inc, has reprinted six chapters from the Handbooks of 1929 and 1934 and entitled them "Those Great Old HANDBOOK RECEIVERS". Members who are fascinated by early shortwave sets which are easy to build (yes, you can still find all you need if you look) will find this book to be a goldmine of original source material. I love it! AVAILABLE from Practical Wireless Book Store, Price £6.95 plus £1 p&p (94 pages). Credit Card orders taken 24 hours a day on 01202 659930.

DISCOVERY OF LOST EDDYSTONE MODEL "SCIENTIFIC PORTABLE THREE"

Yet another previously 'lost' Eddystone has surfaced, again in its city of origin, Birmingham. The 'Scientific Portable Three' is the only known Eddystone 'suitcase' set and in its write-up of June 1930 in the Wireless World it is described as having "a SG high frequency valve, grid detector and pentode output valve, with Celestion loud-speaker and an all-up weight of 34 lb. Price £26 15s!"

Found tucked inside this model was an undated cutting from the Daily Mail, (probably the seventies) with a reference to a sale of radios at Christies. On the margin is written 'This old portable wireless receiver, which belonged to Aunty Tot, was bought about 1927 or 28. It is an Eddystone and was the most expensive portables then made'.

**FOR SALE, £395, or vno, phone Howard, 0121 706 0261
Thu/Fri/Sat 10am-4pm; Mon/Tue 7pm-9pm**



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IF YOU FORGOT TO FILL IN YOUR YELLOW
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IN NEWSLETTER No 42 DON'T DELAY
RENEW TODAY**

MEMBERS FREE ADVERTS

WANTED: Details of re-stringing the 888A receiver. Also still looking for coils for my 358X. All details and offers to Ben G4BXD, 01562 743253.

FOR SALE: Eddystone 358X for rebuild, £35, collect from East Grinstead.
Phone G4GEN on 01825 712205

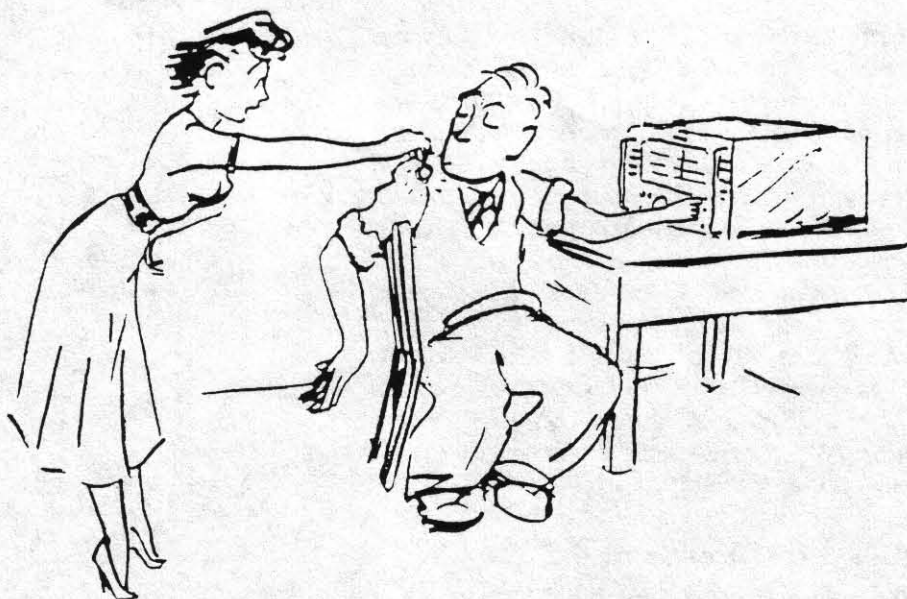
FOR SALE: 23 copies of Short Wave Magazines from 1937 to 1945 in fair condition.
Price £15 plus p&p. Ring Dave's Mum on 01904 768280 (York)

WANTED: Eddystone EB35; call Geoff on 01159 322 246

FOR SALE: Marconi plug-in metering unit for Atlanta Receiver, £20 incl p & p.
Call Mike on Sheffield 258 5937

EUG 80 Metre NET

This continues to take place on the First Sunday and First Thursday of every month, NOT weekly, as some members have thought. (Frequency 3695 plus or minus). Time: 09.45 for AM testing, 10.00 for LSB (Local = GMT + 1 until Oct) One of our members, Brian VE3DFC, in Ontario, has erected a three-element yagi for eighty, aligned on a great circle for UK. Using an 830/4 Rx and a Johnson Viking II Tx (I think that runs about 100 watts output) he had an AM contact with Greenland getting a 5 & 9 plus 50db report! But no British stations heard.... Keep on listening, folks (I've passed the rest of your letter on to Ted for comment in the next N/L).



". . . Take your ring - and I hope you and the Eddystone will be very happy . . ."

(With Apologies and Acknowledgement to G3COI and the Short Wave Magazine, January 1955)

- Mechanical Problems.-

The turret tuner mechanism doesn't cause many difficulties even now, although most sets are several decades old. Usually a whiff of grease, especially the silicone or 'moly' types, is usually sufficient to keep it working smoothly.

If however it DOES refuse to rotate, then don't worry too much. The whole mechanical linkage is very simple and a good visual examination as one attempts to turn the Range knob will show the point where jamming is taking place. The system is remarkably tolerant of wear and tear factors and if one starts off with a can of 3 in 1 oil and a pot of suitable grease then the jamming can be cleared. Occasionally it may be necessary to remove build ups of previously applied grease, by now hardened to the consistency of mortar. Try a few drops of switch cleaner, or use some of that Tippex dilutant -BUT DO REMEMBER TO APPLY NEW LUBRICANT. Oil is okay for the primary cleaning job but most mechanical parts in your Eddystone require a light grease for permanent lubrication, if you are a DIY car type then the grease ought to be available, in house.

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- Further to those GEX Diodes.-

A letter from Ron to the effect that the GEX54/3 with an Orange spot on it just will not do !!!

Ron tells us that this diode is for very low reverse voltage and low reverse current circuits. So low that he quotes figures of a 3 volt reverse voltage limit, with associated 6 microamp reverse current limit. Moral is Look for the Orange Spot.

- Ted. - - - - -

- Coaxial Cable History.-

For most of us the history of this type of low impedance RF feeder starts with the use of coax cable by the Armed Forces in WW II. Prior to that date most feedlines were of the high Z open wire type.

An item in a 1936 Wireless world mentions that as far back as 1936 the German Post Office had installed a 250 mile coax link for the transmission of High definition Tv pictures from the Leipzig Fair to Berlin. No technical details are available but I would be interested to know what repeaters were required and the distance between them, that early coax was very lossy compared with todays stuff !

- - - - -

- HRO PSU by Eddystone.-

In a recent letter John teague, G3 GRJ, mentions his recollections of the Army designation PSU No; 5, which bore the labelling P.S.E.G.

John comments that this psu was for use with the HRO and was clearly of UK origin, and of better quality than the usual National supplied psus. He had always wondered whether the letters PSEG could relate to Peto-Scott and never gave a thought to its possible Eddystone origin.

Just one more snippet of info to add to my files, but I am left wondering what the PSEG stands for? Could it be that a part translation would be something along the lines of Power Supply Eddystone Gxxxx? or maybe PSU Strattons Eddystone Gxxx maybe? For some reason these 4 letters PSEG raise faint memories in the back of my mind, can somebody help?

- Replacement Electrolytics.-

An interminable subject this, a reminder from one of our senior EUGers that many of those on sale today, and he refers especially to the mini types, are just not suitable for use on psu circuits where they have to deal with residual AC.

The design of many of today's high capacity, small size electrolytics is such that they have minimal plate area and when used on such smoothing tasks they will almost certainly fail early in their life.

The same point goes for some of the smaller sizes of polyester or ceramic types which will overheat on circuits where they have to deal with heavy current duties.

There are electrolytics made for smoothing and reservoir use and these are so identified in most catalogues.

- Noise, and my 1002.-

Since my 1002 is a very early, pre-production model it may well be that some of its problems, that have developed over the years, are not relative to the production sets.

I have mentioned the existing faults, cured shortly after my receipt of the set from Chris Pettitt. I recently had another problem come up on the FM band only.

This set uses a Mullard FM tuner feeding a separate FM dedicated IF board which has facilities for low level stereo output and a feed from one channel to the 1002s AF amplifier to give mono monitoring via the built-in speakers.

All had been well on FM since I cured the problem of a 900 c/s tone superimposed on the AF signal when a station was tuned in, (Graeme's biological frequency counter classified it as 900 c/s!).

Well now several months on and the signal seems to slide off-tune to a point some 250 Kc/s high, and one is left with spiky noise on top of the signal when it is retuned.

Not a very satisfactory situation when I want to QAP my Jazz & Big Band on Radio 2, Monday evening. It means turning

on my Alien Black Box for the evening and I object to this.

A quiet afternoon with nothing scheduled meant that I could begin to fault find. I had a choice, go for the Mullard tuner or go for the IF board. Frankly with such a large change in frequency I thought of the tuner unit but dreaded opening it, after having dissected it from the set.

Okay so I played chicken and went for the IF board, good job I did for I discovered that it was a problem which appeared to relate, at first sight, to the AFC circuit but which when traced back was located in the small, separate, pcb which holds the 18 volt generator for electronic tuning of the FM tuner.

So I had been wrong on both counts ! Still I had got there, sort of. The manual gives all necessary gen for re-alignment and/or fault-finding. It quotes that when setting up the tuning voltage level one aims for a 2 volt level when setting RV401, the trim pot on the 18 volt psu. This is measured between point 203 and chassis/earth. It was fine when first switched on at 2 volts more or less. But as the signal drifted so this voltage changed ! Dissing the lead from the 18 volt psu to pin 203 and keeping a monitor on it could be seen that the voltage drifted after several minutes. So it was a fault in the voltage generator/rectifier/smoothing circuits, somewhere.

It is a pretty simple circuit and consists of a single tranny as oscillator, two rectifier diodes, and the 18 volts zener, plus a few Rs and Cs.

The trim pot R401 was my first target and I decided to check this out in operation. A few twists back and forth made calibration of the FM band completely OFF. But also it showed that the pot needed some cleaning as the voltage did not so much 'swing' as 'jump'. This cleaning job completed a further check was made and it was only then discovered that there was a dry joint at the earthy end of this trim pot. The earthy end of the zener did not look to good either. Both were resoldered and the board was rechecked out over its full rotation. Much better now !

Re-installation was next and with just a rough attempt at re-calibration the set was tried out, for a good hour with no apparent jumps in frequency, or noise. The next evening the band was properly calibrated and since then, about a week, the set has behaved itself. Ted.

- - - - -
- Historical Item.-

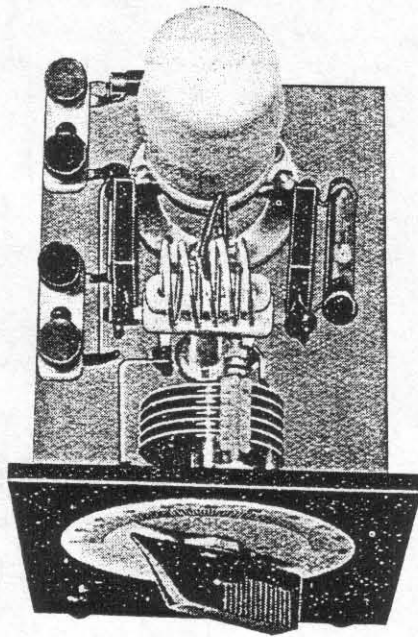
Nice comments from several members about the letters printed recently that Geoff Woodburn had sent to me in the -80s, his info on the 'old days' with Strattons/Eddystone and some of the models he recalled. I am preparing some other letters for a future issue - **watch this space.**

I like the historical aspect of the EUG myself and try to share all my findings with EUGers - did you get your stuff in the post Colin ? Hope it fits in with your project okay.

I am preparing an article to go in a newsletter soon on the whole series of Kilodynes, more versions than many of you know of. Ted.

A MODULATED OSCILLATOR

4.5 METRES TO 8 METRES.



General lay out showing disposition of Components.

This oscillator will be of great value to the ultra short wave experimenter in testing and lining up ultra short wave receivers. It radiates a continuous note at a constant level over a variable frequency band of 67 to 37.5 Mc/s from 15° to 100° on the dial.

The oscillator valve functions in the usual way, an electron-coupled circuit being used. A time constant arrangement, consisting of a suitable value grid leak and condenser is, however, incorporated which breaks the oscillations up into groups of about 300 per second, thus giving an audible output. The high tension supply necessary is 60 volts, and it should be noted that a variation of high tension will slightly alter the pitch of the audible note. It is also interesting to note that in this case a triode valve has been successfully used as electron-coupled oscillator, although it is general practice to use a screened grid valve for this purpose. The present triode arrangement works extremely well and there is a considerable saving in cost between the price of the two valves.

The frequency range, which gives a complete overlap each side of the 5-metre amateur band and the television wavebands, is covered by a 40 m.mfd. condenser tuning a 5-turn silver plated coil. A tapping from one side of the filament is taken to the centre of the coil. The high frequency choke used in the filament lead must be of low resistance so that no appreciable drop of filament voltage occurs. The Cat. No. 1021 H.F.C. is specially made for this purpose.

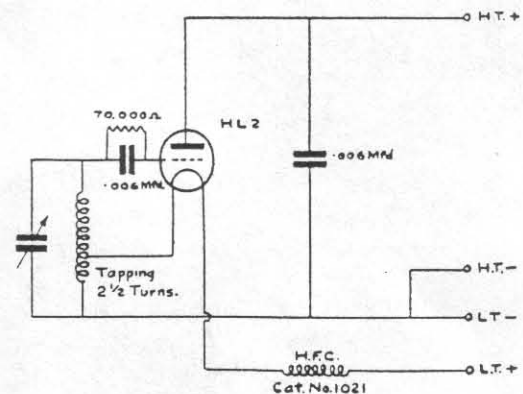
The unit is mounted on a small panel and baseboard, an illustration of the lay out being given, and the assembly is one which can be completed without difficulty in a very short time.

EDDYSTONE PARTS.

	Price
1 4-pin Frequentite Valveholder, No. 949 ..	1/5
1 Ultra S.W. Choke, No. 1021 ..	1/3
2 2-way Frequentite Terminal Saddles, No. 1046, 1/- each ..	2/0
1 1½" Insulating Pillar, No. 1029 ..	4½d.
1 Microdenser, 40 m.mfd., No. 900 ..	4/3
1 5-turn Coil and Base, No. 1050/1 ..	2/7
1 Pointer Knob and Dial, No. 1027 ..	1/3

MISCELLANEOUS PARTS.

2 Fixed Condensers, .006 mfd., Dubilier or T.C.C., 1/6 each
1 ½ watt Resistor, 70,000 ohms, Mullard, Erie or Dubilier
1 Baseboard, 6" × 4", ½" Plywood
1 Panel, 5" × 4" × ¼", Wood or Bakelite
Connecting Wire, Screws, etc.	..
1 Osram Valve, type HL2



CIRCUIT DIAGRAM.

- SFERICS.-

A reminder here that any components that are hot to the touch, except the dropper in Universal sets, should be investigated. And if you do smell burning, or even hot varnish when you turn your set on, then QUICKLY turn OFF again. A quick reaction here can save the cost of a new mains transfo and all the associated aggro in finding one or having the old one rewound. This is very expensive by the way.

A general rule if you really do have to re-align the IFs is that the cores should be in the outermost position. There will always be TWO points of PEAK output but the CORRECT one is the OUTER position or the selectivity of the stage(s) will inevitably be compromised, you may even get an oscillating IF.

The balanced, doublet, or dipole aerial. Call it what you will this type of aerial will cut down on QRM from local sources. This is due to the balanced nature of such an array. The local QRM balances itself out in the two arms of the aerial, worth a try if you have been suffering from a neighbours RADIATED QRM. But it is no help if the 'stuff' is coming over the mains supply.

Mains borne QRM, it may come over the Live, Neutral, or Earth wire, or any combination of these three. So if you are suppressing a supply do all three legs. Few people realise that the commoned mains earth going from house to house is a prolific canal for all sorts of noises produced in electrical equipment. Most Eddystones have some kind of suppressor condenser at the mains input point. The AC/DC sets also have mains suppressor chokes so wonder no more why these are less prone to mains QRM.

Just a tip from one EUGer, if you have a high level hissing noise out of the speaker of your EC10/EB35 set. If this hiss cannot be reduced by turning down the volume control then go for the output trannies. These OC71s must suffer from age and become prolific noise generators. Funnily enough whilst one noisy OC71 produces a LOT of noise, the two in the output stage, if both noisy, will produce less. Must be balanced out somehow.

On the EC10 model you can reduce noise level in the output stages by replacing R40 (4.7K) and R39 (1.2K) by modern low noise types. Resistors in general become both noisy and high in resistance when old.

An EB36A that was recently renovated after purchase had been found to be excessively noisy and took too much current. causing the psu transfo to run hot. Nothing magic here just some ageing e'lytics which needed to be replaced - well it is about 30 years old !

Backlash on a 'slide-rule' type of Eddystone ??? Well don't blame the Company. It will almost certainly be found that the set has been fitted with a new drive cord or wire. There are two possibilities here. Either it has been tensioned TOO much or is TOO loose. Another possibility here is that the spring

tension idler pulley is STUCK and not doing its job. How about checking that the replacement drive cord/wire is not TOO thick for the grooves in the pulley ? Yes it can happen.

Differences in the frequency coverage of the Eddystone 670 and its MIMCO badged version. Yes there are, for some reason the MIMCO does cover the 60, 70, 80 metre bands but has no Trawler band coverage as there is a gap between 1.5 and 3.5 Mc/s. It also has a LW band. The Eddystone version does cover trawler band but has no LW band. QuirkY !

The performance of the mechanically switched IF selectivity system on the 680 type of set IS superior to the switched coil system on such as the 940 ? Definitely so as you will realise if you try them side by side. But WHY should this be ? I have long had the feeling that it is due to leakage between the tapped windings of the 940 IFTs - any comments please ?

Noisy, rustling noise on using the BFO ? Then go for a new series coupling condenser as this problem has been frequently documented. The silver mica type of condenser DOES go noisy with advanced age and a new polystyrene type will work wonders. Try it tuned to an unmodulated carrier, before and after and you will be persuaded.

Old, dried out, electrolytics can become noise generators besides causing possible self-oscillation in a stage, due to lack of decoupling capacity.

Eddystone Broadcast transmitters have been sold to, and installed by, several companies in New Zealand they are usually local stations with a power of 1 Kwatt. Funnily enough they were supplied by MARCONI.

Can't get those stuck grub screws out of the knobs ? Then trot out to the garage and get that can of WD40, a few drops of this at intervals of a couple of hours and Bingo ! A loosened grub screw.

Replacement screws for the older sets, they are/were all BA sizes so don't go trying to fit metric sizes. Oh yes, it is often tried and really messes up the threads of the holes. BA sizes are STILL available if you look in the trade catalogues for them.

Those bright red HUNTS condensers used in such as the 830/7 are becoming a source of trouble nowadays, if the mail is anything to go by. They may sometimes be seen to have a cracked case, allowing ingress of moisture. Otherwise they seem to be able to lose most of their capacity. Examples checked out of circuit show a 0.05 muf marked one was reading mere puffs on the capacity bridge. Worth checking these out on a deaf receiver.

Those sets that turn up with the long handled, black toggle switch from time to time. These may be actual production fit items as some contracts did specify this part, i.e. some of the 680 range supplied to the, then, Post Office Engineering

Dep't had this switch specified. It may look like a fugitive from a 1930/40s 'special' sports car but it is in the Eddystone catalogue.

- - - - -
- Mica Condensers.-

These items are just as suspect after many years of use as even the paper types ! FACT.

I don't know where the idea came from that these mica jobs are indestructible but they AIN'T. The usual factor in the failure of such items is the 'cycling' phenomenon where the component is repeatedly subjected to application and removal of the ergs. this apparently causes internal stresses which cause premature (!) failure - so says an ex Philips chappie.

These mica types are used as padders in RF stages, as resonators in IFTs and as couplers/decouplers elsewhere. If your set goes deaf or dies then do not just check the paper condensers, check also the mica, or for that matter the ceramic types. With the passage of years it may even be wise to swop them all if you want a receiver for everyday use as opposed to one for show.

- - - - -
- Just a comment from one EUGer.-

Stan is one for the paperwork side of Eddystone and he has amassed a mountain of literature from manuals and brochures to just photocopies from the old WW mags at the Reference library near his home QTH.

The question that is put today, by Stan, is this. What on earth does the 'M' suffix stand for after the 770M which was the early version of the 770R and 'U' sets ??

For that matter Stan what does the 'R' and the 'U' suffix stand for ? I can take it that the 'U' as in UHF can be interpreted directly but the 'R' ?

Any offers please ? I remember a query on this from Tor several years back but never found any answer.

- - - - -
- Badged Receivers.-

Has anybody ever come up with a full list of those models that have been badged and sold by other companies ??

My files do mention company names such as Redifon, ITT, Siemens, Debeg, Hagenuk, MIMCO, Marconi, POED (Post Office), BBC, among others and I know of many of the models and their equivalent Eddystone number, BUT, I just do not have the time to research all this myself.

Communication with the various companies could be a starter for such investigations, but some companies are just not interested in answering such queries from the likes of US. Any offers from those with excessive leisure time ??

- The ERA Receiver.-

Just to clear up a few queries from members, there were two versions of this that I know of - from adverts.

The earlier version was the ERA no suffix at all. Then a couple of months later comes a dated advert for the ERA7. I am not ruling out another as yet uncovered version but as it stands now there are just the two - if you know more then let me know. This was touted as a broadcast version of the ECR Communications receiver but the differences are sufficient for it to be considered a different model entirely.

- - - - -

- Geoff Woodburn, some Info.-

Geoff joined Eddystone in 1938 and was employed primarily on assembly work. He graduated to Test and Inspection during the war (WW II) and was responsible in this position to Jack Shrimpton, the Chief Inspector.

Following the withdrawal of Strattons/Eddystone from the VHF mobile market it was decided to concentrate on receiver manufacture. Component manufacturing continued also.

In the 60s some changes in the organisation at the Bath Tub put Geoff in the Development Dep't as Development Engineer.

This info comes from a friend of Geoff's - also an ex Eddystone employee, and is in answer to a members letter.

- - - - -

- Selectivity on the 680X.-

A comment from Ian about the change in IF - very slight but definite - that occurs when you swop from wide to narrow band on this and other models with variable selectivity.

The very fact of moving the coils physically apart, or together, MUST cause changes in the resonant frequency of those coils, mutual capacity, mutual inductance etc;

About 18 months back Graeme wormald did comment upon this in a letter to me and he actually made measurements which proved the existence of this phenomenon. The results however were really quite minimal.

- - - - -

- The S.700.-

This rare enough model was mostly marketed as the IMR54 by Marconi International Marine Company but one or two examples badged as Eddystones, with Lighthouse logo, do exist. One is in the Factory collection.

Some time back in his letter to me EUGer Philip Taylor mentioned having sailed with the 'Gaelic Ferry' - this would be the mid -70s. He mentions that an IMR54 was fitted here and he was not too impressed by it. It was apparently second hand when fitted to the Gaelic Ferry, not very sensitive, heavy to handle, Live parts inside the cabinet as the set was run from ships 220 volt DC supplies. This is the first account I have

ever had of the S.700 but if anybody knows more then please write me c/o Jim Murphy.

- - - - -
- Overloading on an EC10.-

This set has been in Jack's ownership for many years and always has performed without problems. A recent power failure due to electrical storm damage and lo, the EC10 had apparently suffered as overloading on strong signals and very noticeable intermodulation distortion was present.

Nothing to do but open it up and check as this is the only station receiver besides a VHF handheld.

First investigations centred on the aerial input but after some time with no untoward findings it was decided to check out the components in the first IF stage. Good job he did as the diode that is in this collector circuit was completely shorted internally, not the slightest bit of difference between back and front Z. This is designed to damp down the IFT Q so as to limit overloading problems and must have been affected at the time of the power failure. A new OA90 was available from a pal at the local club so the repair job was quickly done and the EC10 is once more back in use.

Point is that the protective diodes in the aerial circuit, they are now 1N4001 types, did not go so the 'spike' which caused this OA90 to go must have been mains borne ! Worth thinking about this. How come the zeners in the psu and power line of the RX did not suffer, they didn't though as they were checked out.

- - - - -
- The Heyday of the Valve.-

Back in the '50s when the Valve was King (long live the KING), the various manufacturers, large and small, were turning them out at the rate of 20,000,000 a year. Seems incredible but it is true enough. Luckily there are many still stocked around the world so we shall not have to modify our old sets to use FETS for a long time.

Mind you by then FETS may be a bit short on the shelves so what will it be ?

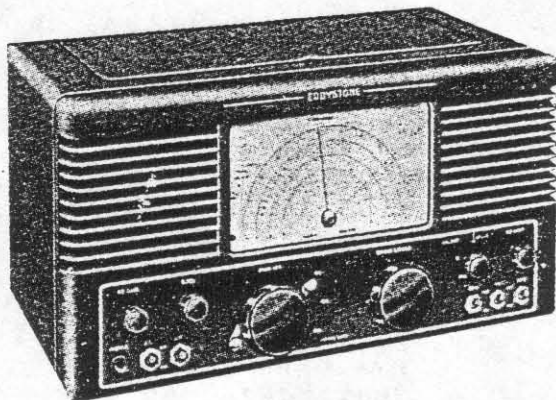
James.

- - - - -

Sent in by Keith Norton, N.Z. Euger.

THE N.Z.A.R.T. "EDDYSTONE" CONTEST

In May On 80 Metres



This contest has been made possible by the generosity of the manufacturers of the British "Eddystone" Communication Equipment, Messrs. Stratton and Company Limited, in offering, in conjunction with their N.Z. Agents, Messrs. Arnold and Wright Limited, their latest Eddystone Communication Receiver, the 640, together with valuable prizes of other Eddystone equipment, for competition amongst N.Z. Amateurs. They do this to mark the return to the N.Z. market of the popular Eddystone Components and to demonstrate their particular interest in New Zealand.

With these attractive prizes competition will be strong and attention is drawn to rule IOB. Let us make it a happy contest by avoiding overmodulation, avoiding key-clicks and QSYing with the H.T. OFF the final amplifier and so let the other fellow enjoy himself too.

WHEN ?

Over the four week-ends in May as follows:—

- 1800 hrs. Friday, April 30th, through to 0600 hrs., Monday, May 3rd.
- 1800 hrs., Friday, May 7th, through to 0600 hrs., Monday, May 10th.
- 1800 hrs., Friday, May 14th, through to 0600 hrs., Monday, May 17th.
- 1800 hrs., Friday, May 21st, through to 0600 hrs., Monday, May 24th.

DURATION

Contestants will operate their stations for contest purposes for THIRTY (30) hours during the above times.

N.B.

- (a) For contest purposes, the minimum unit of operation for computation of time will be one hour.
- (b) Periods of operation will be from the even hour to the even hour.
- (c) Even if only one contact is made in a period this will count as one whole hour's operation. It therefore follows that logs must not be submitted showing times computed in fractions of an hour.
- (d) You may operate your station in ANY hourly periods within the contest times, the choice is up to you.

RULES

- (1) All contestants must be financial members of N.Z.A.R.T. domiciled in a New Zealand radio district or in the Rarotonga area.
- (2) Phone and C.W. may be used.
- (3) All contacts to be made on the 80-metre band with licensed amateurs.
- (4) Only ONE contact allowed with any one station for contest scoring.
- (5) The decision of the Contest Committee will be final in the case of any dispute.
- (6) Only one operator may operate any one station, and only one station may be used by one operator. If two receivers are used they both must be manipulated by the one operator.
- (7) Mobile operation is not permitted, except by licensed mobile stations in the Rarotonga area.
- (8) Six figure serial numbers will be exchanged by stations. The FIRST three figures of this number will be the LAST three figures on your Operator's Certificate as issued by the P. and T. Dept. Where the certificate has less than three figures "0" will be used, e.g., Certificate No. 24, your serial number, would be 024. For Certificate No. 1237, your serial number would be 237. For your first contact, the last three figures of the serial number will be zeros, e.g., 237000. For subsequent contacts, the last three figures of YOUR number will be the first three figures from the

N.Z.A.R.T. "EDDYSTONE" CONTEST RESULTS

CONTEST WINNER

"Eddystone" Communications Receiver :
Mr. R. A. Dixon, ZL3JT, Brunner-ton,
West Coast, 783 points.

Low Power Phone and C.W. Division

1. Order for £10 :
Mr. A. M. Montgomery, ZL4HE, Green
Valley, Palmerston R.D., 676 points.
2. Order for £3 :
Mr. D. A. Farquharson, ZL4HH, Signal
Hill, Dunedin, 651 points.
3. Order for £2 :
Mr. A. W. Torrie, ZL2FG, Golden Gate,
Paremata, 627 points.
4. Order for £1 :
Mr. V. R. Jackson, ZL4BO, 47 Lorn
Street, Invercargill, 596 points.

High Power C.W. Division

1. Order for £10 :
Mr. C. L. Herbert, ZL1MB, 21 Hara-
paki Street, Remuera, Auckland, 658
points.
2. Order for £3 :
Mr. C. Brittenden, ZL3HC, 153 Otipu
Road, Timaru, 641 points.
3. Order for £2 :
Mr. M. T. Gabriel, ZL2GL, 239A The
Terrace, Wellington, 587 points.
4. Order for £1 :
Mr. S. G. Waite, ZL1AB, 65 Anzac
Street, Takapuna, Auckland, 530
points.

High Power Phone and C.W.

1. Order for £10 :
Mr. R. Garrett, ZL1NF, 7 Waipa
Street, Birkenhead, Auckland, 770
points.
2. Order for £3 :
Mr. S. Langrope, ZL3IA, Lavaud Street,
Akaroa, 726 points.
3. Order for £2 :
Mr. T. E. A. Nevill, ZL4HP, Moa
Creek R.D., Oturehua, Otago, 702
points.
4. Order for £1 :
Mr. J. W. Potter, ZL1TO, Oratia,
Auckland, 699 points.
5. Order for £1 :
Mr. J. W. P. Bulger, ZL4HJ, 59 Gal-
loway Street, Mornington, Dunedin,
W.I., 698 points.
6. Order for £1 :
Mr. J. R. Keys, ZL3GU, 60 Huxley
Street, Christchurch, S.I., 695 points.

Total Entries	46
High Power Phone and C.W.	30
Low Power Phone and C.W.	10
High Power C.W.	5

Branch Certificate

AUCKLAND, team ZL1NG, ZL1TO,
ZL1MB, 2005 points.

Australian Winner

Mr. H. B. Angel, VK4HA, Orchid
Street, Enoggera, Queensland.

● MESSAGE FROM THE CONTEST SPONSORS—Messrs. Arnold & Wright Ltd.

On behalf of Stratton & Co. Ltd., makers
of the famous "Eddystone" equipment, it
is our pleasure to offer congratulations to
all prize-winners in this competition.

Especially do we wish to congratulate Mr.
R. A. Dixon, of Brunner-ton, who, against
a large number of competitors, carried off
the main prize, which, as you all know, is
an "Eddystone 640" receiver.

We say, "Well done, Mr. Dixon."

● **OUR COVER PHOTO** depicts the
coveted prize. This new "Eddystone 640"
British-made communications receiver "is
the outcome of practical collaboration be-
tween the manufacturers and a number of
leading amateurs. Its design is based essen-
tially on the special requirements of amateur
operators . . . and embodies years of
practical experience in the design of short-
wave equipment, as well as the results of
war-time research and development."

As yet, we have not personally had the
opportunity to try this receiver, but when
supplies come to hand we hope to. In the
meantime, we are assured by the staff of
"Short Wave Magazine," in a three-page
test report (June, 1947), that "the
'Eddystone 640' is a beautiful receiver
and no operator who understands the
amateur band requirements could fail to
be impressed by it from every point of
view."

—Editor

Brief Station Description of ZL3JT, Brunner-ton

The transmitter is entirely home con-
structed and housed in a rack and panel
cabinet having three decks.

The RF section comprises a 6V6
crystal harmonic oscillator, capacity
coupled to an 807 as a buffer, which is
link coupled to the 812 final amplifiers,
running between 75 and 100 watts in-
put.

On the audio side we have a 22X
crystal microphone into a 6SJ7 to a
6C5 to a 6F6 triode connected and
transformer coupled to a pair of 6L6G
modulators in class AB2.

The receiver is an Army type ZC1
MK.II run on A.C. and slightly improved
by the use of an ECH35 mixer and a
6C6 outboard preselector.

Antenna for both receiving and trans-
mitting is a single-wire-fed 1/2-wave 80
metres antenna.

serial number received in your previous QSO.

Example:—

Station Contacted	Number Received	Number Sent
ZL2XX	024000	237000
ZL2YY	473146	237024
ZL2ZZ	299276	237473

(9) Contest times must be strictly adhered to.

(10) A—All stations must be conducted in accordance with P. and T. Regulations, 1932, and its amendments.

B—Contestants who operate their stations in such a manner as to cause unnecessary QRM through phone splatter or C.W. key-clicks will be disqualified.

(11) Any contestant whose final amplifier tubes have a plate dissipation of or exceeding 50 watts (check ARRL Handbook) must furnish a Certified Statement, witnessed by two licensed amateurs who are N.Z.A.R.T. members, declaring that the power input to the final amplifier used throughout the EDDYSTONE Contest did not exceed one hundred (100) watts.

In the case of QRP contestants, a similar Declaration must be made by All contestants in this division declaring that the power input to the final amplifier throughout the EDDYSTONE Contest did not exceed ten (10) watts.

SCORING

(12) This will be similar to the Memorial Contest, 1947. Starting with a maximum of fifteen (15) points, descending scores for each succeeding contact in any one "scoring area" will be allocated. Each country in the world will be considered a "scoring area" except New Zealand, where each radio district (ZL1, ZL2, ZL3, ZL4) will be considered a scoring area. For your first contact in ANY ONE area you will claim 15 points; for the second 14 points; for the third 13 points, and so on until from the fifteenth contact with that area only one point will be claimed for each contact. (For convenient conversion chart see "Break-In," November, 1947, page 363.)

Date	Time	Station Worked	No. Sent	No. Received	Ph./C.W.	Points Claimed
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N.B.—Rule off your log after each hour's operation.

DISCUSSION GROUPS' FORUM

Topics :

Safety Techniques in Transmitter Operation and Construction

and

The N.Z.A.R.T. Unwritten Laws of Amateur Radio.

Deadline : April 10th, 1948

See Editorial, page 3.

LOGS

(13) Logs must be on standard quarto-size (10in. x 8in.) paper and ruled up as shown hereunder. Logs must be clearly ruled off after each HOUR'S operation.

A summary must be given showing:—

a. Number of contacts and points claimed for each "scoring area," e.g.—

Scoring area	Contacts	Points
ZL1	20	125
ZL2	22	127
VK	7	84

etc., etc.

b. RF line-up of transmitter.

c. Power input to final amplifier.

d. Antenna used.

e. Branch of which you are a member.

f. Your NAME and ADDRESS.

g. Which division of Contest you are entering for: (1) High power Phone and C.W.; (2) high power C.W. only; (3) QRP Phone and C.W.

(14) All logs must be posted to "Contest Committee," N.Z.A.R.T., Box 489, Wellington, to arrive not later than 5 p.m., Friday, June 18th, 1948.

AWARDS

To the highest scorer (from any division) one EDDYSTONE Communications Receiver.

Orders for EDDYSTONE Components to the values shown:—

High power Phone & C.W.	High power C.W.	QRP Phone & C.W.
1. £10	1. £10	1. £10
2. £3	2. £3	2. £3
3. £2	3. £2	3. £2
4. £1	4. £1	4. £1
5. £1		
6. £1		

Note that awards are on a National basis, there are no District awards. Winner of the Receiver will not be eligible for other prizes.

A Certificate will be awarded to the leading N.Z.A.R.T. Branch. The Branch score will be taken from the three highest scores of contestants who are members of the Branch.

N.Z. FREQUENCY ALLOCATIONS

(Correction to Call Book, page 9)

For General Use—

- 3.5—3.96 Mc/s: C.W. and A.M. phone.
- 50—54 Mc/s: C.W. and A.M. phone.
- 52.5—54 Mc/s: F.M. and P.M. phone.
- 166—170 Mc/s: C.W., A.M., F.M., P.M.
- 420—450 Mc/s: C.W., A.M., F.M., P.M.
- 1345—1425 Mc/s: C.W., A.M., F.M. and P.M. phone.

For High-Frequency Permit Holders—

- 7.0—7.3 Mc/s: C.W. only.
- 14.0—14.4 Mc/s: C.W.
- 14.2—14.3 Mc/s: A.M. phone (by special permit).
- 28—30 Mc/s: C.W. and A.M. phone.

- Cross Modulation.-

This article is mainly for those with some technical knowhow amongst EUGers, however the results are pretty much undoubted and the conclusions are inescapable.

Cross modulation, no amplifier is perfectly linear be it for high or low power, high or low frequency or whatever.

What is a proven fact is that valve type amplifiers, in particular the 'front ends' or RF amplifiers of valve type receivers, are far less susceptible to both cross modulation and intermodulation, than are solid state amplifiers.

Pause here whilst all you semi-con fanatics look around for pen and paper, but it is TRUE ! In fact I sometimes wonder if those who tout modern solid state stuff really appreciate just how bad they are ! For those of us who have lived through the valve era, and still hang on to that era through our collection of 'hot-bottle' sets, the difference between a good, well set up valve set and a modern solid state black box is quite enormous, and very noticeable to our discerning ears.

If you have such as an 830, a 940, or an EA12 then you can make a comparison and you will just have to accept the differences when these are compared with modern equipment. I often wonder why we need all this super miniaturisation, all of those whistles and bells, all of those tiny and user-unfriendly controls that are impossible to operate without also operating the button placed about a tenth of an inch (sorry centimetre) alongside the wanted control. Do we really need all those Zillions of memories ? which are no match for that one single biological memory that we all possess ?

It is an unfortunate fact that those who are pro solid state sets must accept - the dynamic range of any solid state receiver is less than that of an equivalent quality valve type receiver.

What is dynamic range ? It is the ratio of minimum usable signal to maximum signal that can be handled by a receivers front end in a linear fashion.

For most solid state equipment this figure comes out at circa 70dbs for the general run of sets to about 90 dbs for the really expensive professional sets. And do not allow yourself to be deluded by all of the fancy circumlocutions that are bandied about by the dealers anxious to unload their stock to keep up cash flow.

On the other hand our 'oldie' valve sets could, and can, easily achieve figures above 140 dbs. This for the non-mathematical types is a difference of between 300 to 3000 times that of a solid state set !

What does this mean in practice ? Well all of those multi-megawatters on the 7.3 mc/s broadcast band will be leaked through the RF stages of those 'wide-open' solid state front ends and will appear on top of, amongst, and underneath your wanted relatively low power amateur signals just a few tens of Kc/s lower down on the 7 Mc/s band - probably this is why so many reports given during QSOs mention the 'noise' problem. No real problem for our EA12 or 830 with its tuned RF valve type front end, maybe why some who are new to valve receivers think they are deaf !!!

Now I shall wait for those anonymous letters and dealers spec; sheets trying to befuddle me with their highly

controversial figures. Its okay I have broad shoulders and can take the flak.

- - - - -
- NDBs Heard from the East Coast UK.-

Ian lives on Tyneside and he is becoming quite adept at picking up some of the Norwegian NDBs audible from his QTH.

The equipment in use is nothing very exotic, just a home built loop aerial and an EB37 receiver run from batteries, a choice made as the level of mains noise was almost nullifying the quietness of the loop aerial.

The listening area is usually in a corner of the bedroom at the top of the house which used to be an attic. It means that the receiver and aerial are well away from most of the QRM producing stuff in the house. Where possible such items as the dish-washer and tumble-drier have been fitted with suppressor type sockets on the principle that QRM is best, and most reliably suppressed at source, not at the receiving end.

The EB37 does not have a built-in BFO and since most NDBs these days are A1 type emissions, i.e. switched and keyed carrier with no modulation, the use of a BFO is essential to hear them.

A home built BFO consisting of a simple single transistor oscillator using a ceramic resonator and a series variable condenser trimmer has been built and has proved to be quite adequate. It is in a small box and its feed into the receiver is via the A2 terminal, the loop uses the A1 and A sockets with the case earth disconnected from this input circuit.

The loop aerial is a homebuilt one of approximately 3 feet by 3 feet and is mounted on a frame made from wooden laths on a round stand that enables the whole device to be rotated by hand. With 24 turns wide spaced and with an air dielectric variable condenser of unknown capacity the coverage is from below 200 Kc/s to past the end frequency on the scale of the EB37 (350 Kc/s).

Results have been surprising to say the least, one important factor is the clear path out across the port area and with a direct sea path to the Norwegian Coast.

After several months of listening some NDBs such as KL, KN and VD (Sklinna, Skrova and Vardo respectively) have become regulars and are used as 'indicators' of the propagation conditions. Others such as the single letter beacon 'R' at Rundodden have been once only catches. Power of these beacons varies considerably and in some cases there are intervening land masses such as the Lofoten Isles. Daylight reception, such as it is, is more variable than at night. This is due to the fact that after dark the skywave predominates and greater distances become possible.

Total number of Norwegian NDBs so far heard are 16 and of these Ian has got letters of confirmation from 5 of the authorities responsible for operating and maintaining these beacons.

Strangely enough the single letter call 'R' station is a beacon operated by the Norwegian Polar Institute, whilst the one at Skrova (KN) is an aeronautical beacon, which is nonetheless used by marine operators !

- Maritime NDBs -

ID	FREQ	QRA	ID	FREQ	QRA
AB	381	Faroes	GD	311	Scotland
AD	299	Holland	GJ	306.5	France
AK	312.5	Latvia	GL	307	Eire
AL	305.5	France	GL	305	Corsica
AL	286.5	Sweden	GR	296	Holland
AV	290	Portugal	GV	310.3	Iceland
			GX	298	France
BA	294.5	N. Ireland			
BA	309.5	Spain	H	306.5	Poland
BH	296	Denmark	HA	313	Norway
BJ	303.5	Norway	HB	328	Greenland
BK	312.5	Russia	HH	288	Holland
BL	289	Isle of Lewis	HK	314	Norway
BN	299	France	HO	312	Norway
BO	310.5	Norway			
BR	313.5	France	IA	303.5	Spain
BT	312.5	Russia	IB	287.3	Portugal
BY	286.5	Eire	IN	316	Iceland
			IP	310	Sardinia
CA	301	France			
CB	295.5	Jersey	JA	295	Poland
CF	291	Sardinia	JV	367	Greenland
CM	313.5	Cromer			
CP	293	IOW	KA	312.5	Lithuania
CR	295.5	France	KB	312.6	Germany
CS	312.5	France	KD	301.5	Scotland
CV	287.5	Portugal	KL	288	Norway
			KN	296	Norway
D	303	Rota	KU	294	Sweden
DA	305.7	Iceland	KY	289.5	Norway
DB	312.5	Ukraine			
DU	300.5	Dungeness	L	301.5	Spain
DV	295	Iceland	LA	300.5	Norway
DY	290.5	Scotland	LB	312.5	Latvia
			LE	287.3	Poland
ER	301	Holland	LEC	319	Stavanger
ER	310	France	LL	290.5	Sweden
			LO	289.5	Sweden
FB	303	Flamboro' Hd	LP	311.5	Eire
FD	290	Scotland	LT	291.5	Canaries
FG	297	France	LZ	284.5	Cornwall
FH	309.5	Norway			
FH	331	Greenland	MA	284.5	Spain
FI	286.5	Majorca	MA	291.5	Russia
FN	306	Lancs;	MA	297.5	Finland
FP	305	Scotland	MA	303.4	Iceland
FR	287.5	Norway	MA	309.5	Norway
FT	286.5	France	MD	287.5	Portugal
FV	303	Sweden	ME	304	Italy
			MH	292	Spain
			MN	289.5	Denmark
			MR	290	Portugal
			MR	291.5	Latvia
			MY	304.5	Spain
			MY	337	Faroe
			MZ	300	Eiree

ID	FREQ	QRA	ID	FREQ	QRA
NA	291.9	Canaries	TA	298	Spain
ND	315.5	Lithunia	TG	291	Norway
NF	311	Nth Foreland	TI	300	France
NK	286.5	Scotland	TL	314.5	Italy
NL	404	Faroes	TN	306	Denmark
NO	285	Spain	TO	292	Norway
NP	285	Belgium	TR	286	Eire
NP	289.5	Italy	TY	313	N Ireland
NZ	308.5	France			
O	299	Tarifa	UD	288.5	Spain
OB	301.5	Sweden	UH	312	France
OD	287.5	Poland	UK	294.5	Essex
OG	313.5	Sweden	UN	299	Sweden
OH	288	Eire	UP	399	Greenland
OR	303.5	Spain	UT	306.5	Norway
OR	306.5	Estonia	VC	303.4	Portugal
OZN	372	Greenland	VI	290.5	Spain
PA	294.5	Estonia	VL	303.5	Holland
PA	313	Spain	VR	299.5	Norway
PH	294	France	VS	299.5	Italy
PI	308	Portugal	VS	312.5	Spain
PQ	314	France	VY	290.5	Sweden
PR	284.5	Finland	YE	303	France
PS	294.5	Anglesey	YM	288.5	Holland
PS	297.5	Spain			
PS	304	Anglesey			
PT	294.5	Durham			
RB	302	France			
RC	308	Portugal			
RD	308	France			
RE	295.5	France			
RG	301.1	Iceland			
RN	293	Scotland			
RO	293.5	Spain			
RR	298.5	Scilly Isles			
RS	306.5	Estonia			
SB	290.5	Wales			
SB	304	Shetlands			
SE	287.5	France			
SG	310.5	Denmark			
SJ	292	Sunderland			
SK	299.5	Norway			
SK	314.5	Iceland			
SM	292.5	France			
SN	295	Norway			
SN	291	Spain			
SN	308	Portugal			
SN	289.5	France			
SR	312.5	Iceland			
SU	291.5	Eire			
SW	298.5	Denmark			
SY	293	Norway			
SY	306.5	Estonia			

- AERO BEACONS, UK.-

Ident	Freq	QRA	Ident	Freq	QRA
AC	325	Glasgow Scot;	HG	356	Halfpenny Grn
ALD	383	Alderney Ch Is;	HRW	424	Heathrow Eng;
AOS	307	Aberdeen Scot;	IOF	357	Flotta Scot;
AP	370.5	Aberporth SW	IW	426	Bembridge Eng
AQ	336	Aberdeen Scot;	JW	329	Jersey Chnrl Is
ATF	348	Aberdeen Scot;	KIM	365	Hmberside
BAE	325	Barton Lancs;	KS	370	Kinloss Scot
BE	357	Beccles Suff;	KW	395	Kirkwall Scot
BHD	318	Berry Hd; Eng;	LA	282	Lyneham Eng
BIA	339	Bournemouth	LAY	395	Islay Scot
BIR	406	Birmingham	LBA	402.4	Leeds Eng
BLK	328	Blackbushe	LCY	322	London City
BO	341	Benson Eng;	LE	383.5	Leicester Eng
BOU	391.5	Bourn Lincs	LIC	545	Lichfield Eng
BPL	420	Blackpool Lancs	LPL	349.5	Liverpool Eng
BRI	380	Bristol Eng	LS	432	Lee on Solent
BUR	421	Burnham Eng	LUT	345	Luton Beds
BV	372	Brough Eng	LYX	397	Lydd Eng
BZ	386	Brize Norton Eng	MCH	428	Manchester Eng
CAE	320	Caernarfon Wales	MW	376	Middle Wallop
CAM	332.5	Cambridge Eng	ND	417	Gt Yarmouth Eng
CAR	366.5	Carnane IOM	NEW	352	Newcastle Eng
CBN	374	Cumberland Eng	NGY	399	New Galloway
CDF	388.5	Cardiff Wales	NH	371.5	Norwich Eng
CHT	277	Chilterns Beds	NN	378.5	Northampton
CIT	850	Cranfield Eng	NOT	430	Nottingham
CL	328	Carlisle Eng	NWI	342.5	Norwich Eng
CLN	429	Clacton Eng	OF	325	Filton Eng
CNL	404	N Connell Scot	OLD	344	Oldham Lancs
COM	349.5	ComptonAbbas Eng	OTR	398.5	Ottringham
CT	363.5	Coventry Eng	OX	403.5	Oxford Eng
DND	394	Dundee Scot	OY	332	Belfast NI
DO	364.5	Dounrey Scot	PE	336	Prestwick Scot
EDN	341	Edinburgh Scot	PH	333	Penzance Eng
EGT	328.5	Londonderry NI	PSW	389.5	Ipswich Eng
EKN	357.5	Enniskillen NI	PTH	388	Perth Scot
EME	353.5	E.Midlands	PW	426	Prestwick Scot
EMW	393	E.Midlands	PY	396.5	Plymouth Eng
EPM	316	Epsom Eng	RCH	369	Rochester Eng
EX	337	Exeter Eng	RDL	343	Redhill Eng
FNL	401	Fenland Eng	RNR	374	Radnor Eng
FOS	348	Fairoaks Eng	RWY	359	Ronaldsway IOM
FY	417	Finningley Eng	SAN	359	Stanstead Eng
GE	338	Gatwick Eng	SAY	669.5	Stornaway Scot
GLG	350	Glasgow Scot	SBH	351	Sumburgh Scot
GO	402	Fife Scot	SBL	323	Sherburn in Elmet
GRB	361	Channel Isles	SDM	348.5	Shipdam Eng
GST	331	Gloucester Eng	SH	426	Shobdon Eng
GY	365	Gatwick Eng	SHD	383	Scotstown Scot
HAV	328	Haverford Wales	SHM	332	Shoreham Eng
HAW	340	Hawarden Wales	SLP	382	Sleap Eng
HB	420	Belfast NI	SM	356.5	St Mawgan Wales
HBR	350.5	Humberside Eng	SND	362.5	Southend Eng
HEN	433.5	Hendon Eng	SS	315.5	Scatsa Scot

Ident	Freq	QRA	Ident	Freq	QRA
STM	321	St Marys Scilly Is	WFR	339	W.Freugh Scot
STU	400	Strumbles Wales	WHI	368.5	Whitegate Eng
SWN	320.5	Swansea Wales	WIK	344	Wick Scot
TD	347.5	Teeside Eng	WT	406	Wittering
TL	376	Lerwick Scot	WL	385	Barrow Lancs
TLA	363	Talla Scot	WOD	352	Woodley Eng
TRN	355	Turnberry Scot	WPL	323	Welshpool Wales
UT	325	Unst Scot	WTN	337	Warton Lancs
UW	368	Edinburgh Scot	WZ	416	Newcastle Eng
WCO	335	Westcott Bucks	YVI	343	Yeovil Eng
WFD	380	Woodford Lancs			

By and large aero beacons are less powerful and less easily heard than are marine beacons, unless you are close to the ground site of an aero beacon, or you have a good aerial system, then you will get few besides the local beacons. Most aero beacons are amplitude modulated and no BFO is needed.

Marine beacons are now mainly CW only and the BFO is needed to copy them, you will find as many as five or six beacons on each channel (frequency).

The usual run of Eddystone receiver goes up as high as 370 or 380 Kc/s and so many of both types of NDB are receivable. If you really want to be 'spoilt' then get yourself a model 850 receiver as this covers the full range of Beacon Bands.

- Foreign Beacons.-

There are some foreign Beacons of both types which are well known for putting a good signal into the UK, whether this be due to an exceptional QRA, i.e. at a good altitude. Or whether this is due to their having higher power. The fact is that such as VI, Vigo in Spain on 290.5, or LEC, Stavanger in Norway on 318, give consistently good signals over here, after dark. So after you have mastered the reception of UK NDBs then you may wish to progress onto the more elusive foreign NDBs. Should you want to do this then BUY the BOOK !! There are very good books available with the full info on all of the worlds aero and marine beacons.

- Those Solid-State Replacements.-

Jack Read has written in to point out that all of these suggested mods whereby a thermionic valve is replaced by a solid-state rectifier, be it plug-in or wired in, can cause problems.

Jack points out that one of the reasons why thermionic devices are so longlasting is that their gentle warm up as the kathode comes up to temperature means that the HT supplies are brought up to working voltage slowly. this is as opposed to the solid-state world where as soon as mains is applied the HT is ON. In any receiver be it new or ageing this suddenly

applied HT is a shock to the other components in the circuit. It is especially bad for those ageing e'lytics which will tend to rebel when treated to sudden applications of HT - well wouldn't you ??? It is just further proof that you cannot get something for nothing. The cost of new e'lytics may well exceed the cost of a new valve. YOU HAVE BEEN WARNED !!

- - - - -
- New Zealand News.-

Peter Lankshear tells us that he has acquired a 740 in reasonable condx and that both the diecast speaker and the matching 'S' meter came with the 740 - LUCK !

A comment is that both this 740 and his already owned 940 had holes made in the rear perforated panel to take a Belling-Lee socket. (this was usual when the set was to be used with, or as, a 'Q'-fiver, or with a convertor for maybe 2 metres).

In Peter's case he enlisted the aid of a garage who welded in a patch, drilled the required matching holes, and after painting the repair is to all intents invisible.

Peter also comments on the valve to semicon substitute saying that he encounters a lot of this in his work of repairing domestic valve equipment - still much used down there. In such cases the modus operandi is to replace the original valve type and repair the havoc wrought, usually e'lytics blown up when they could not stomach the increased HT.

- - - - -
- From Scotland with Love.-

Bill Gibson saw the request for suitable coils for the Edometer and has one of the coilholders so is sending it to NZ for just the cost of postage - many thanks Bill, nice to know there are such as yourself around.

- - - - -
- EUG on the Internet.-

From Simon, G8 P00, comes the info that he has put us on the 'net' and you can read it, if you have the gear, on address <http://www.plasma.co.uk/simon/> It seems that if any EUGer has info for the site then he can also e-mail it to Simon for insertion by sending to simon@soft-tools.plasma.co.uk (hope I got that correct there Simon). I am not a computer bod myself but hope that the above will be of help to those of you who are, let me know how you get on if you do use the above facility please as your experiences will help other EUGers.

- Valves Wanted ! -

Ted Edwards has obtained both a 770R and a 770U for restoration and is in need of a 6AF4A, and an ECC189 for his 880/2 he adds. I have passed on the necessary addresses to Ted for these items and hope that he will be able to get on with the work. Don't forget to let us know how you do Ted.

- Germanium Diodes Type GEX24.-

Gary McSweeney states that he has a few GEX24 type diodes available if any EUGer is in need. I suggest that you contact me first and I shall put you in touch with Gary, after that you can sort it out between you. As most of you know I do not like putting addresses in the N/L, a bit like broadcasting our liking for fine equipment that would be.

- SHACKWAY.-

That letter in the last issue prompted Peter Lepino to write off for further info and he got back a barely decipherable letter which states that they do have an S.556 receiver which is not working and appears almost complete minus case - best thing is to contact them direct if you need either a 556 to restore or for spares. They also have a few domestic types such as HMV 5211, and 5112, but then EUGers would not be interested - or would they ?

- Free Members Ads.-

FOR SALE,- Eddystone 670A in very good condx, also 870 in good condx, both working. would prefer buyers examine and collect. Call Howard on 01446-743447 (Barry, Sth Wales).

WANTED,- Wave change wafers, set of four, for model EB35 III. Would consider a scrap set if switches are okay and intact. Contact 01376-513612 (Essex).

WANTED, ANY EDDYSTONE AND R.1155 RECEIVERS BROCHURES, ETC: AND POWER SUPPLIES FOR R.1155, CROSSED NEEDLE INDICATOR ETC; ANY CONDX CONSIDERED, EVEN RUSTY ! ALSO A FEW EDDYSTONE DOUBLES AND SPARES FOR SALE, ASK. Phone Peter Lepino, on 01372-454381 or 0374-128170 - ANYTIME.

- Endit - Endit - endit -

That is IT ! Another Biggy but the amount of material coming in, or asked for goes up each Issue. Enjoy it and let me know what you want in future Issues. 73,

Ted.

EDDYSTONE USER GROUP



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