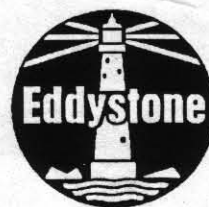


Eddystone User Group Newsletter



Issue No: 50

August 1998



Featured Model - Eddystone EB37

- A non profit newsletter for Eddystone Users
 - Compiled and edited by Ted Moore
- Information quoted from Eddystone Literature by kind permission of Duncan Whittle, Managing Director of Eddystone Radio Limited
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Well, we finally made it to the Golden Jubilee edition. Fifty issues of the EUG newsletter and I am sure that you will be more than pleased with the efforts of your EUG team of Ted, Graeme, and Anthony. This edition is the largest by far and not only includes Anthony's Index for last year's Newsletters, but also Graeme's Quick Reference Guide to all the post-war valve sets and early transistor receivers, numbering about fifty which accounts for the vast majority of our member's interests.

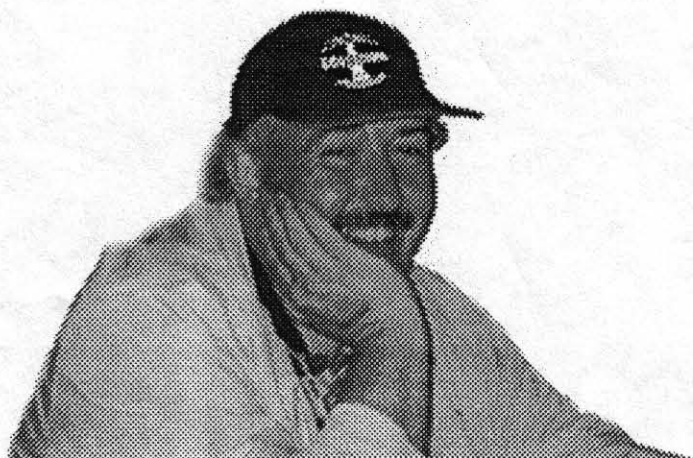
By next month Graeme hopes to make available a compendium of the Eddystone Valve sets originally published in 'Radio & TV Servicing' by Poole, Malloy, Hawker, et. al. This gives circuits and details of 14 sets of the 'forties and 'fifties, together with the specialised servicing procedure required to bring these old-stagers up to scratch. Ted has reproduced the 'Eddystone' version of the 3 x EF50 receiver, which has exercised members' minds for the past couple of years. I'm told there are more articles in the archives featuring this famous Dutch VHF pentode of 1939 and these will be presented in the coming months.

Graeme has been revisiting an issue that was raised a few years ago. It was suggested at the time that members register their Eddystone ownership with the EUG. Many members with substantial collections declined on grounds of security, others just didn't want to risk the hassle of being pestered to sell a rare item. Since then many people have enquired about the types held by members and, of course, we haven't the faintest idea. So we're going to give it another go. Turn to page 34, pull it out (or copy it if you wish to keep the vintage advert on the next page) and fill it in. NO NEED TO GIVE ANY NAME OR ADDRESS. Then return it to Graeme G3GGL (address on front cover), You will be helping to create a very historical record of what is about out there. Remember, no records have survived of quantities of each type manufactured. The results will be published in the next Newsletter IF YOU ACT NOW! It would be good to start the whole exercise off with an audit of the Company's Museum collection if Graeme can exercise his undoubted charm on their new MD!.

Well, I think that all there is, I don't know about all these photos of your EUG team appearing in the newsletters, sometimes like listening to the radio reality never lives up to your imagination. Anyway, this is me at an unguarded moment at the last NEC show.

Enjoy your newsletter

Chris Pettitt GOEYO
EUG Patron





ISSUE 50

Big enough for you??

Well FIFTY newsletters is a bit of a BIG milestone. The fact that we have survived this long has been due to dedicated help given by EUGers themselves. There is no doubt that Chris Pettitt had a lot to do with us getting this far, but let us not forget Jim and Graeme.

In the early days a great deal of the photocopying was done for us by Jim Murphy, even today he continues to act as one of my 'mailboxes'.

Along came Chris, when EUG became too big for Kathy to administer by herself. It was the help that we received from Chris which not only kept us going, but also enabled us to grow to what we have today.

Some two and a half years back Graeme took over the admin side of EUG. And what a gem he has turned out to be. I know of no other person who can fit so much work into so short a time. We all owe the present format of the N/L to Graeme's perseverance and persistence in finding the best and most cost-effective means of publishing the N/L and our other publications. Thanks Red Baron.

For some years now we have been hearing about, and researching the fabled THREE TIMES EF50 receiver. Now it appears that there are at least three versions, published in various magazines throughout the world. The one that we have chosen to use as an historic project for the DIYer is that authored by G5JU, an ex Bath Tubber himself. It does naturally use many Stratton/Eddystone components and has been retyped up from an Australian magazine. Graeme will no doubt be doing a follow-up on this and maybe - who knows - he will even build himself one for review!

POWER-FREE DROPPERS FOR AC/DC SETS

George has bought a nice-looking 870 but there is one problem, an o/c dropper resistor. Not an insuperable problem for an ex domestic-wireless repair-man.

The valves have all been checked out on a 'brought back from retirement' Mullard High Speed Tester and are all well within the Green band for emission with no other problems apparent, i.e. heater/kathode leakage. A good inspection of the inside of the receiver, top and bottom chassis, showed no obvious faults and so the meninges were set to work on the dropper problem.

It was well remembered that early valve sets used on AC could operate happily for years using a properly-rated condenser as a watts-free dropper. A test set-up was lashed together on the bench using a multi-output mains isolation transformer - and the experiments began. Using at first a 1 muf paper condenser rated at 600 volts AC the transfo was set up to produce an output of 150 volts which was fed to the 870. The voltage across the heater chain was monitored by a DVM. As was suspected the 1 muf was too low a value to produce anywhere near enough volts across the 807 heater chain. Even when the transfo output was upped to 240 volts.

A second condenser of 2.2 muffs rated at 550 volts AC was next used and this (continued over . . .)

was more like it. With the 870 switched on the measured volts across the output valve heater was now just about 17.6 volts. This was considered adequate and after a check on the other heaters had shown them to be also within the same tolerance it was decided to use this. Unfortunately there was one big problem. The HT DC was now too high and it was necessary to fit a dropper resistor of 500 ohms at 6 watts to bring it within a reasonable tolerance. The 870 was now working fine on all ranges, no unalterable mods had been done and the set was boxed up, until such time as a dropper can be liberated. (I don't like this but since George appears to know what he is doing then I guess it is okay, Ted.).

- Free Members Adverts -

FOR SALE,- Eddystone EC10 with mains supply unit and product detector fitted. Needs slight attention. Please call Mike G3 GWD on 01892-822605 (Kent area).

FOR SALE,- Shack clear out time ! Eddystone 840A plus manual, fair condition but a bit deaf so needs some work. £70 o.n.o. Belcom Liner 2, 2m ssb plus 30 watt linear transmitter, £50 o.n.o. TS700G 2m multimode Tx £120 o.n.o. A4 to A5 photocopying done ring for details. Ron on 01207-284144.

3 x EF50 Parts List.

Eddystone coils type,-

706/LB	33-15 Mc/s	706/W	3.3-1.35 Mc/s
706/Y	16-6.7 Mc/s	706/P	1.4 -.72 Mc/s
706/R	7.5-3.1 Mc/s	706/G	750-300 Kc/s
706/BR	370-150 Kc/s.		

Components.

1 x Diecast chassis Cat no 643.
 1 x Metal cabinet Cat no 644.
 3 x EF50 valves.
 1 x ceramic microdenser 12.5 pF (C7) Cat no 580.
 3 x valve holders, ceramic B9G, List L500.
 3 x retainer rings List no L568.
 2 x metal brackets Cat no 708 .
 2 x slowmotion drives Cat no 597.
 1 x Directdrive dial Cat no 595.
 1 x RF choke 2.5mH Cat no 737
 2 x pots 100k (R6 & 11) type SG.
 R1 - 2 megs. R2 - 220Ω. R3,4,7, - 10k. R5,12,- 33k. R8,- 4 megs. R9,13, - 22k. R10,15, - 47k. R14, - 0.5 megs. R16 - 560Ω. R17, - 100k. R18 - 25k. C1,6, - 50pF. C3,4,5,11, - .002mF. C9, - 100pF silvered mica. C10, - 30Pf moulded mica. C12,14,20, - .0005mF moulded mica. C13,17, - 0.5 mF paper. C15,18, 0.01mF TCC. C16,- 50mF/12v e'lytic. C19, - 0.01mF moulded mica.
 1 x telephone jack.
 2 x ceramic microdensers 140 pF (C2 & 8,) Cat no 586
 2 x coil bases Cat no 707.
 2 x flexible couplers Cat no 529
 2 x skirt knobs Cat no 2416.
 1 x Full vision dial Cat no 598.
 1 x lead thru insulator Cat no 695.
 1 x min standoff insulr Cat no 1019.
 1 x 5 way tag strip.

A copy of the original article may be had from Graeme against copying costs. See *page 7* for schematic.

- T.R.F "HAM" RECEIVER -

Circuit Design from Eddystone.

By J.N. Walker G5JU, Stratton & Co; Birmingham, England.

By exercising care in the selection of valves, coils, and other components, it is possible to build a three valve TRF receiver capable of an excellent performance on both the amateur bands and the short wave broadcast bands. The present design is a typical example.

The Mullard EF50 valve possesses a high value of mutual conductance and can be made to work well in all three stages - RF, detector, and AF amplifier - of a TRF receiver.

The coils are a new type recently introduced by Stratton & Co Ltd and take up but little space, thereby lending themselves to a compact design. Yet they possess high 'Q' factors and are very efficient. Each coil has three windings (coupling, tuned circuit, and reaction) and is therefore suitable for use in most positions in a receiver. One end of each winding is brought to a common earth pin so that four pins suffice.

The three coils which cover from 33 Mc/s (with a 140pF tuning condenser) are wound on ribbed formers and have air cores. The remaining coils in the series are wound on a former fitted with an adjustable dust-iron core, and are fully enclosed for extra protection.

Types are made covering the medium and long wave broadcast bands, and, if desired, the receiver can be used for occasional broadcast reception.

The tuning condensers have ceramic insulation, and again, being physically small, assist in the achievement of a compact layout, with short wiring.

It is primarily intended that the power supplies for the receiver be drawn from a small AC mains unit, but it may be noted that the consumption is sufficiently low to permit economical operation off batteries. The valve heaters draw 0.9 ampere at 6.3 volts. A 6 volt 20 ampere hour battery will therefore operate the receiver for up to 20 hours at a charge. The HT consumption is about 10 milliamperes - it varies slightly with adjustment of the gain control. The performance is quite good when using a 120 volt battery (with one modification noted later).

Discussion on the Circuit.

The complete circuit diagram is given in figure 1. The first valve is a straight RF amplifier, the gain being varied by adjustment of the screen voltage. Regeneration becomes evident when R6 is well advanced. If, as happens with some of the coils, actual oscillation occurs, R6 must be backed off a little. It gives an increase in gain, but, more important, it also improves the selectivity.

The RF grid circuit tuning condenser is independently adjusted. Optimum results are thereby obtained and the construction simplified.

At first sight, R1 may appear superfluous. It is included to prevent the grid of V1 being deprived of bias whilst the coil is being changed. The high value specified has no deleterious effect on the performance.

The output of V1 is shunt fed to the coupling winding on

the detector grid coil. In parallel with the latter are two variable condensers. The larger can be used for general purpose tuning, for which reason a slow motion dial is fitted, or as a bandset condenser. The smaller bandspread condenser is coupled to the full vision dial. The amateur bands are well spread out (details are given later) and fine tuning is possible on any of the short wave broadcast bands.

The detector valve is triode connected. Used as a pentode smooth reaction is control becomes virtually impossible and no improvement in signal strength is obtained.

Rather a lot of resistors and condensers appear in the anode circuit of the detector valve, but they all serve useful functions. In the main, the additional decoupling is inserted to make very sure that no radio frequency voltages reach the grid of the EF50 audio amplifier. It may not be generally realised that many minor troubles with a TRF set - for example, threshold howl, hand capacity effects and 'ploppy' reaction - are frequently due to the audio valve amplifying RF voltages, these are then fed back to the earlier stages. The EF50 gives considerable gain, and it is particularly important to filter out RF voltages. The small resistors and condensers cost but little and are well worth including.

Shunt feeding to the anode of V2 is necessary, and R9 performs this function. R10 is the anode load. The combination of C12, R13, C14 and R15 forms a very effective low pass filter.

The value of C13 is given as 0.5 μF , and this is the minimum value that should be employed, to prevent noise being audible when rotating the reaction control R11. This value can, with advantage, be increased, and a 2 or 4 μF electrolytic condenser (200 or more working volts), if obtainable, should be substituted.

A resistor is used as the anode load of the EF50 output stage, and the output is entirely adequate for all normal needs when using telephones, or even a small speaker. If it is intended to use a speaker regularly, a pentode output transformer, with a ratio of 60:1 should be substituted for R18. C18 and the telephone jack can remain, the low impedance winding on the transformer being taken to a terminal strip, for connection to the speaker. In this case, the value of R17 should be reduced to about 10,000 ohms. These modifications will, of course, increase the HT consumption.

No audio gain control has been found necessary, as the RF gain control permits a wide range of signal strength adjustment.

Points regarding Frequency Coverage.

As the coil data panel shows, coils are available covering frequencies from 33 Mc/s to 150 Kc/s. this is a wide range, and it is practically impossible to arrange circuit constants to give optimum results over the entire possible coverage. the values recommended form a good compromise.

If the main interest lies in the higher frequencies - say 7 Mc/s upwards - the value of C1 and C6 can well be reduced to 25pF, and that of C10 to 100pF. On the other hand, better results will be secured on medium wave and long wavelengths if C1 and C6 are increased to 100pF and an all wave type of choke (e.g the Eddystone Cat; No; 1066) included in lieu of the 2.5 mH type specified.

Construction.

The diecast aluminium chassis, on which the receiver is built, is easy to work, and, as comparatively large holes are required, the construction is fairly easy. Only two small screens are required, and they may be made of any metal available - brass or aluminium of about 18 SWG (0.048 in thick) is recommended. Details of the screens and of the holes in the chassis are given in Figs 2 & 3.

The RF Stage.

The RF stage is a compartment formed on three sides by the chassis walls and on the fourth by the screen. The latter is fitted close up to the valveholder, which must be fitted as indicated in Fig; 2, so that the length of the anode lead actually in the RF compartment is very short. This compartment houses C1, C2, C3, C4, R1, and R2. resistor R4 is soldered to the centre tag of the gain control potentiometer, as also is C5.

Condensers C3 and C4 are mounted across the valveholder in an upright position, to provide a measure of screening between the grid pin (No; 7) and the anode pin (No; 3). The screen above the chassis shields the coil from other parts of the receiver. The lead-through insulator, used as the aerial terminal, is fitted to the rear of the chassis and projects into the RF compartment. Alongside this insulator is a 4 BA bolt for an earth connection.

The Detector Stage.

Coupling condenser C6 and the RF choke are supported, at the anode end, by a miniature standoff insulator. The other end of C6 goes direct (through a hole in the chassis) to the coil holder. The other end of the RF choke is held by a two-way tag strip, which also takes R3.

Several advantages obtain from mounting the detector valve and coil on pillars, well away from the chassis. Construction is simplified, leads are kept short and stray capacities are minimised. The pillars used for the coil holder are 1 in; long. If any difficulty is found in purchasing suitable pillars, they can easily be made by sawing off lengths of small diameter tubing, the centre hole of which is large enough to take a 6 BA bolt. Before permanently mounting, wires of appropriate length should be soldered to the coil holder sockets and all connections made to the valveholder, including the fitting of C9, C10, R8, and R9.

Tuning Condensers C7 and C8 are positioned with the spindle 1 inch above the chassis. the rotors are earthed, by the large tags provided, to a soldering tag, fitted beneath the nearer fixing bolt of the V2 valveholder.

The audio stage is straightforward and calls for no particular comment except perhaps to mention that the grid stopper (R15) is fitted very close up to tag 7 on the valveholder.

The power lead takes the form of a three way cable, anchored to a three way tag strip.

Fitting the Chassis to the Cabinet.

Holes are provided in the chassis and cabinet to enable the two to be fitted together, a $2\frac{3}{4}$ in; length of 2BA screwed

brass rod being required for the purpose.

When coming to the holes in the front of the cabinet, a smear of vaseline or other compound should be placed on the spindle of the centre potentiometer (R11), so that when the chassis is pushed up against the panel, a mark is left on the latter. A pilot hole is drilled out and further pilot holes made at the appropriate distances to right and left of the first hole, for the spindles C2 and R6. The pilot holes are then enlarged to $\frac{3}{4}$ in; diameter, either by means of a punch or by drilling a number of small holes and filing clean.

The same procedure is followed for the two 13/16 in; holes required for the slow motion dial heads. care should be taken to mark the holes correctly, at least in the horizontal plane. Errors in the vertical plane can be taken up by up and down movements of the tuning condensers.

A little difficulty may be found fitting the index to the dial on C2. A 6BA tapped hole is necessary, and if a tap is not available, it will be as well to leave out the index since accurate readings of this dial are not necessary. Set condenser C2 to full mesh before finally fixing the chassis inside the cabinet.

Operation.

A well smoothed power supply delivering a voltage between 150 and 250 volts is suitable for the HT supply. As mentioned earlier, a 120 volt dry battery may be used, in which case R12 should be omitted. No switch is included in the receiver itself as it is assumed that one will form part of the power unit. if an HT battery is used, means should be provided for breaking the positive or negative lead, to prevent the small drain through R5, 6, 7, and 11 during periods when the set is idle.

Any type of aerial may be employed - good results have been obtained with a short length of wire, but, as with any other receiver, the better the aerial the better the results. If a long aerial is used - that is over 66 feet - it may be desirable to reduce the size of C1 in series with the aerial coupling winding.

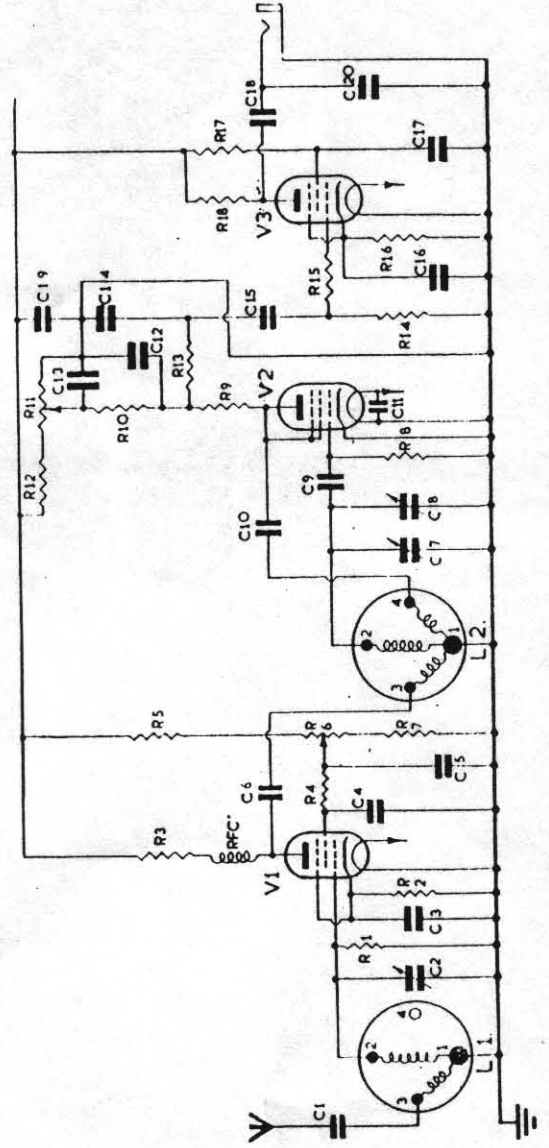
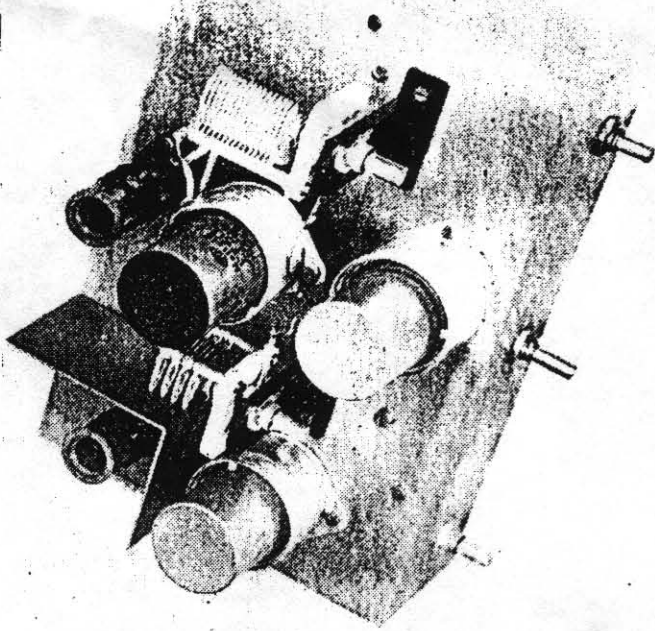
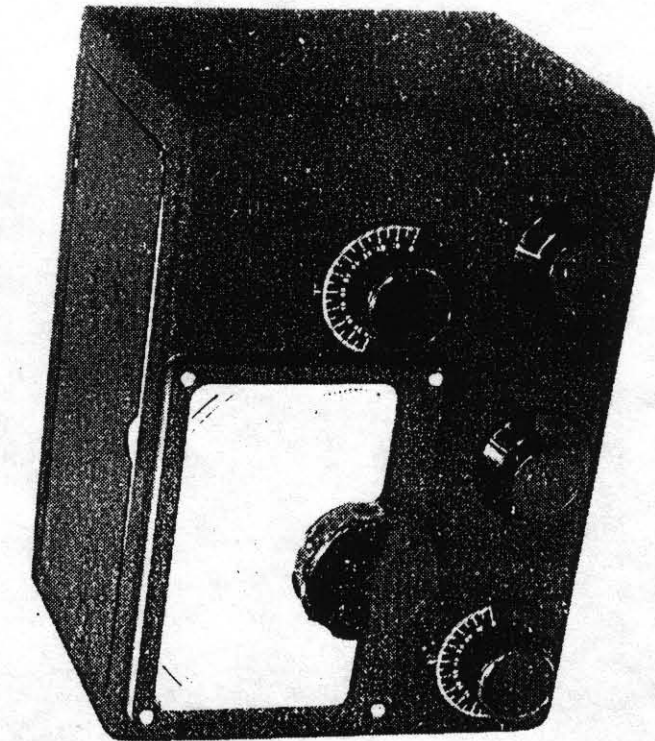
Slight microphony may be found with some EF50 valves. If it occurs, the valves should be changed around, paying particular attention to freedom of microphony of the detector valve.

Particulars of the approximate settings of the dials for the various amateur bands are given in the accompanying table and, provided the specified layout is adhered to, fairly close agreement should be found with the figures shown.

All the coils are wound to close tolerances and, in the case of the higher frequency coils, the readings on the dials of C2 and C8 will be similar, allowing for the effect of the Bandsread condenser C7.

On the lower frequencies, the position of the dust core will affect the coverage of any given coil. to begin with the core should be well down inside the former. If, with the tuning condenser at maximum, it is then found that the frequency is too low, the core may be brought nearer to the top of the former.

The core of the RF coil is adjusted so that resonance occurs with identical dial readings of C2 and C8. the tuning range of C7 will be small on the lower frequencies, and tuning will normally be carried out with C8.



Schematic for THREE TIMES EF50 RECEIVER.

SOME INTERESTING COMPONENTS from the **NEW ILLUSTRATED**

EDDYSTONE

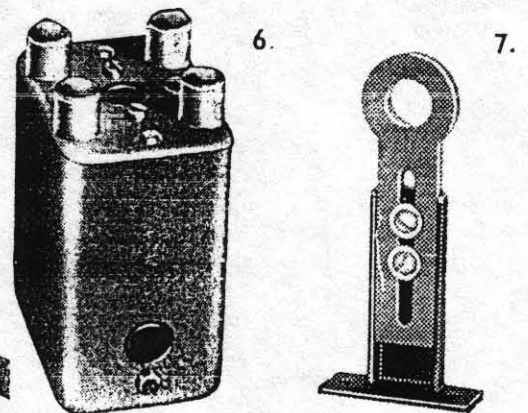
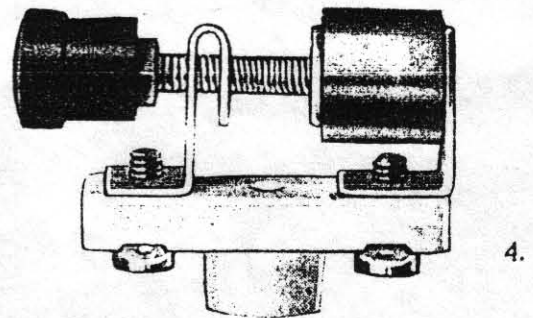
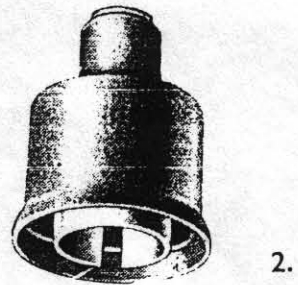
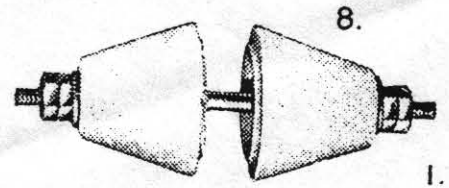
CATALOGUE

This is a selection only of the EDDYSTONE range of specialised components. The EDDYSTONE Catalogue includes full descriptions and electrical details of slow motion dials, tuning condensers for reception and transmission, metal cabinets, racks, etc. Supplies of the Catalogue are not unlimited, but early requests with 2½d. stamp will receive a copy.

- 1. Lead-through high voltage insulator. Ceramic cones. No. 1018. Price 2 6
- 2. Insulated valve top connectors. The larger type covers transmitting valves such as 866, T 240, etc. No. 562 (9 mm.) 1 3
No. 563 (7/8") 1 3
- 3. Low-loss Aerial Lead In. Length of tube behind insulator is 5¼". No. 946. 3 3
- 4. Neutralising Condenser. Capacity 1.5-4 mmfd Flash over 2,000 v.R.M.S. Size as illustration. No. 481. 3 6

- 5. High Frequency Chokes. Minimum self capacity, small external fields. Both types approximately 5 180 metres. No. 1010 (50 m a) 2 6
No. 1022 (250 m a) 3 -
- 6. Screened I.F. Transformers for 450 Kc/s in sealed case. No. 645. 17 6
- 7. Adjustable insulated bracket. Universal application for component mounting. Height of mounting centre adjustable from 2¼" to 3½". No. 1007. 2 6

A WORD OF WARNING. Most lines in the Eddystone Catalogue, including those illustrated here, are in reasonable continuity, but manufacturers have not yet reached the happy state of guaranteeing availability. If you order through WEBBS efficient Mail Order Service, please ENQUIRE FIRST (without remittance) and save disappointments.



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New Publications from EUG

Where he finds the time I know not yet Graeme has produced TWO new EUG booklets for the delectation of you EUGers.

The first is what might be termed "An Idiots Guide to Eddystone Receivers - Post WWII". What we have is a concise guide to the postwar models both valved and first generation tranny.

You get a precise listing of the main characteristics of each model plus a photo of one of the range of models using that style panel and cabinet.

The booklet is titled "A Quick Reference Guide" and it will be an indispensable item if you are attending a rally or swopmeet. You will find it at the end of THIS issue.

Eddystone Servicing, The Postwar Years.

This, the second booklet, is really a reprint of those models which appeared in the almost ubiquitous Radio & Television Servicing books by Molloy Poole and Hawker

What Graeme has done is to re-publish the parts of the servicing data which is relevant to the Eddystone models featured in those books.

What YOU get is two invaluable guides to all of those models which are most likely to be available on the market.

Birkett's of Lincoln.

Sam mentions that whilst renovating his 640 he had need of a number of items, i.e. paper condensers and resistors.

It was only necessary to make a call to Birkett's, read out his list, be told that they could supply all the 'bits' and then make a trip there the next day to buy the lot. A trip home with all the 'goodies' and then to work. Quite a painless way of doing repair work says Sam.

This is but ONE of MANY letters we get about the helpful attitude at Birkett's emporium. And yes, as Brian mentions in his letter, they also do mailorder, so what are you waiting for? AND NO - EUG has no connection with this company, we just appreciate their helpful attitude.

ISOPLETHICS - HIGH/LOW matching.

Isoplethics of 13 Greenway Close, North Walsham, Norfolk, NR28 ODE can supply a ready built matching unit which enables the use of modern low impedance phones with the high impedance outputs of our valved Eddystones.

- Featured Model, The EB37 -

This fully transistorised receiver designed for the enthusiastic broadcast listener whose requirements are not entirely fulfilled by the usual domestic model. The full LW, MW, and SW ranges are covered from 150 Kc/s to 22 Mc/s with the usual gap between 350 and 550 Kc/s which contains nothing of interest to a broadcast listener and DOES contain the IF of 465 Kc/s.

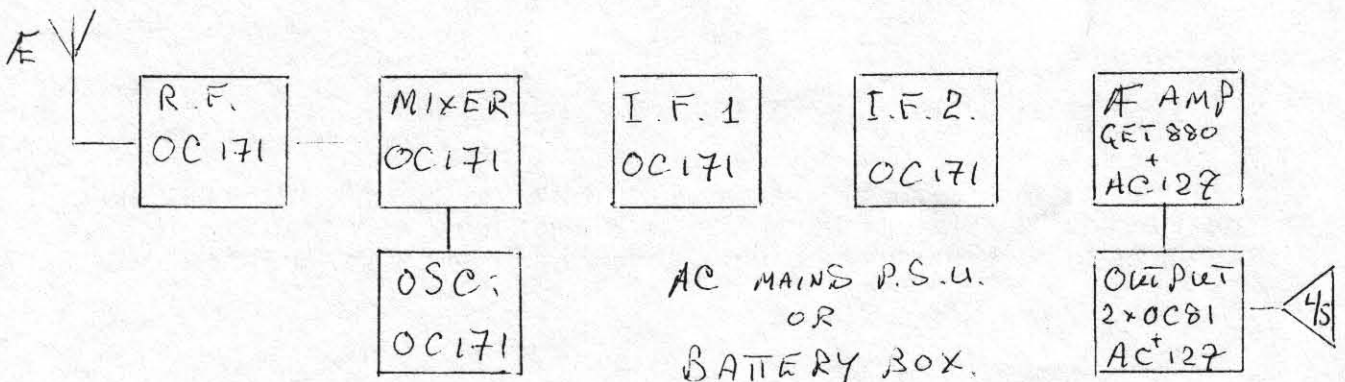
The 5 ranges are divided as follows;-

- Range 1, 22 to 8.5 Mc/s
- Range 2, 8.5 to 3.5 Mc/s
- Range 3, 3.5 to 1.5 Mc/s
- Range 4, 1.5 to 0.55 Mc/s
- Range 5, 0.35 to 0.15 Mc/s

These cover all of the normal medium and long wave bands plus short wave broadcast bands up to and including the 16 metre band.

Power supply may be either from a built-in battery box for six 'D' type cells, giving the requisite 9 volts, or from a separate mains psu box which can replace the battery box inside the case. Either supply may be switched on via the front panel power switch. Other front panel controls are a Scale light switch, spring loaded so that only momentary illumination is provided, thus saving on battery power. Other controls are the large tuning knob which operates the flywheel loaded slow motion mechanism. Gearing is such that some 50 turns are necessary to cover the full slide-rule type scales, however with the flywheel just several flicks will cover the full length of the scales. There is an AF volume control, and a top-cut tone control. The five position range switch does not have a spare position for when the receiver AF stages are used alone, thus in such a case the set must be tuned to a quiet channel. When this is done the rear mounted AF sockets may be used to drive a taperecorder on record, accept AF from a tape recorder, a pick-up, or a microphone. The built-in speaker is a 5" round type which provides good quality considering the metal case.

Ten transistors and five diodes are used in this circuit which is based on the well proven EB35/EC10 models. The design makes use of a fully tuned RF amplifier stage to provide adequate sensitivity and selectivity on today's bands. An overload protection circuit is included to prevent damage to the set when operation is in the proximity to a high power transmitter. Separate mixer and local oscillator stages are followed by two IF stages and a five transistor transformerless AF/output stage using complementary PNP and NPN devices to drive the 8 ohms speaker. A block schematic is provided below.



RADIO RAMBLINGS

Gottings from my Notebook



by Graeme,
G3GGL

THE GREAT RF GAIN MYSTERY SOLVED . . .

If you're thinking of changing the RF gain pot on your Eddystone, think again. We were all brought up to believe that AF gain pots had logarithmic carbon tracks and RF gains were linear wire-wound. In fact, it's engraved on tablets of stone somewhere . . . isn't it? Not quite. Not if it's an Eddystone! It all started with some members, having changed worn-out RF gain pots, reported a ferocity of action approaching that of a switch! "The whole of the gain control happens in the last eighth of a turn", they complained. Apart from a few wrinkled noses we all ignored it; after all, you don't tweak the RF gain for AM.

THE AWFUL TRUTH . . .

Then it happened to me; I changed an RF gain pot and immediately got the 'switch' syndrome. I measured the old one at half setting and got a reading of 1.5k... and a reading of 10k overall. Wow! Not a WORD in the book about this. The old pot was larded with Servisol and put back; problem gone. I spoke to Ted Moore about it and he gazed at me in pity. Obviously thought my marbles were going. Then I spoke to Bill Cooke about it... "Ah, yes," he mused. "I seem to remember it was a Special." The mind boggled; a logarithmic wire-wound pot? Really!

After a mention in a recent Newsletter, Tor Marthinsen in Norway remembered replacing the open-circuit double RF/IF pot in an 850/4 and getting poor results. Fortunately he hadn't thrown the old one away and decided to open it up. Imagine his surprise when he found it wound with THREE DIFFERENT THICKNESSES of resistance wire. The first third of the pot is a linear 0-500 ohms; the next third is 0-2000 ohms; and the last third is 0-7500 ohms. Add them together and you have the 10,000 ohms specified in the handbook! What a trick! So be warned.

AN ANSWER TO THE PROBLEM . . . ?

Tor goes on to offer a possible answer to the problem, by grafting in a bit of (Shhh!) solid state device. It goes like this: use a logarithmic carbon-track pot of around 100k-500k, and use a PNP transistor as an impedance (resistance?) transformer. The cathode resistor(s) may need lowering to compensate for the V_{be}-drop of the transistor. Thus the transistor will carry the cathode current of the RF valve(s) and the pot will not be loaded. A free lighthouse car-sticker will go to the first member to report using the system successfully (and give details)!

VALVES WE HAVE KNOWN AND LOVED . . .

Out of the thousands of different radio valves produced over the years some are engraved on our hearts. The 6L6 and its smaller sibling, the 6V6; its RF derivative, the 807. And then there was the EF50. I think we all had a love-hate relationship with this very high-gain RF pentode. I remember the first one I found. It was rolling about on the floor of a derelict Sherman tank in 1946. They were lined up on a two-mile long runway in Yorkshire waiting for the scrappers to take them away. (The tanks, that is, not the EF50s). I was a teenage scavenger, cycling the countryside on the lookout for any useful relics of the recent conflict, and unable to resist scrambling into a turret or two. The EF50 must have fallen out of the spares box of the W.S.19, for indeed this strange red cylinder found a place as the Tx driver stage in that ubiquitous mobile phone of yesteryear. I actually failed to recognise it as a valve due to its aluminium casing. So I sawed it open . . .

It had emerged from the Philips factory at Eindhoven in 1939 as the latest thing for 45mc/s Television. Just in time to be incorporated into Britain's vital radar defences. (continued over . . .)

As the war progressed the strange noval (9-pin) glass-based valve became the most common of British radar valves. It had a mutual conductance of 6.5 mA/v, four or five times that of normal radio valves, and as a result was considered by many to be untamable in a high-gain circuit (as opposed to the wide-band circuits for which it was designed). The decade following the war saw several designs aimed at using it to breath new life into simple homebrew 'straight' sets, and we are presenting a season of them, starting with the Eddystone version of 1949 (see this Newsletter).

The EF50 had several military aliases; the army called it the ARP35 (Army Receiving Pentode). The RAF called it the VR91 (Valve, Receiving), and then it became the CV1091 (Common Valve). It originally started a beautiful red colour, as it belonged to the family of Mullard "Red E" valves (Mullard was part of the Philips group). Later on it was left in a natural silver finish, but those made by Sylvania in the USA continued to sport the crimson hue. The post-war miniature EF91 was of virtually identical characteristics and had a very long operational life. The Americans used the 6AC7 (on a normal octal base) for the same job. Keep on watching, folks . . .

LOW IMPEDANCE HEADPHONES . . .

Gary McSweeney, spotting Alan's difficulty (N/L 48) in using low impedance phones with earlier Eddystones (640 etc), has sent me an excellent answer to the problem. A little outboard matching unit which plugs directly into the radio and has a socket for the headset. It contains a miniature transistor-radio output transformer (less than one cubic inch) type LT-700, available from Maplin at £1.36. It matches 1.2k to 3 ohms, a ratio of about 20:1, which makes all the difference. Give it a try; you can build it into any small box and include top-cut (shunt) and bottom-cut (series) condensers in the primary if desired. Thank you, Gary.

Our photographic wizard has been at work again (as you may have noticed), and Simon has managed to create the two smiling faces of our Patron and Editor to adorn this Newsletter. But don't *anybody* ask for an Eddystone hat; it's all electronic trickery!

IN THE NEWS . . .

Whilst on holiday last month listening to BBC Radio Cumbria's morning News I was surprised and pleased to hear *TWO* E.U.G. members' voices, featuring in different items. First of all Ron, G8URU and his XYL Joyce, were being interviewed about receiving a major civic award for their wildlife conservation project. Well done, both of you! Ron, a retired ITV broadcast engineer, helped out with our stand at the NEC last May; many of you will remember chatting with him.

Then, a few items later, came Stephen, M1BZL, reporting on a High Court murder appeal (the interesting one with the suicide note). Stephen Cape is a professional broadcaster, often seen on BBC National TV News. Congratulations on the new callsign, Stephen. (We understand that morse practice is progressing between assignments).

VINTAGE DX CONTACT . . .

Early in July, EUGer Colin Crabb, G4HNN, operating on 80 metres from Kidderminster, Worcestershire, worked a station in Poole, Dorset, a distance of about 110 miles. Nothing unusual in that, you may say. But listen to the circumstances!

Every summer the Severn Valley Railway (a steam preservation line), holds a 'War Weekend' where the clock is put back. Colin took the part of a 1944 American Master Sergeant with XYL Liz as his popsy (who else?). Within the railway station he demonstrated a 1943 Willys Jeep, complete with American-built 1942 19 Set, to an incredulous public. After relaying the 49-metre broadcast band through a speaker-amplifier he was asked if it could send messages! "Of course", said Collin and increased the whip aerial to its full 12 feet.

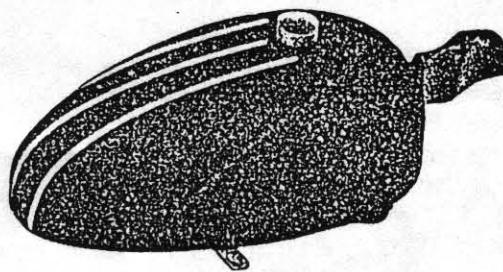
Getting out the morse key he then proceeded to work Mervyn, G3TLZ in Poole, down on the south coast. Colin received a report of RST 457 and gave one of 445! The QSO held for 20 minutes. The 19 Set has no RF gain control, no side-tone, and the Tx output on CW was 10 watts when it was new! Isn't this what real radio's all about? Well done, Colin and Liz. Colin's day-job is a professional musician and he makes frequent broadcasts.

Isn't it curious how E.U.G. attracts those with broadcast industry connections? (Yours truly started life at BBC Skelton shortwave station in the days when the aerials were hand-slewed!).

SEMI-AUTOMATIC MORSE KEY

13.

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THE EDDYSTONE S689 BUG KEY

Introduction.

The Eddystone S689 bug key holds the unique position of being the only commercially produced key of semi-automatic design to be manufactured in Great Britain. Sadly the key was never to attain the high degree of popularity expected by it's makers, but it's construction and appearance are enough to give it a great deal of character.

History.

By the late 1940's, the Birmingham based Stratton & Company Ltd., later to become known as Eddystone Radio, had built up a fine reputation for the manufacture of high class communication receivers and accessories. But it was not until late in 1947 that the initial work was begun on the development of a semi-automatic morse key.

Mechanically it was to follow the well proven principle of the Martin 1904 Vibroplex design, but in a style in keeping with the traditional Eddystone use of die-castings. After careful testing of shapes and materials for the various components, a number of pre-production models were assembled and evaluated by the amateurs working for the company. One of these pre-production models being displayed at the Amateur Radio Exhibition held in London's Royal Hotel in November 1947.

The first production run was made in early 1948, when a batch of 250 keys were assembled. Unfortunately, despite being seemingly well received at the Exhibition, sales of the key proved poorer than was expected. A second production run, again of 250 keys, was planned but it is almost certain that only around 100 or so of this batch were actually assembled at the time.

Although the S689 was undoubtedly liked by many users, sales of the key continued at a slow pace. Eventually the company, foreseeing no future improvement in it's popularity decided to offer the remaining stock of keys as a job lot to Birmingham's Chas. H. Young who ran the city's Amateur Radio Shop. As a result of this deal a number of keys were assembled during 1952 and sold to Chas. H. Young who placed the S689 on special offer in October of that year and continued selling them until stocks were exhausted.

Construction.

The key is almost entirely constructed of untreated brass and die-cast aluminium, the base and cover being finished in the almost obligatory black ripple or wrinkle paint. Despite the base and cover being aluminium, the weight of just under 3lbs is adequate for most operators, although fixing holes are provided in the base.

The majority of adjustments are carried out in a similar manner to most other conventional single split lever semi-automatic keys. The exception to this is the dot return coil spring, the tension of which is not independently adjustable. The spring is held by the left-hand control arm stop screw and the tension can only be varied to a small degree by setting of both the left-hand and right-hand stop screws.

The main pivot pin bearings consist of a single phosphor-bronze ball for each bearing, only the lower of which is adjustable. Two speed weights are provided, one large and one small, the use of either or both can give a wide variation in dot speed. The arm is damped in the rest position by a rubber grommet on the back stop, this is remarkably effective in use, although the rubber does become brittle with age.

Unlike the majority of American designs, where the lever arm, lever rod and main spring are riveted together, the control arm of the S689 can be completely dismantled down to individual components.

Conclusions.

Why the Eddystone S689 proved to be unpopular is unclear. Whilst admitting the general feel of the key does fall somewhat short of the many excellent American high speed semi-automatics, the key does not suffer from any major defect in design. The combination of a number of shortcomings may, however, have been a contributory factor to its unpopularity.

The exact number of S689's produced is unknown, but it seems clear that the figure did not exceed 500. No serial plates were fitted to the keys although the majority do have a number stamped onto the connecting strip on the underside of the base, two keys in the author's collection being numbered EZ0829 and DZ1283. This number consists of a date code and production number, although records do not exist concerning the exact sequence used, it is believed those keys which carry the DZ, EZ, FZ or GZ prefix belong to the first production run in early 1948. All other numbered keys are likely to belong to the second production run which took place in the following year and those without a numbered strip are possibly part of the batch eventually assembled in 1952 for the deal with Chas. H. Young.

So far, no keys have been located by the author that carry the FZ code from the first production run and all keys, so far, located from the second production run carry the AG code. The author would welcome any correspondence from readers having keys numbered outside this sequence or from operators who have used or still use the S689.

Notes, Credits and References.

Keys photographed are from the author's collection. EZ0829 is ex-GM3DVX John Gorrie(SK). DZ1283 is ex-G3HTM Walter Ellis(SK). All photographs are by the author.

Correspondence (25 Jul 88) with Chris Pettitt, Managing Director of Eddystone Radio, who provided the S689 Data Sheet.

Correspondence (31 Jul 88, 28 Aug 88, 23 Feb 89, 18 Nov 89, 13 Jul 90, 9 Jan 92, 9 Jul 92) with Bill Cooke, former Chief Engineer and Managing Director of Eddystone Radio, now retired after 50 years with the Company.

Correspondence (3 Sep 88) with Chas. H. Young.

Correspondence (13 Oct 89, 26 Oct 89, 24 Nov 89) with Cliff Hartles, former Engineer with Eddystone Radio who spent 18 years with the Company, now living in Germany.

Short Wave Magazine, July 1948 p.291 advertisement Stratton & Co. (first ad for S689 in SWM)

Short Wave Magazine, December 1950 p.651 advertisement Stratton & Co. (last ad for S689 in SWM)

Short Wave Magazine, November 1952 p.580 advertisement Chas. H. Young (first ad listing S689, although un-named, on special offer in SWM).

R.S.G.B. Bulletin, July 1948 cover iv advertisement Stratton & Co. (first ad for S689 in Bulletin).

R.S.G.B. Bulletin, April 1950 cover iv advertisement Stratton & Co. (last ad for S689 in Bulletin).

R.S.G.B. Bulletin, October 1952 cover iv advertisement Chas. H. Young (first ad listing S689, although un-named, on special offer in Bulletin).

R.S.G.B. Bulletin, December 1947. Amateur Radio Exhibition 1947 held in Royal Hotel, London, review of.

R.S.G.B. Bulletin, April 1949, p.247. The Eddystone Semi-Automatic Key. review of.

An earlier version of this article entitled "A Closer Look At The Eddystone Bug" appeared in Morsum Magnificat nr.13 p.30-33.

This particular article is however a product of my continuing research into the S689 key.

Colin Waters, G3TSS

December 1988 and
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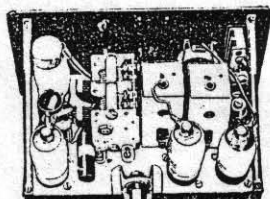
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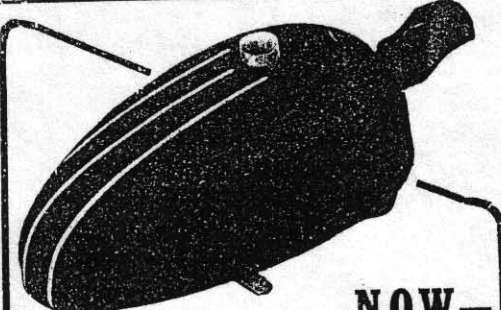
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REPLACEMENT VALVES FOR EDDYSTONE RECEIVERS

By Peter Lankshear

Many questions from EUG members are related to valve types and their alternatives. This is understandable, as valve numbering "systems" were often capricious and individualistic, especially in the case of British manufacturers. A classic example is the popular small pentode type EF91, originally developed I understand, by the Philips organisation for television. Exactly the same valve can be found labelled as 6AM6, SP6, Z77, 8D3, and 6F12. Government organisations recognised this problem many years ago, and developed a catalogue of universal CV numbers for many types. In this, for example, the EF91 and all its aliases share the single CV number of 138. CV numbers are not always found on receiving valve labels, and therefore they have been included in the following list.

Even an organisation as specialised as Eddystone used dozens of different types of valves over the years, and I have listed the types that I have been able to identify as being used by them.

Eddystone receivers are very reliable, but like all valve equipment, they occasionally need valve renewal. Valve failures are generally due to reduced emission and physical faults, but generally they do have surprisingly long lives, and wholesale replacements are generally not warranted. The best way for the average Eddystone User to check the need for replacement is substitution. The ideal would be to have a set of good valves on hand, and to replace valves only if trying a new one shows a definite improvement.

The bad news is that except for some specialist audio types still being produced for affluent Hi-Fi enthusiasts, valves are not being made any more. The good news is that there are likely to be sufficient stocks of existing spares available for most Eddystone receivers for the foreseeable future.

Direct alternatives are available for many valve types and are unlikely to create any problems except in some cases where they are a different physical size and may require shielding. This involves the American octal based metal series especially, as many of these can take three forms. The metal envelope types are both compact and shielded, with the GT version very little taller and if shielding is found to be necessary for stability, shields that clip on to the base shell are available. However, the G envelope valves can be a problem to shield, and they can be too tall for some receivers.

With so many manufacturers involved, and the large variety of valves produced, it is not surprising that there were some types that were very similar, differing only in minor characteristics, ratings, or pin connections. Some of these have been listed as practical substitutes. For example, later designs of rectifiers can often be used in place of older types. Many Eddystone receivers use 5Z4 G rectifiers, and these can be directly replaced by several types including 5V4G, GZ30, GZ32, and GZ34. Note however, that while a GZ34 can replace a 5Z4, in the case of high powered equipment such as amplifiers, the reverse does not always apply. Eddystone receivers, however, are modest in their power demands, and the types listed above can be regarded as interchangeable. Note too that although in many cases, a 6V6 will happily replace a 6F6, a 6F6 in a 6V6 socket could have insufficient bias.

Different pin connections can be a problem in substitutions, and clearly, modifications to a receiver should be avoided if possible. Valves that are otherwise similar can have the suppressor grid, the cathode and possibly an internal screen interchanged. These elements are frequently connected together in receivers anyway, and the original wiring may accommodate the differences automatically. One case in point is the substitution of the 6BA6 with the higher specification 6BZ6, a useful trick for improving the performance of input R.F. amplifiers. These are example of suppressor and cathode connection interchange, and in the typical case of the Eddystone 680, the appropriate pins of the R.F. amplifiers were wired together anyway. Another example is the EAF41 and EAF42 and their U series equivalents. These also have the suppressor, screen and cathode connected differently, but provided socket pins 4 and 7 are wired together, they will be interchangeable.

Incidentally, the diode pentode EAF42 may, in some cases be replaced by the quite different triode hexodes ECH41 or ECH42. By a coincidence the diode anode in the EAF42 uses the same pin as the triode anode in the ECH42, and in the case of the Model 740, which uses no fewer than four type EAF42, the BFO, R.F. and audio amplifier valves can, in emergency, be replaced satisfactorily by the ECH42. I suspect that the same would apply to the series connected heater receivers that use the UAF42 such as the 670 and 840C.

One valve question that seems to crop up frequently is that of the 6K8 and its equivalence to the ECH35. The short answer is that their only similarity is that they are both triode hexodes and they may both work in the same circuit but the 6K8 is unique, with different ratings, and the oscillator can "squegg" in some receivers not designed for it. A study of the construction reveals that the cathode of the 6K8 is offset, but concentric with the triode grid and with the triode anode on one side. The hexode elements are on the other side of the cathode, whereas all other triode hexodes have the two sections separated vertically. Many substitution tables list the X65 as being equivalent to the 6K8. It is not, and in fact is the equivalent of the 6J8G. My recommendation is simple. In the case of the 6K8 and ECH35, if possible, use the original type of valve.

VALVES FOR EDDYSTONE RECEIVERS. SUBSTITUTES & ALTERNATIVES				
ORIGINAL TYPE	C.V. TYPE	DIRECT EQUIVALENT	PRACTICAL SUBSTITUTE	NOTES
0A2	1832	150C2, STV150/30		
0D3	216	VR150/30		
12AT6		HBC90		
12AT7	455	ECC81,B309,		
12AU7	491	ECC82, B329		
12AX7	492	ECC83,B339		
12BA6	1928	HF93		
12BE6		HK90		
150C2	1832	SEE 0A2		
19AQ5		HL90		
25L6	552	KT32		
35W4				
35W4		HY90		
5Y3G(GT)	1854, 1856	U50	5Z4	5Z4 slow heating. Higher output voltage.
5Z4(G)(GT)	1863, 1864	GZ30,	SEE GZ34	
6AJ8	2128	SEE ECH81		
6AK5	850, 2877	EF95 5654		
6AL5	283, 2822	EAA91, EB91, D77, DD6		
6AM5	136	SEE EL91		
6AM6	138	SEE EF91		
6AQ5	1862, 2883	EL90, N727		
6AT6	452	DH77, EBC90	SEE 6AV6	
6AU6	2524, 4023	EF94		
6AV6	2526	EBC91	SEE 6AT6	
6BA6	454	EF93,W727	SEE NOTE	6BZ6 may be used to advantage in 1st R.F.Stage See text.
6BE6	453	EK90,6H21,X77,		
6BL8	5215	ECF80		
6BR7	2135	8D5		
6C4	133	EC90, L77		
6C5(G)(GT)	581,582		SEE 6J5	"G" replacements may be too tall and require shielding.
6CU7	2888	ECH42		
6ES8	5331	ECC189		Variable Mu double triode R.F. amplifier

ORIGINAL TYPE	C.V. TYPE	DIRECT EQUIVALENT	PRACTICAL SUBSTITUTE	NOTES
6F16	3886	SEE EF41		
6F6(G)(GT)	1912	KT63, N63	6K6G(GT)*	6V6* is O.K. without circuit change, but there will be a minor reduction in power output.
6H6(G)(GT)	1928,1930, 1931	EB34,D63		"G" replacements may require shielding
6J5(G)(GT)	1932,1933, 1934	L63	6C5(G)(GT)	Little practical difference between 6J5 & 6C5 "G" replacements may be too tall and require shielding
6J7(G)(GT)	1935,1936, 1937	KTZ63, Z63	EF36/37*, 6W7G*, OM5*	"G" replacements may be too tall and require shielding
6K7(G)(GT)	1941,1942, 1943	KTW63,W63	6U7G, 6S7G* EF39*,OM6 *	"G" replacements may be too tall and require shielding
6K8(G)(GT)	1944,1945,1946		ECH35, OM10	There is NO direct equivalent to the 6K8. Refer to text ."G" replacement may be too tall and require shielding
6L7(G)	1050,1051	X64		"G" replacements may be too tall and require shielding
6N8		EBF80	EBF89	
6Q7(G)(GT)	587,588	DH63	EBC33* 6T7G*	EBC33 Gain is lower than that of 6Q7 "G" replacements may be too tall and require shielding
6V6(G)(GT)	509,510,511			No direct equivalent but 6V6GT is very plentiful.
6X5(G)(GT)	572,573,574	EZ35, U70		
7D9	136	SEE EL91		
7S7		X81	7J7	
8D3	138	SEE EF91		
8D5	2135	6BR7		
D63	554	SEE 6H6		
D77	140	SEE 6AL5		
DH63	587	SEE 6Q7		
DH77	452	SEE 6AT6		
E180F	3998	5A/170K		
EAA91	283	SEE 6AL5		
EAF41			SEE EAF42	See Text
EAF42	3883	6CT7, WD150	EAF41	See Text
EB34	1054	SEE 6H6		
EB41	3881			
EBC33	1055	OM4		
EBC41	3882	6CV7, DH 718, 62DDT		
EBF80		6N8	EBF89	
EC90	133	SEE 6C4		
ECC189	5331	6ES8		Variable Mu double triode R.F. amplifier
ECC81	455	SEE 12AT7		
ECC82	491	SEE 12AU7		
ECC83	492	SEE 12AX7		

ORIGINAL TYPE	C.V. TYPE	DIRECT EQUIVALENT	PRACTICAL SUBSTITUTE	NOTES
ECF80	5215	6BL8		
ECF82	5065	6U8		
ECH35	1347	OM10 ,X61M		
ECH41			ECH42, 6CU7	
ECH42	2889	6CU7	ECH41	
ECH81	2128	6AJ8,X719,6C12		
EF41	3886	6CJ5, 6F16,W150		
EF91	138	SP6,6AM6, 8D3, Z77, 6F12		
EF93	454	SEE 6BA6		
EF94	2524	6AU6		
EF95	850,2877	6AK5		
EK90	453	SEE 6BE6		
EL32	1052			
EL41	3889	6CK5, N150, 67PT		
EL42	3890	N151		
EL90	1862	SEE 6AQ5		
EL91	136	7D9, 6AM5, N77 N144		6AK6 can be used if socket rewired
EZ35	574	SEE 6X5		
EZ40	3891	UU9,U150,88KU		
EZ41			SEE EZ40*	
EZ80	1535	6V4		
GZ30		5Z4(G)(GT)	GZ32	
GZ32	593	GZ34, 5V4G		
GZ34	1377	5AR4	GZ32,5V4G	
HF93	1928	12BA6		
HK90		12BE6		
HL90		19AQ5		
HY90		35W4		
KTW63	1195	SEE 6K7		
KTZ63	1074	SEE 6J7		
L63	1067	SEE 6J5		
L77	133	SEE 6C4		
N150	3889	SEE EL41		
N78	3711			6AQ5 Can be substituted, but change bias resistor to 270-360 ohms and rewire socket.
OM10	1581	SEE ECH35		
SP6	136	SEE EF91		

ORIGINAL TYPE	C.V. TYPE	DIRECT EQUIVALENT	PRACTICAL SUBSTITUTE	NOTES
U50	1268	5Y3G(GT)	5Z4	
UAF41			UAF42	See Text
UAF42		WD142	UAF41	See Text
UCH41		CF141	UCH42	
UCH42		14K7,X142,141TH	UCH41	
UF41		12AC5,W142		
UL41	1977	N142, 45A5, 451PT		
UU9	1855	SEE EZ40		
UY41		U412	UY42	
VR150/30	216	0D3		
W727	454	SEE 6BA6		
X61M	281	SEE ECH35		
X64	1280	6L7G		

* Different heater current from original. This is normally only significant in series heater operation, including AC/DC receivers.

FOR SALE - WANTED - FOR SALE - WANTED - FOR SALE

FOR SALE: Eddystone 840C, £80; Hallicrafters S-38EB, £30; ICOM R70, boxed, Manual, £350. All Good Working Order. Ray Thomas 01792-588835 (Swansea).

WANTED: Eddystone 958, any model, non or part worker. Alf 0121-475-8647 (B'ham)

WANTED: Handbook for RACAL UHF Freq Meter 9917. Call Jack 01684 574968.

HELP NEEDED: INSTRUCTION MANUAL for HEATHKIT (DAYSTROM) VALVE VOLTMETER TYPE IM-13U by GRAEME G3GGL, 01299 403372, or SEND TO ADDRESS on FRONT COVER OF THIS NEWSLETTER. Expenses refunded.

WANTED: Racal RA37A LF Converter, RA218 SSB Converter, MA197B Preselector; Any condition considered; Call David on 01788 574099 (Rugby)

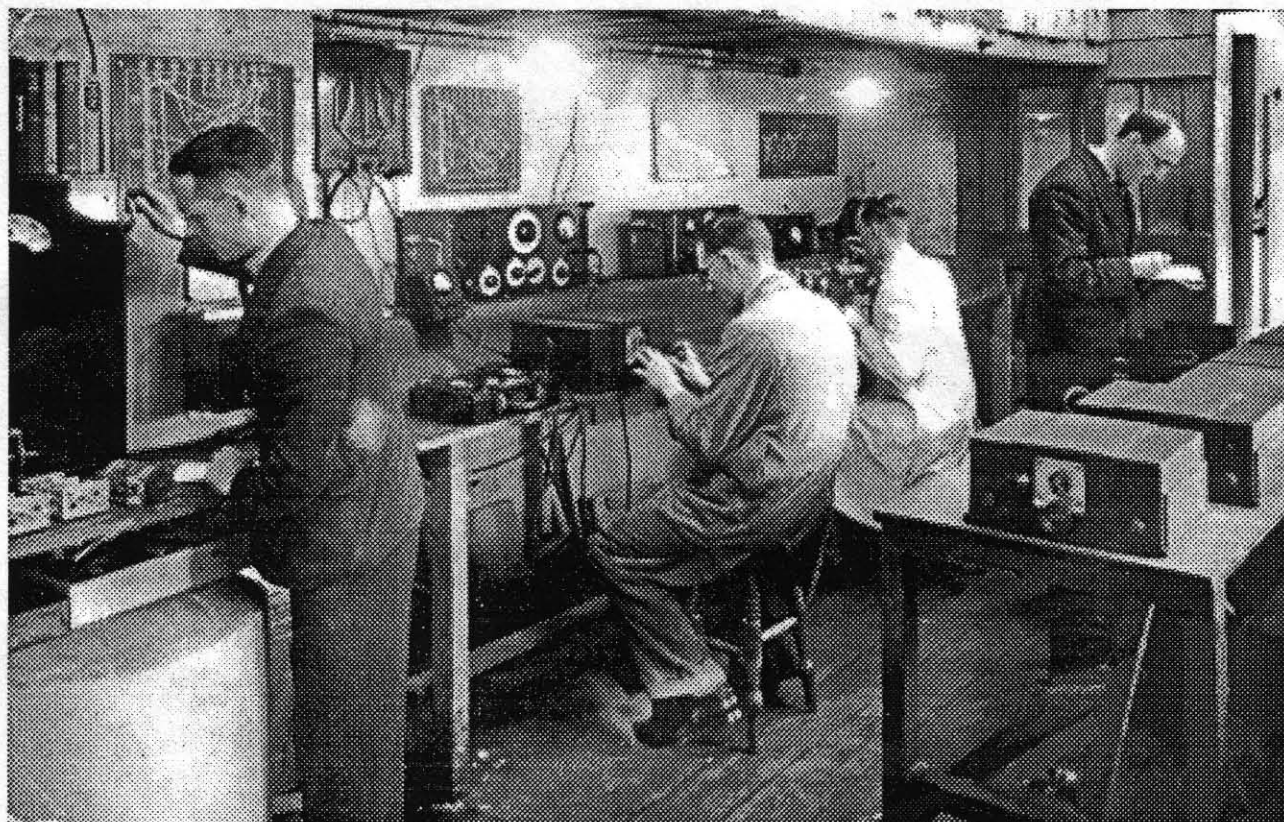
FOR SALE: Eddystone 770R (Donated for Radioamateur Invalid and Bedfast Funds) £70. Call G3MJK 01256 389439 (Basingstoke.) Buyer to inspect and collect.

SILENT KEY SALE (G8RF) TRIO TS500 TX/RX, Power supply, Remote VFO, £100. YAESU FL-50B/FR-50B Combination TX+RX, £100. AIRMEC Rx C864, £30. RACAL VHF/UHF Calibrator, £5. Class 'D' Wavemeter, £10. WESTON AC/DC Wattmeter, £10. Two AVO Signal Generators, £5 each. SOLARTRON Double-Beam Scope, £5. All above in good order. RAF R1155 Rx, tatty, less valves, £5 ALSO various components such as Variable Conds; Dials; Slow Motion Drives; Meters, Relays, Small Speakers, Crystals, etc. etc. Buyers to examine and collect, must pay in pound notes please. Contact Frank G3ZPE 01902 843159 (Wolverhampton).

THE COOKE REPORT

Part 3

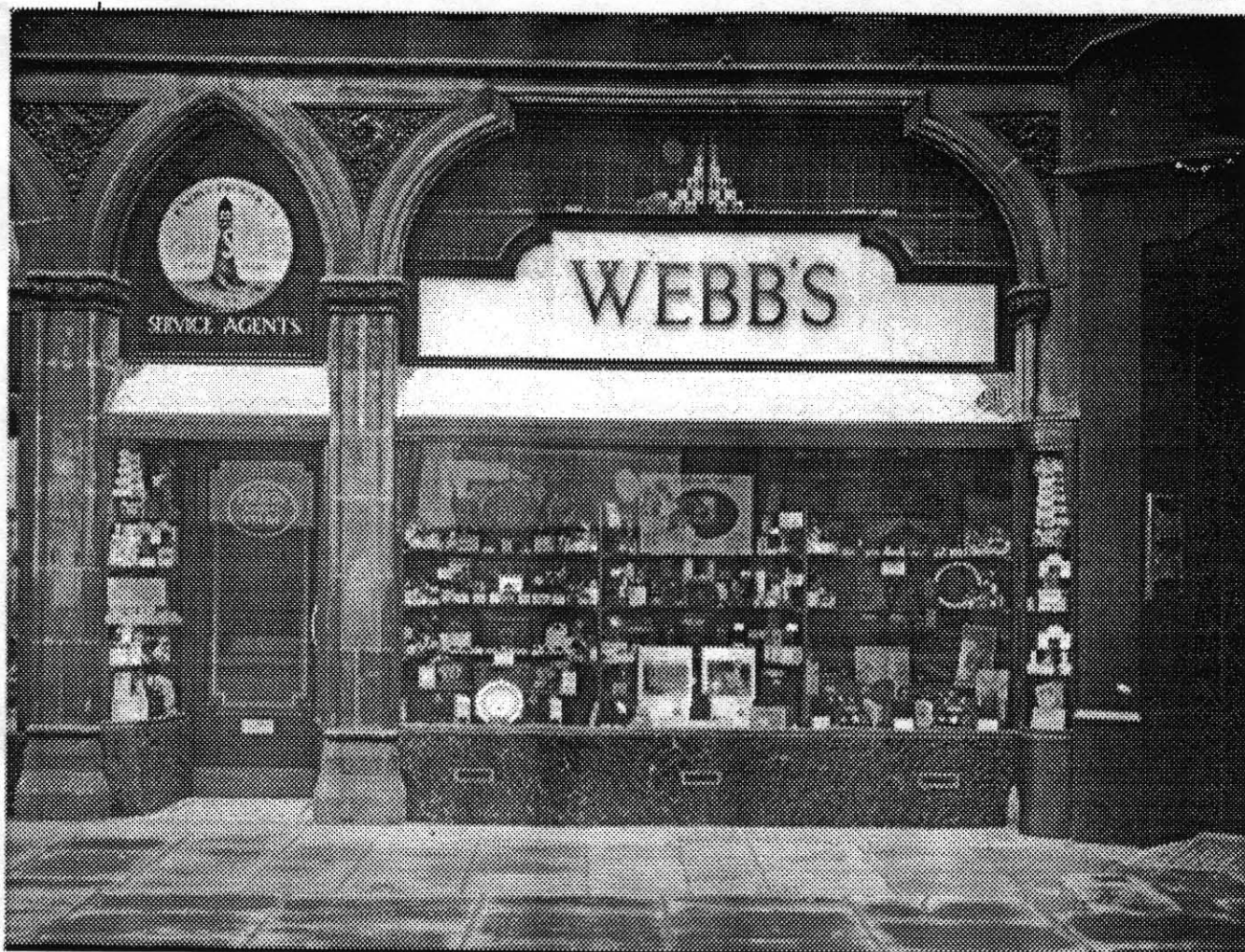
In our last Report we read how Bill Cooke, GWØION, became Chief Engineer of Eddystone at the incredibly early age of 28 after wartime service with RAF radar in North Africa. He had returned to a Company in a 'new' factory in the 'Bath Tub', a derelict lido taken over by Stratton's in 1940 after their Birmingham city-centre factories were destroyed in the Blitz. Bill continues now with more reminiscences of the period.



When I took this picture of Stratton's Test Department at Eddystone Works, Bromsgrove Street, Birmingham, in 1938, the 'All-World Eight' was the latest product.

"My first peace-time trip abroad was to the USA on behalf of the Company. I spent some time with each of the four American 'greats', RCA, Westinghouse, Motorola and Collins. I'm not saying I went to spy on them, but it was certainly an eye-opener to see things done on a scale that we could only dream of. My learning curve took a sharp jerk upwards.

continued >>>



The Birmingham branch of Webb's, Stratton's retail chain, in 1935.

A LIFE ON THE OCEAN WAVE . . .

"Stratton's Marine Agent was one of those larger-than-life characters who used to abound in the British Merchant Service. Alf Willings was based at West Hartlepool on the north-east coast. Nobody visited Alf without the Scotch magically appearing on the table; it disappeared just as magically! He knew every ships' officer from Texas to Tasmania.

"One day I visited him to discuss some long-forgotten technicality and he fell to speaking about the Cabin Trade, as we came to call it. 'You know', he said, 'There's a good market out there for a decent general coverage receiver to sell to all those ships' officers, to say nothing of the first-class passenger cabins'. In those days virtually all merchant ships had steam-driven generators supplying about 110 volts D.C. with the roughest waveform you ever saw. Ships' officers would buy cheap American AC/DC sets with unbalanced aerial inputs and get mediocre results and a short life. 'What they want', said Alf, 'is a set as well-built as the Sparks' sets, but without all the fancy controls'.

"Back at the Bath Tub we were still struggling to perfect the 680, which was proving to be a bit of a handful. We had no AC/DC (or 'universal') sets in mind; in fact we had never built any and considered them to be rather nasty! But business is business and minds were concentrated. It only took about seven months to design, develop and gear up our suppliers for what was to be one of our most successful models: the 670 series. It was launched in 1948, a lookalike for the 640 but it only had four controls; tuning, wavechange, volume, and tone, the on/off switch ganged to the latter. It had push-pull UL41s to give good clean sound in noisy environments and would run from any supply of 100-250volts, AC or DC. The outer case was completely isolated from the 'live' inner chassis. It achieved instant success as 'The Seafarers Receiver', selling for £37 10s (£37.50), with a 'brute-force' mains filter at £2 10s and a special ships' aerial at £2 12s extra. It was only available for Marine Export and Overseas Markets due to Britain's parlous financial state following the War. It continued with minor changes as the 670A and 670C until 1964, a life-span of 16 years!

THE STABLE INCREASES . . .

"Shortly after this we started work on two new models. The first was the 740, a straightforward general coverage set using the same case as the 670 and as many common components as possible. Although it had a B.F.O. and Noise Limiter it was really aimed at the Tea Planter market and would run from AC mains or a 6 volt vibrator pack for those relying on charging sets for power. The 'All World Six' (alias the 710/B) was a six-volts-only version, without the BFO, for the less technical tea-planters! It was introduced in 1950 and ran until 1954.

"The other new model broke real new ground. It was the Company's first double-superhet and the first 'slide-rule' dial. The 750 was an 11-valve general coverage set with communications features intended for professional use; it was also badged as the Marconi HR100. The first IF was originally 1600kc/s, but in some parts of the world this was in the medium-wave broadcast band and it suffered from breakthrough, so we had to nudge it up to 1620kc/s! The second IF of 85kc/s, with variable bandwidth, gave razor-sharp selectivity and, of course, the image (second channel) was negligible. Price started at around £50 in 1950 but crept up to £78 by 1958 when it ceased production.

A SUCCESSFUL FACE-LIFT . . .

"As I said in the last Report, the model 680 had a slow start but when it got off the ground it was a winner. In 1951 the original half-moon dial was replaced by the 750-type slide-rule dial and the set redesignated the 680X. This has led to a certain amount of confusion, probably going back to the 358 (which had no crystal filter) and the 358X (which did). Both 680s had a crystal filter, the use of the suffix 'X' was purely at the whim of Harold Cox, the Technical Director, who thought it sounded mysteriously interesting! The only other difference was the use of a pentagrid in the frequency changer in place of a triode-hexode. Manufacture continued until 1961.

*Bromsgrove Street after
the bombing of 1940*

25.

LIFE'S NEVER SIMPLE . . .

"The 680X was ordered by many overseas agencies, including one from the Indian P.T.T. for 60 models which were duly despatched. A little later an order was being filled for a New Zealand contract when two blew up on standby soak test. Geoff Woodburn, development engineer, had the job of doing the post-mortem. He found that the power supply reservoir electrolytic, (16mfd at 450volts) and the HT decoupler (40mfd at 350volts) were wired in back-to-front. The result, of course, was an increase in HT on components not designed to stand it. Geoff came down and told me. All assembly-line models had been quickly corrected. 'What shall we do about the Indian order?', he said, 'Harold Cox will go mad!'. 'Tell nobody.' I said. And then sat and

worried . . . After a week I couldn't stand it any longer. I made discrete enquiries in sales accounts. 'Oh, haven't you heard? The crane driver slipped when they were unloading - they're at the bottom of Bombay harbour. There's been an insurance claim and we'll have to make another 60.'

*IN HIS NEXT 'REPORT' BILL CONTINUES HIS STORY
OF LIFE AT WEST HEATH IN THE MID-TWENTIETH CENTURY*

STOP PRESS - STOP PRESS

The Eddystone User Group has embraced the reality of modem technology and acquired a share in the latest system of communication. In future it will be possible to despatch messages by the process known colloquially as "e-mail". In order to achieve contact by this method it is necessary to have suitable equipment known as a "PC" connected through the public telephone service via a device called a "modem". Messages should be addressed to "TED" or "GRAEME", as appropriate, and sent to:-

eddystone@nomis.co.uk

(The sharp-eyed among you will recognise the supplier of the service)

27 June 1998

Dear Graeme,

What a small world! While I ought to be babbling on about my 940 purchased two years ago from the back of an antiques shop specialising in optical and navigational bits and pieces in Millport on the Scottish island of Great Cumbrae during a 'HopScotch' holiday in our small motorcaravan, I have other things to say relating to the 'Red Baron' of Bewdley.

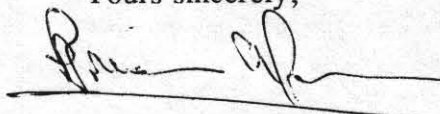
What a treat to receive Issue 49 of the EUG Newsletter with its clear print and good quality photo reproductions. Congratulations.

Now to my story. During the course of a wet two weeks June holiday in Shropshire and Mid-Wales my Wife and I (my Wife reluctantly!) embarked upon an excursion on the Severn Valley Railway. We were advised to get off at Bewdley station and look around this attractive little town. At no time did I make any connection with the Bewdley of EUG fame. When we disembarked the train at the station we proceeded to walk into the town where we found the streets lined with crowds of people in jovial mood. On enquiring of one of the bystanders we were told that it was carnival day and that they were all waiting for the carnival procession which was due to start at any time. Accordingly, we chose an appropriate position and watched the entire procession pass. One of my hobbies being photography and equipped with a camera loaded with slide film, I became very trigger happy in order to capture as much of the spirit of the moment as possible. The film was posted off to the laboratory while we were away and the processed slides were on the doormat when we got back along with other mail including EUG Newsletter No. 49. What a surprise to subsequently read on page 18 of Graeme Wormalds' other leisure interests! Also the two photographs on the next page of the 'Red Baron' himself. At this I had to rush to my slides to see if I had a shot of Graeme performing in the Carnival we had so much pleasure in watching during our brief visit to Bewdley. Sure enough on slide 26 there was the same 'Red Baron'. If you, Graeme, would like to borrow this slide and the others of the Carnival I would be pleased to forward them for loan (and reproducing if required).

Another slightly irrelevant spin off of our visit on that afternoon was a visit made to a jewellers shop in the main street in which my Wife saw a ruby ring which I had been inviting her to look out for to celebrate our ruby wedding anniversary in August. As a result Bewdley cost me more than I had bargained for!

If the Newsletter Editor, Ted Moore, feels this may interest other members by all means feel free to use it for inclusion in a future issue if required.

Yours sincerely,



Brian Abrams. GOBII.

Mr. Graeme Wormald, G3GGL,
15 Sabrina Drive,
Bewdley,
Worcestershire, DY12 2RJ.

Wideband Aerials on H.F.

Having used a random wire through an ATU for many years now, the idea of having a purpose designed aerial for the most used band takes some getting used to.

Ivor has an 830/7 which he uses mostly on the low Hf bands, especially 6 and 7 Mc/s. Having the time and feeling more energetic than usual this summer, it was decided that a folded dipole type aerial would be constructed and hung between a chimney and the large tree at the bottom of the garden area. This was the space formerly occupied by the random wire. A new random wire was installed purely as a temporary measure, sloping down from the eaves towards a tie point on the side fence. This gave a sloping wire some 40 feet long and going from about 28 feet up to about 6 feet up at the far end.

Looking back through old mags and Newsletters the item in Issue 10 regarding Folded Dipoles and their advantages was read and digested. Further reading on this subject came from the RSGB handbook (an old one this).

It was decided that a three element folded dipole as shown in Issue 10, would be constructed, there being enough garden length to fit in one tuned for about 6.7 Mc/s. The reasoning here was that this would fall more or less in the middle of the two 'favourite' bands. Given the wide band qualities of this type of skywire it was expected that such an arrangement would permit its use on both bands with equally good results.

The end and central spacers were made from solid and strong perspex tubing, the only item purchased for this job. The wire was a roll of multistrand mains cable that had been around in the shack for several years. End supporting cord was some polypropylene rope used for marine purposes, enough had been left over from a recent refurbishment job on a neighbour's boat. The feedline was at first a problem since it has to be at or near 250 to 300 ohms impedance for this type of aerial. Then it was remembered that for many years such feedline had been replaced by 'bellwire', or flat twin lead, even twisted mains lead if that was all that came to hand. The same neighbour who had supplied the wire for the top wires now came up with a partial roll of flat twin mains lead, 5 amp carrying capacity.

The whole aerial was assembled in one afternoon by laying out the pieces on the back lawn, soldering all of the joints with a thirty year old 100 watt iron, taping them up in self-sealing electrical tape. The end support cords were knotted and the ends sealed by heat from the side of the hot soldering iron, this prevents fraying of the end strands. All was now ready for hoisting the array into place. Here came the first problem, rain and wind meant a postponement of the job until next day. The whole array had to be left on the ground overnight and appeared to greatly interest the local bird population.

Next morning was bright and sunny with little breeze, almost ideal aerial rigging conditions. The chimney end was the easiest but this had to be left until last. A ladder up into the tree, through the branches and leaves, meant that only a few feet of real tree climbing was needed to get the far end up high enough for it to be on a level with the chimney. This was at a point where the tree trunk is still

comparatively thick and does not sway much in high winds

At the chimney end the aerial was hauled up and affixed by using an old lashing and bracket put up originally for the old Band III aerial. This left the downlead hanging vertically down at a point about 10 feet from the ground floor shack window. it was taken across at a slight slant and secured to a tie point before being led in through a small purpose drilled hole in the PVC window frame.

First results on the dipole that evening did not seem to bring any magical increase of 'S' points. A comparison though with the random wire showed some slight increase in signal strength. More importantly though the comparison showed a marked reduction in noise level and TV timebase noise. This was deemed to be a successful operation and well worth the time and energy expended on the project. The sloping random wire was left in situ as a means of comparing performance of the new dipole on other HF bands, both above and below the designed for bands.

Re-radiation from Domestic Radios

A recent letter from an EUGer showed both his perplexity and his frustration when he begged for some clues as to why he was able to hear Radio 1 FM at about 10.7 Mc/s on his EB35 receiver. A clue contained in his letter was to the effect that the next door's teenager was a Radio 1 fan and that was how he, a Jazz FM fan, had identified the QRM.

This is a pretty common phenomenon these days where so much domestic equipment is of the cheap and nasty, plastic variety. plastic cases mean a total lack of screening of the PCB and with so much copper trackwork there is an obvious chance of this trackwork acting in a secondary capacity as an aerial to re-radiate the IF, and other, signals which are produced in the receiver.

The signals produced may be simply radiated through adjoining walls to your receiver, or they may be picked up by your aerial. What ever the route they take to get into your receiver one very good idea is the inclusion in the aerial lead in of your set a simple wavetrapped tuned to 10.7 Mc/s. This will almost certainly suppress the QRM signal sufficiently to cure your problem Bill. A simple home wound coil of - say - 18 turns, $\frac{1}{2}$ " diam tuned by a trimmer will do the job for you.

Dud Regulator Valve ?

A recent fault with one receiver was cured simply by replacement of the VR valve. The measured HT from this valve had been up around 165 volts and was causing distortion of the local oscillator output, with some spurious visible on the scope. The valve was not striking at all and remained obstinately dark. A check on the associated resistors came up negative, so hey presto, new valve and the job was done.

** Big Blow Up ! **

John got this 680 for £60 plus an old Hi-Fi unit. It came in working order and a quick inspection showed that there were no visible mods or alterations either above or below the chassis. All went well for several months and the 680 was well used on all ranges as John pursued his hobby of Short Wave Dxxg each evening and most weekends too.

It was during a hot weekend in June that the 680 first began to smell, not just any old pong but that very well defined one of "hot transformer". It was immediately turned off and allowed to cool down for an hour before the case was removed and the set was upended on the bench.

Only a limited knowledge of valve sets - but a good working knowledge of semicon devices meant that whilst transformer theory was okay some blind tests had to be done on the rest of the 680. Several hours later and nothing untoward could be found on the chassis, it was felt necessary to do some power on tests of the mains transformer.

A quick look at the circuit showed that the fuses were in the primary only, not in both primary and secondary as with the other station receiver - a 750. For this reason all valves were removed to take off the LT and HT load. The 680 was then checked for leakage between primary windings and each secondary in turn, nothing showed up on this leakage test. A continuity test was also done on each winding and all appeared okay.

Next step was to put some mains onto the transformer and to do some tests for voltage output. This was where the problems arose. A few quick tests and the LT windings checked okay, but the secondary was definitely unbalanced with just 187 volts on the one side but some 256 volts on the other half. By now the transformer was also showing some rise in temperature, -off load remember !

It seemed quite obvious that the half of the secondary with the low voltage reading must have had some shorted turns. There is no quick and easy solution to this kind of fault. It means either a new or replacement transformer or a rewind of the old one.

After much 'phoning around of various pals and dealers, an advert in the hobby mags and on the bulletin Board at the local Club, nothing was to be found in the way of a replacement transformer. What did come up was the mention of a small company in Rochdale who do rewinds as well as making transformers, both one-offs and quantity supplies for bigger companies.

A weekday trip up to Lancashire from Walsall and having lugged the transformer into the small 'factory' on an industrial estate the verdict was given. Yes, a test for shorted turns on a 'growler' had shown that my diagnosis was correct. Yes, they could do a rewind. BUT the price was steep at £28 and a two week wait.

What to be done ? If a working 680 was wanted there was no choice and so the go ahead - plus a cheque for £28 - was given.

Two weeks later and a phone call elicited the response that the transformer was ready, tested, and was there for collection. It was collected and carried home on the passenger seat, looped around with the seat belt, well it was felt that the cost deserved some care being taken in it's transport

homewards. Fitting that evening took just a half hour, then the valves were put back into place and after a second 'in case' check all around the ergs were applied.

The 680 burst into life as before, all voltages checked out as per the table supplied in the manual, and an 'on-air' test showed it to be as lively as ever. A half hour of use on the bench and there was no noticeable temperature rise of the transformer. A full evenings use out of the case and the item was just slightly warmed up - normal !

Having put the set back into the case and re-integrated the 680 into the bench line-up the set was left on for a full night of soak testing with no discernible ill-effects. What was once a £60 680 is now an £88 plus petrol costs 680 and the extra cost is considered well worth while. John.

Eddystone Rcvr Valve Lists.

The valve listings contained in this issue are the work of EUGer Peter Lankshear in New Zealand. That they will fulfill a need is clear as Peter says, much of our mail is on the subject of valves and their equivalents and anything that lessens the need for such a quantity of mail must be good.

Peter also comments that the 6C5 triode really does have TWO grids. He goes on " -- It comes from the fact that RCA engineers were under considerable pressure to get the first generation of metal valves on the market and they took the easy way out with the general purpose triode of the series by using the electrode assembly of the 6J7 pentode. That is why the the glass 6C5 has a shield surrounding the anode, (The 6J7 was in turn based on earlier valves, the types 6C6 and 77.) How's that for expediency ?"

Both Peter and I hope that the listing in this issue of the N/L will prove helpful to all EUGers. It is at the end of the N/L proper, and like the Booklet done by Graeme, it may be detached, re-stapled, and filed separately for your convenience. Ted.

From The Antipodes - - -

Keith Norton has written to tell me that he has received the special 1/16th Hex key that Graeme purchased and sent out to him - in answer to an SOS.

Seems that these non-decimal sizes are not available to Keith down there. The key has enabled the 830 knobs to be removed and replaced, the drive cord has been renewed with monofilament fishing line, the cursor has been re-fixed with a dab of superglue. Here the happy part ends ! Seems that in putting the dab of s-glue on he may have inadvertently dropped a blob down into the 'guts' of the drive mechanism and now Keith has a seized up drive. It is an ongoing saga so maybe we shall hear more from Keith as work progresses. Happy Days Keith ! Had more than a few such contre-temps myself over the years, how about blobs of solder that mysteriously appear and short out pins on valve holders ? Ted.

-Silly about Silicon & Germanium -

Yes I know the BC212 is a SILICON PNP device and not a Ge type tranny, I know I even made the same boo-boo last year over the same tranny. What can I say except that I am sorry and possibly lay the blame to "incipient, precocious, senility" or what ever happens to 65 year olds. Thanks Andrew for pointing it out to me, may your EC10 never grow whiskers !

- Early 870s -

Some time back I mentioned that some of the very early 870 sets were not 5 valvers but 4 valve plus metal rectifier. I had actually owned one built like this but had never seen any others of that ilk.

Now comes the info from Ian that this must have been one of two factory prototypes that were not sold, but must have 'leaked' out of the factory. Ian is an ex-BathTub employee and he says that all production sets were 5 valvers, now we know. Thanks Ian.

- Energy Conserving Bulbs -

This has surfaced before, as I recall. Those energy saving bulbs, typically made by Philips, utilise a switched psu to conserve the power. Unfortunately for us they employ an oscillator that runs at around 30-40 Kc/s, is a square wave circuit, and so produces harmonics throughout the LF, MF and HF spectrum. If you have recently become aware of wide band noise on your receiver then check around for bulbs such as these. If you can, then bin them. Colin had several in the house and they are now replaced with those old user-friendly filament types.

- Soldered Joints -

If you are 'into' valve type equipment then ask for and buy the correct kind of solder. The solder normally found on the market is low melting point for pcb use and in the thermionic valve environment it can melt causing cataclysmic disaster to your receiver. If you ask for the correct solder it can be bought, so says Tim.

- Grease NOT Oil -

A recent letter to the effect that any suggestion of using 3-in-1 oil on gears or drive mechanisms is way off the mark.

3-in-1 oil especially causes rust after a short period, even the finest sewing machine oil is not recommended according to Dave. The correct item is some form of graphite grease or one of the modern 'moly' greases. Thank Alan and Dave.

- Australian Standard Frequency Xmission -

A request for info here from an EUGer in Devon. Does the SFT from Australia still exist on 16 Mc/s (not 15 Mc/s) ???

Jim is asking about this as he had once logged it but cannot now locate it on any of his receivers, valve or semicon. Info please to the N/L for all of us. Ted.

- Shack Calibration Pips -

Graham writes in to say that he notes that when his WWII HRO Mx receiver is on, the local oscillator produces QRM on other sets in the shack. He now uses it to provide a calibration pip for setting the band edge when he is tuning a particular band, i.e. the 14 Mc/s band on his 840C.

The HRO has always been well known for this phenomenon and the local oscillator does produce re-radiated signals. A plus in this case, but QRM in others. Ted.

- QRM versus QRN -

I heard this the other eve whilst listening to a local operator on Top Band. He was talking about rain static when using his vertical aerial and saying that this QRM was absent when he went over to the longwire.

I have always been taught that Man-made noise pollution over the RF range is QRM, whilst 'static' or other Naturally caused interference is QRN. In fact we were taught in the RAF that the way to remember these two bits of 'Q' code was 'M for man-made' and 'N for naturally generated'. Seems logical to me. Ted.

- Modern Pots as Replacements -

A letter to Graeme, passed on to me (Ted) for reply. It commented upon the fact that upon fitting new pots for the RF and AF gain controls to his EC10 he had found that the knobs had become 'off-centre' or eccentric.

Graeme has pointed out, quite correctly, that whereas the originals would have had $\frac{1}{4}$ " diameter spindles, the newer replacement types would have been 'metricised' to 6m/m size and so the knobs would be loose on the spindles. Tightening of the grub screw would put the knob off-centre. Q.E.D. If you do not believe him then try it.

- The end of the Red Baron -

Apparently friend Graeme has terminated his posturing in the Bewdley Carnival with a prize ! So the Fokker has been decommissioned, Eda has her electric scooter back, and Graeme's neighbours are no longer expecting those little men in white coats to come and cart him away. Good on you for the prize Graeme and now back to normality - EUG ! Are you going to advertise the Fokker in the August N/L ?

- - - -

Eddystone - Quick Reference Guide.

Graeme has been at it again, burning the midnight oil on our behalf. The last seven sheets of this EXTRA LARGE Newsletter are a complete, detachable for reference, guide to all of those most popular models that an EUGer is likely to encounter at any Rally or Swopmeet.

As he says in his foreward to the Q.R.G. - "it is a simpleton's guide" which should be of assistance to those newcomers who are not so 'au fait' with the many different models. Strange thing has happened here Graeme, I have found myself turning to your guide on several occasions since it arrived !!! Seriously though folks, it is a masterful piece of work and the author deserves our thanks. Ted.

Satellites with a 770R II

Dave has got two of the above mentioned model and finds that they are rather more versatile than many people will allow of.

The spare one, i.e. that which is not in normal monitoring use in the shack, is now hooked up through a wide band VHF/FM aerial amplifier as sold for domestic use This gives some 7-10 dBs of gain on the top three ranges. More than enough to make the 770R II into a potent satellite monitoring receiver when connected to a simple crossed dipoles aerial system mounted on the roof.

So far a total of 7 satellites have been monitored and identified in the 136-7, 147-8 and 150-1 Mc/s bands. The receiver is fed into a decoder/modem which enables the contents of received signals to be displayed on the PC screen.

Zener Diode Noise

A letter from Jerry Pierce re a so-called 'squirting' noise on the output of his EB35 - - but only when the set was used on 9 volt battery supplies, and then only on the Long and Medium Wavebands. Since it is an 'odd' fault condition it may be worth remembering for the future.

The EB35 had been in use on its mains psu for several years until Jerry and the XYL went off to Mull for a holiday early this year. caravan living for two weeks and no mains so operation was planned from an external PP9 battery. One was bought and tested for a few hours at home, less than 60 mA at normal volume so there was many tens of hours of operation in one PP9, so Jerry calculated. Upon arrival the set was wired up and powered up but now there was an unaccounted for 'squirting' noise and only on LW and MW, it disappeared above about 2.00 Mc/s. A quick trip into Tobermory and another PP9 was procured since this was deemed to be the most likely culprit. Wired up alone, and later in parallel with the first PP9 the problem was still there, no change at all. This meant no NDB chasing but Jerry was able to use it for SW b'cast listening. Back home- on mains - the problem was cleared. Back onto batteries and it came back. Now layer type batteries of this breed are notorious for having a fairly high internal resistance and so a parallel e'lytic was tried across the battery - still there.

Using the scope probe Jerry tracked the source of the 'squirts' down to the germanium type zener diode used to stabilise the 6.5 volts for the RF/Osc stages TR1 - 3. Replacing the 10 muffs e'lytic across it cured the problem.

EDDYSTONE USER GROUP**SURVEY OF EDDYSTONE MODELS OWNED BY MEMBERS**

We thought it would be interesting to conduct a survey of the various models of Eddystone owned by E.U.G. members and would be grateful if you would list below the model or models you own, including numbers if you own more than one example of a particular model.

Members preferring anonymity need not give their names. The result of the survey will be published in a forthcoming newsletter.

Name of EUG Member (optional):

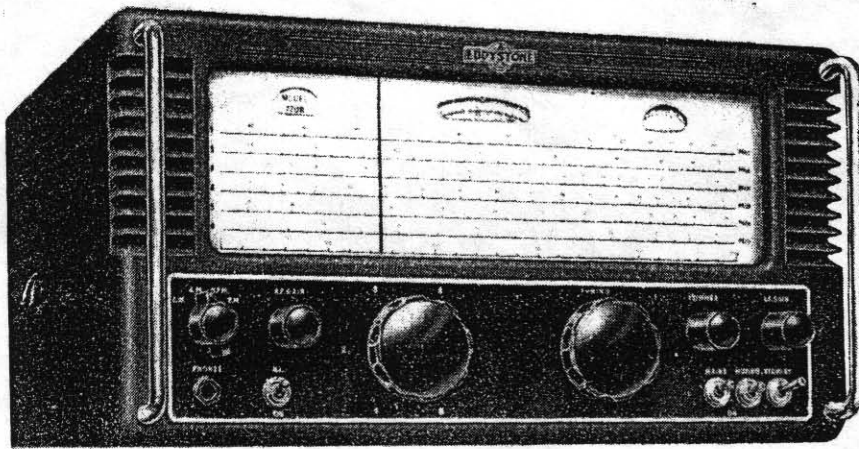
Country (if not U.K.):

Eddystone(s) owned

Attention is drawn

to the **EDDYSTONE 770**

V·H·F & U·H·F



*Communications
Receivers*

Specially suited for
**Monitoring
Field Tests
Laboratory**

ETC.



For highest grade equipment

Superbly engineered and of advanced design, the two models offered possess excellent electrical characteristics and are robustly constructed for service in any climate.

The "770R" has continuous AM/FM coverage from 19 Mc/s to 165 Mc/s; the "770U" from 150 Mc/s to 500 Mc/s.

Both incorporate six-position turret tuning assemblies of unique design and giving high reliability. Self-contained when operated from AC mains and with provision for use on external power supplies. Fully descriptive literature with illustrations and performance curves available on request.

Manufacturers: **STRATTON & Co. Ltd., Birmingham, 31.**

Burning ex MoD Sets.

This isn't quite what it seems as Geoff is asking about his ex MoD 730/4 receiver which has now begun to give off a slight smell of burning whenever he uses the Calibrate button.

I have had this in the past myself, and not only on ex MoD 730/4 models. What I found was happening was that through constant use over the years a surface layer of metallic deposit scraped from the switch springs was being left on the ebonite insulating rings of the switch plunger. This, possibly aided by damp or condensation, was allowing some HT current to 'track' across the ebonite which began to smoulder, turning into carbon as it did so. The carbon being a conductor accelerated the flow of current. Hence the smell of smouldering ebonite, so well known to some of us older enthusiasts. Now that the switch is damaged irreparably it may be the time to buy a replacement and a look in the RS, or Maplins, catalogue will show you a suitable type of Push On switch.. Ted.

Condenser Problems with a 670A

This set has been in quasi continuous use for many years by Derek, an SWL with an interest in mainly foreign broadcast stations.

Recently there have been a number of blown fuses in the mains plug feeding the 670A. The original 1 amp fuse went several times and then a replacement 13A fuse went. At this point Derek knew there was a serious problem within the receiver and he passed it to a fellow club member for repair.

The problem turned out to be not as serious as first suspected, but it may well be a harbinger of problems to come. Both C60 and C61 across the input to the Hash filter had gone leaky, about 8000 ohms on a low voltage test but an immediate full short on mains AC.

New 0.047 muf types at 750 vAC working were obtained and fitted. This allowed of a replacement 1 amp fuse being refitted and the 670A was back in use that same evening. Three months on it is still fine but there is the nagging feeling that if these condensers can go - are any more condensers on their way out ?- Ted

Reforming long unused Electrolytics.

This is a much debated subject but recent experience has decided Steve that it needs to be aired in the N/L again.

In the present case it was an 840A which has been unused for many years, just left stored in the bottom of a wardrobe until the death of a relative.

Steve took the set home and after a quick visual he plugged the set into the mains socket. As some of us might have expected the immediate demise of the e'lytic HT smoothing was apparent when there came a hissing noise and a sickly smell.

Opening up showed that the rubber safety cap had been pierced and a white deposit was now covering all the surrounding area under the chassis. nothing to do in this case except obtain the requisite replacement and fit it, after the nasty clean up operation had been undertaken.

Some thought has since been given to a way of allowing the electrolytics to build up their tolerance again, instead of just simply giving them what turns out to be an overdose of HT.

In the event a variable DC supply was constructed in a case which originally contained a car battery charger. The basic circuit is that of a mains transfo which feeds a silicon diode $\frac{1}{2}$ wave rectifier circuit across which is small 50 watt variac bought at a recent club sale. this enables a dirty DC supply (i.e. DC which is unsmoothed and contains some element of AC) to be produced at the output of the variac. Tests show that an off load voltage of some 20 volts to about 230 volts is obtained.

The procedure employed in testing/reforming some spare e'lytics taken at random from the spares box is as follows. Bearing in mind the stated operating voltage of the condenser to be tested/reformed, it is connected across the variac output which has previously been set to its minimum output. A 1 amp meter formerly part of the old charger is retained in the HT supply and serves simply as a fault condition indicator, giving a high reading on full or part shorts but serving no purpose - since it gives no reading - when a reasonably good condenser is across the output.

Of some thirty e'lytics tested so far some 12 of them have had indicated leakage as the variac was adjusted towards the operating level of the particular condenser. All except two of these has returned to a normal/reformed, state after some time on the marked HT voltage.

The duds have been tried several times before a decision was made to 'bin' them. In future all 'new' sets received here will be opened up and checks done on the HT smoothing condensers.

As a corollary to the above. A number of paper insulated type condensers have also been checked out on this rig and several leaky ones have been identified. Steve.

Carpet Static Charges.

Bob has written in asking as to whether the static charges he builds up on his body as he walks across the carpet, can possibly affect his EC10 Mk II.

I assume that Bob means can it affect the EC10 when he touches the outer case whilst his body is charged up.

Assuming then that his EC10 is correctly earthed and he touches the case, what will happen is that he will get a tingle but that the static will be conducted to earth immediately and no harm will come to the receiver. It would be different if he had the set open on the table and walked across the carpet, got charged up, and touched the PCB. Okay? Ted.

Dry cell corrosion.

The battery box and a part of the top of the chassis of Frank's EB35 II have some unsightly rust patches which it is evident have been caused by leakage from old, exhausted, dry cells of the R20/D type. Leaving these in situ after they are exhausted is a definite No-No for any kind of equipment.

In Frank's case it was necessary to use a proprietary rust remover solution to clear up the patches and this left areas of bare metal. Both on the chassis and in the battery box these areas were taped off with masking tape, leaving a big overlap. The areas have now been sprayed with an aerosol so that the match up the original colour and so far - after several months - there are no indications of continuing corrosion underneath the new paint.



Wharfedale
MOVING COIL
SPEAKER

"BRONZE"
WITH
EXPONENTIAL
CONE

UNIVERSAL
42'6

1½ to 10 ohms and 2,000 to 18,000 ohms.

LESS TRANSFORMER
35'.

Entirely Dust-Proof

SEE AND HEAR
WHARFEDALE
SPEAKERS AT
RADIOLYMPIA
STAND 203

Send for Catalogue of complete range of Chassis and Cabinet Models.

WHARFEDALE WIRELESS WORKS, 62, LEEDS RD., BRADFORD, YORKS.

WIDE RADIATION

Fitted with high-efficiency nickel-aluminium magnet of new type. 100% dust protection of gap.

"Wireless World" reports, Aug. 2nd, 1935

"... we can confirm that there is practically no focussing of the higher frequencies in a beam parallel with the axis of the cone. Further, the high-frequency response is distributed over a much wider range than usual, and there is no serious resonance in the region of 2,000 to 3,000 cycles. The output is well maintained up to 5,000 or 6,000 cycles and then falls off gradually without any sharp cut-off. In our opinion, not the least important feature of the performance is the remarkable bass output from so small a cone. The bass resonance is actually as low as 70 cycles, and down to this frequency there is no serious frequency doubling."

Price and Preference

For many of us, price marks a boundary; but no limit need be set to the enjoyment from one's pipe. Price and preference can be reconciled. Hosts of smokers who first considered cost, now "fill up" with "Airman" for choice.

MIXTURE
FLAKE CUT
NAVY CUT

10d
PER OZ

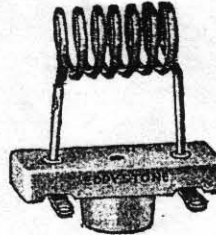
NAVY CUT
DE-LUXE 11P

**PLAYER'S
AIRMAN
TOBACCO'S**

P.A.44K

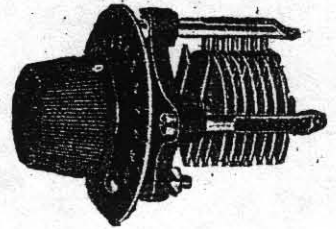
NEW EDDYSTONE
Short-Wave Items

ULTRA-SHORT-WAVE
COILS
SILVER PLATED.



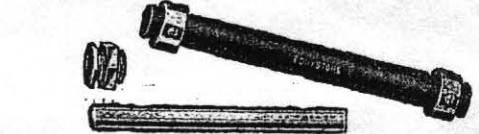
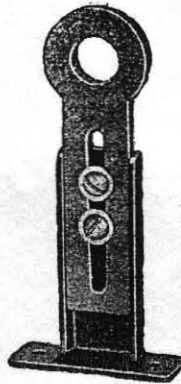
3 turns 1/6d. 5 turns 1/7d.
4 " 1/6d. 6 " 1/8d.
" 8 turns 1/10d.
Cat. No. 1020

MIDGET CONDENSER



Soldered brass vanes. DL-9 insulation. Ideal for balancing, trimming, band-spreading purposes.
3-65 m. mfd. Cat. No. 1013.
Price 4/3d.

INSULATED ADJUSTABLE BRACKET AND EXTENSION OUTFIT

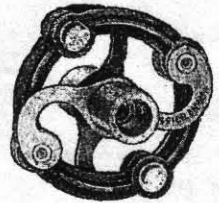


Cat. No. 1007. A strong bracket with the DL-9 insulating slide adjustable from 2½" to 3½" centres. Price 1s. 6d.

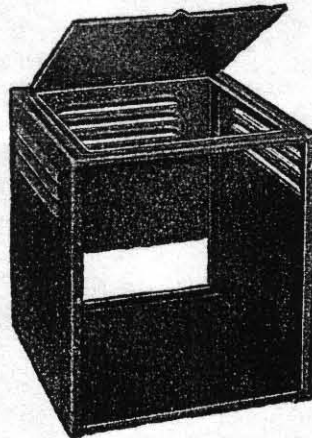
Cat. No. 1008. Extension outfit comprising 4" paxolin tube with 3" brass spindle and panel bush and nut.
Price 1s. 3d.

FLEXIBLE COUPLER

Completely flexible but free from backlash. DL-9 insulation.
Cat. No. 1009 Price 1s. 6d.



WELDED STEEL CABINETS



A smart cabinet rigidly made and well finished. Complete with front panel. 9½" back to front, 9½" high. Cat. No. 1033, 8½" wide. Price 15/6d.
Cat. No. 1034, 17" wide. Price 25/-

**OLYMPIA
STAND 30**

EDDYSTONE
SHORT-WAVE COMPONENTS

STRATTON & CO., LTD.,
Broomsgrave St., BIRMINGHAM.

London Service Dept.:
Webb's Radio Stores, 14, Soho Street,
Oxford Street, W.1.

- Correction -

Jim McGowan wants it to be known that his correct callsign is M1 CUC and not M1 CVC as was on his mailing label for EUG. This has been corrected on the database for you Jim and for any of your pals who read this - they know too. Have some fun on the air and, hey ! why not go for all valve gear, with an Eddystone Rx OF COURSE.

- - - -

-A 750 Clone -

At the last BVWS swopmeet at Harpendon Jim saw a rather sorry looking MIMCO 2232 receiver for sale.

For those who do not know this set it is an S.750/2 and came out badged as the above MIMCO model or as a Marconi Co model HR100. None were ever badged as 750/2 or sold as such.

- - - -

- A Tale of Two 840Cs -

Graeme has taken on the repair of Ron's 840C, and is beginning to wish he had not so done.

With both sets powered by the same 115v isolation transfo and both fed the same IF signal from the same sig gene. The IF stages in Ron's 840C are clipping the signal, the signal on Graeme's 840C is perfectly sine waved. All voltages check out, but it is evident there is some non-linearity present at some point in the IF stage. BUT WHERE ! this way lies madness. HELP.

- The pong of Vinegar -

Andrew recalls, anent the comments on bathroom sealants. Ask any satellite Tv installer and he will tell you to steer clear of any sealant that smells of vinegar as the acetic acid content will rapidly consume any copper in the area.

Furthermore Andrew says that the best sealant is self-amalgamating tape which must be stretched slightly as it is wound onto the joint.

On top of the Western Pennines at 850 feet ASL and in winter temperatures even this self-amalgamating tape does tend to crack and let in the moisture - as I know to my cost. Ted

- - - -

- A Tendency to Howl -

I get this myself sometimes Jim ! But seriously though any howling is due to feedback somewhere in the circuit. For it to be happening on several of your receivers, all Eddystone too, well I am stumped. Can it be that some external signal,

sufficiently strong, is being picked up in these receivers ?

I would very much like to know just what you come up with as the cause - eventually. Ted.

- - - -

- Statistics and all that -

Just a short note from Bill in Anglesey to the effect that more EUGers come from Wales than from any other part of the UK simply because they know good products when they see them.

Are you expecting something apart from a mention for that unsolicited comment Bill ?

- - - -

- That 3-in-1 Oil -

From Ross Paton in N.Z (!) the comment again re not using 3-in-1 oil as it has vegetable oil mixed in with it and sewing machine mechanics just hate having to service machines which have been lubricated with this. He says that if you look at any kitchen pot or pan you will see the goo that vegetable oil leaves behind. Thanks Ross.

- - - -

- MEMBERS FREE ADVERTS -

STILL Wanted, models 960, 890, and 930. Have for for sale or swop a mint EC10 MkII with battery box - £95. Contact Peter Lepino on 01372-454381 or 0374-128170 (Surrey) anytime.

For Sale, An Eddystone 640 with S meter, manual and folder of EUG newsletters. Good condition at £60. Call Bob on 01296-738029 (Bucks), Buyer to inspect and collect please.

For Sale, ex Silent Key, S.640 in excellent external conditon but needs some TLC. Works okay but may need a tweak or two. Yours for £40. Call Jim, M1 CUC, 01708-340304.

WANTED, do you have a copy of the original owners booklet for either the 680, 750, or 940 ? This is the open out one which has servicing info plus the full schematic ? Please write to Ted c/o N/L, thanks.

ENDIT ENDIT ENDIT

That is IT - - a real BIGGY this time so enjoy it. If there are any errors/omissions blame me. 73 Ted.