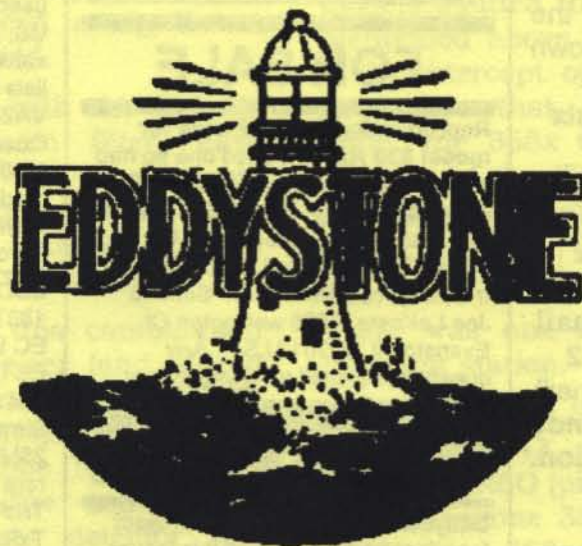


Lighthouse

Founded 1990

**The Magazine of the
Eddystone User Group**

Issue 72, April 2002



**This Trademark was filed 11th February
1925**

**Who says Eddystone Radio started
in 1922, or 1923, or 1924!**

EDDYSTONE USER GROUP

A non-profit-making
group for Eddystone
Radio Enthusiasts
Founded in 1990 by
Ted Moore
Issue 72. April 2002

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Editorial, Layout and
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Computer Consultant
Simon Robinson
M5POO
simon@nomis.co.uk

FOR SALE

Reproduction Finger Plates for model 830 Rx. I needed one so had several made. See picture at www.qsl.net/k9ly Price US\$30 or UK £20. Payment by check from US buyers or by cash in US\$ or UK£ from buyers outside U.S. Send to Joe LeKosta, 3525 wellington Ct., Evanston IL 60201 U.S.A. Any questions? E-mail to k9ly@arrl.net



Eddystone 1650/6 rebuild project (see feature on P of this Issue) Unconverted models about £250, plus conversion costs. Call Geoff MØBGS for full details (Leeds) 0113 269 6527.

KENWOOD/TRIO 1000 comms Rx, matching spkr, G.W.O., Ex Condx, manual, £180 ono. Call 0771 846 4570

EC958 £190 ono, or exchange for something interesting. Call Wally on 01978 262855 (Wrexham)

EB37, not working, no psu, but cosmetically not bad and fairly rare. £50. Anthony 01686 630255

Eddystone 830/7, £220 ono. Front panel unmarked, few scratches on top. Working. (Continued in next column)

Call Norman Rackham 01908 2627069 (Milton Keynes) or E-mail norman.rackham@btinternet.com

Pye tabletop mains radio, c.1950

Wood veneer, LW/MW/SW, working, fair ext condx. £25. Eddystone EB35, excellent condx with Eddystone mains psu and full installation data, cct. etc., £55.

BARTG R5 AF filter kit part assembled, incl chips, data, £15.

VINTAGE books: Short Wave Listening (Jim Vastenhound, 1966) £10. A Course in Radio

Fundamentals (ARRL, 1960) £10.

Radio Handbook Supplement (RSGB 1945) £15.

Call RichardG4ICP (not QTHR) 01376 554628 (Essex) E-mail richard.witney@virgin.net

Eddystone S.556 (first post-war model 1946) GWO £65. Buyer inspect and collect or pay carriage. Mervyn Pascoe (Cornwall) 01209 860548

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EDDYSTONE 40A £50, no lid.

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Trio TS700S 2m base multimode TxRx £200.

All RXs must be collected except 2 metre and EC 10.

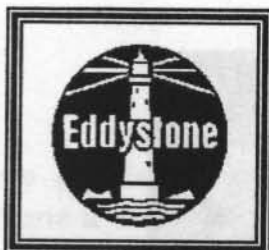
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EDDYSTONE 990R prefer table top model (or table rack cabinet) Condx must be V Good, must work 100% (or close). Top Price paid & will collect anywhere in UK. Call Phil Sewell, 01686 62 63 85, mobile 07710 69 19 61.

Or E-mail at super90@btinternet.com

ONE KNOB REQUIRED, as used for Tuning and Incremental controls of Eddystone 830. Light and dark grey, 1-1/2" dia. Knob, and 1-11/16" dia skirt. Contact Joe LeKosta, 2525 Wellington Ct., Evanston IL 60201 USA or e-mail k9ly@arrl.net



LIGHTHOUSE

APRIL 2002

ISSUE 72

As I write this, two events have happened each of which signifies the end of an era. Yesterday the Queen Mother died which, given that she was a 101, would not have come as a surprise and certainly by the amount of programming devoted to her it was certainly expected. The other event, which by contrast has gone un-announced, has been the death of Eddystone Radio as a Birmingham company.

A couple of weeks ago a chance phone call to the factory ascertained that they had gone out of business and that the use of the Eddystone name and broadcast intellectual property rights and stock had been sold to SBS.

SBS is a small radio broadcast manufacturer situated in Hastings, and with which Eddystone had been working for some years. The receiver side of the business is in abeyance and may not be resurrected.

Apparently Megahertz Communications, the owner of Eddystone, has also gone into administration. Thus, in the space of two weeks, we see two dear old ladies who have given pleasure to many for almost a century disappear from our lives. As for the people employed by Eddystone, some will have been offered positions at SBS, but given that Hastings is so far away it will be a difficult one to call.

I am sure I speak for us all when we express our deep regret at what has happened and only hope that they can find employment elsewhere in the Midlands. This year's Eddystone "get together" at Stan Carney's will be a significant event.

In recognition of the passing of our grand old lady, I will be putting on a G6SL Special Event station on the first weekend in July. Listen out for us /P on 80m/40m and possibly 2m between 4pm and 10pm Saturday July 6th and

8am and 3pm on July 7th. A special QSL card will be available for all stations worked and all EUG SWL reports.

I look forward to seeing many of you at this year's Vintage Fair which is on Sunday 5th May at the NEC, B'ham. I have made some progress in my quest to acquire receivers from my past with the R208, AR88 and HRO sorted. Just the RA17 to find next.

I have been preparing my talk to the Bromsgrove ARS on "Eddystone Radio - the early years". The EUG Newsletter is an absolute mine of information and I have invested in the CD ROM sets that David Oakden G3UFO/VK6DJO produces. Very well worth it if you want to do research on the company.

Finding out just what were the first things Stratton and Laughton made in the years 1922-1925 is proving difficult and it is times like this that I wish I had easy access to the archives we produced at Eddystone.

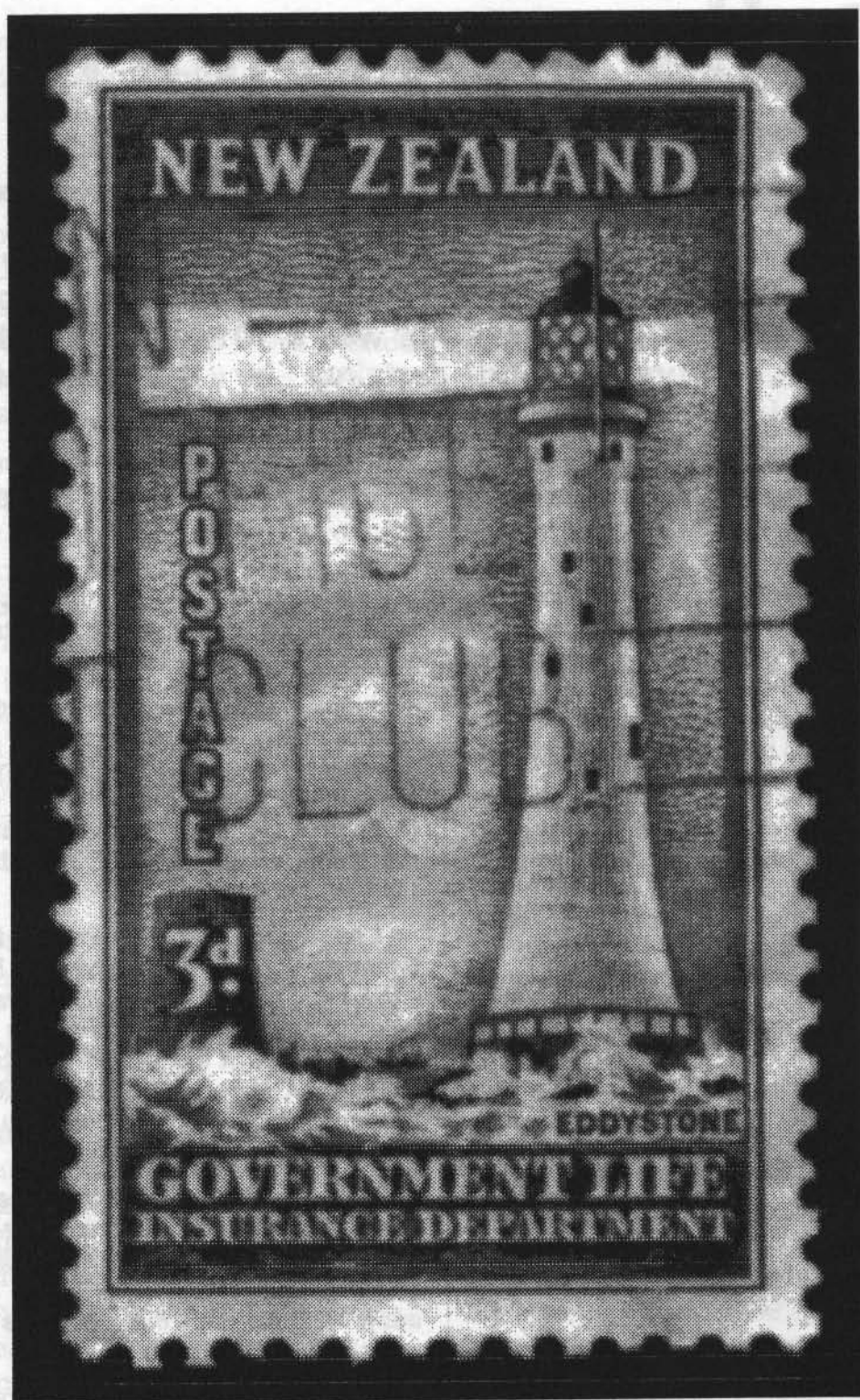
They are now in Chelmsford and are the subject of another debate that I hope to be able to write about in the next issue.

Enjoy your read, all the very best and see you at the Vintage Fair (and hopefully On the Air.)

My best 73's

Chris Pettitt - GØEYO

Patron (gøeyo@blueyonder.co.uk)



I have reached the point in my association with EUG where I am no longer surprised at "Eddystone" appearing anywhere. But I must admit that this pre-decimal postage stamp sent to us from ZL-land by Bryan Marsh in Auckland was an eye-opener. Note how the "3d." is super'd on Smeaton's Stump. I wonder what year it is? Come on, you Stanley Gibbons fans! The colour is purple with some green in the centre and it is $1\frac{3}{8}$ inches high. Thank you Bryan, we hope you're recovering well.

Graeme G3GG1

NOW IT CAN BE TOLD

IF YOU EVER WORKED G7DOG ON TWO METRES AND WONDERED WHY THE VOICE WAS SO GRUFF, THE SECRET HAS NOW BEEN REVEALED BY THE HOME OFFICE. IT IS ONE OF THOSE STORIES YOU JUST CAN'T BELIEVE... AND YET?

BY GRAEME WORMALD G3GGL

Many of you will recall the BIG Change in the Home Office Amateur Radio Licence when the examining body, the City & Guilds of London Institute, changed over from the 'essay' type of examination paper to the 'multi-choice' variety.

It coincided with the rise in illegal CB activity, which culminated in the introduction of a legal CB service in Britain, over twenty years ago. Many would-be operators who had shied away from the 'essay' paper went first into CB and then into Class B (no Morse, VHF-only) amateur licences.

The ham population of Britain rocketed overnight and not a few prosecutions took place for impersonation in the examination room.

It was shortly after this, around the mid-1980s, when I was talking to an old ham friend, G3DLN. Eric had been a Yeoman of Signals in the RN during the War and got his ticket in 1947 on the exemption clause. No tests, just apply. He got it for the asking.

But he was a bit scathing about the new arrangements and made some uncalled-for remarks about the newer hams. "A well-trained monkey could pass the C & G nowadays" he grumbled. Quite unfair, of course, but it sowed the seeds of uncertainty in my mind.

It so happened that I had recently acquired an Irish Red Setter bitch from the famous Chipperfield circus family. I know that a certain amount of controversy was stirred up some time ago by one member of the family, but my link was with the Yorkshire branch.

My connection there had specialised for a lifetime in training intelligent canines to speak simple words. One of her suc-

cesses was the cross-bred Jack Russell terrier which won fame (and not a little fortune) on television by walking around and asking for 'Sausages!' Remember?

But she had progressed much further with my Red Setter. Several dozen words and short phrases were now in her repertoire. Could she be trained to call "CQ Two" and then reply "You're twenty over nine in Bewdley"?

The answer was a resounding "Yes", and the devious side of my nature swung into action. To cut a long story short I sat the C & G in her name . . . We had to wait about two months for the callsign but when it arrived she'd already learned to say "Fine Business" and "See you further down the log".



For about three months she kept Two Metres humming with her husky voice and rapid rubber-stamp contacts. In fact, there were one or two pileups at the weekends. She had to use the TS-700 on vox, of course. She never could master the pressel switch on the mike.

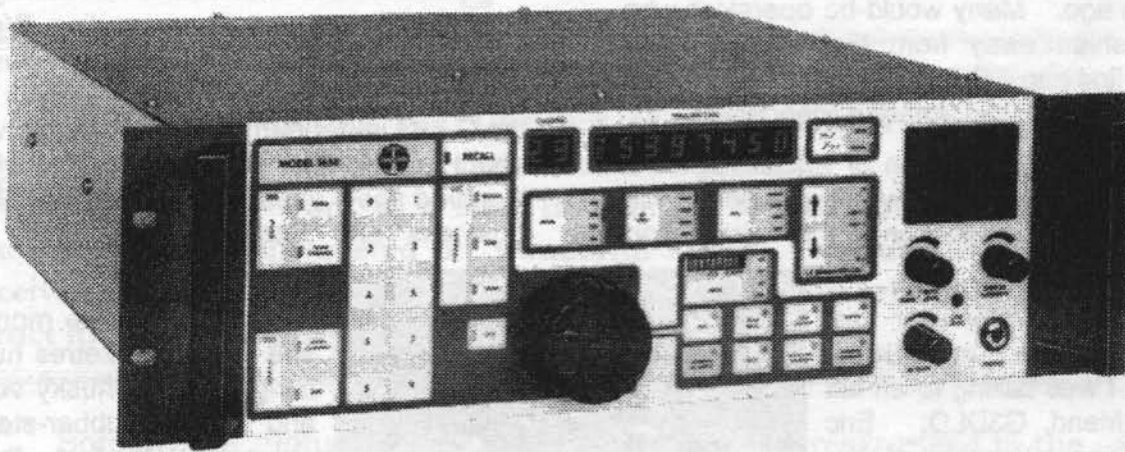
Unfortunately her downfall (and mine too, come to that) happened one Bank Holiday weekend when a ham holiday-maker came round for a chat. As he walked up the drive he was greeted by a bounding Setter and a husky "Hello, blue eyes! You're five and nine here in Bewdley," and the secret was out.

Of course, the Home Office hushed it up and slapped a 'D-notice' on the Press. No way could it be revealed that Her Britannic Majesty's Secretary of State for Home Affairs had granted a transmitting licence to a Red Setter!

Until now, that is, when it was released under the April Agreement. ★

Top Secret

Members may recall that in the late '90s a flurry of excitement was caused by the release of a batch of Eddystone 1650/6 receivers, specially built for GCHQ, and technically still on the secret list. They had one distinctive feature; unlike the 1650 shown below, they had no tuning knobs! Ever wondered what happened about them? Read on.



The 1650 Re-homing Project

By Geoff Steedman MØBGS

Two large, hungry-looking Alsatians growled a warning as I lifted the corner of the tarpaulin. I felt suddenly dizzy as my eyes feasted on two pallets stacked high with gleaming, pristine Eddystone 1650 receivers. What possible use could these mean, slaving wolves have for such treasures? Desmond Morris would have told me that, after four years, the dogs considered them part of their pack. Anyone trying to remove them would be risking life and limb if they didn't treat them right.

Admittedly, the 1650/6, as it stands, has gained the reputation of being no use to man nor beast. How the Government fits in with that analysis must be another story. They had quite a lot of them built in 1988, and most of them seemed to have ended up here.

I had already spent too much money, hurt pride, and about two years intensive study on my own 1650/6 to just see them as so much scrap, so I asked Graeme if I could describe how to convert them into something useful.

It may not look much like the battleship style Eddystones we all know and love, but the 1650 model does represent an important landmark in Eddystone development, being the first of their receivers to employ the dreaded microprocessor. It seems tragic to let them sit there unwanted when they are certainly capable of being converted into very useful communications receivers.

I remember that when I looked inside my original impulse-purchased 1650/6 model, I was horribly disappointed. No memories, hardly any panel LEDs, two IF-centred filters, no spin-tune, and a very odd 5kHz product detector output. It appeared that, true to form, I'd bought another "lemon".

It was obviously designed for remote control in some sort of FSK application, which is how I used it for a year or so - it was very good for weather maps but not much else. Rather than admit my mistake, I eventually set about trying to make a 'goer' of it.

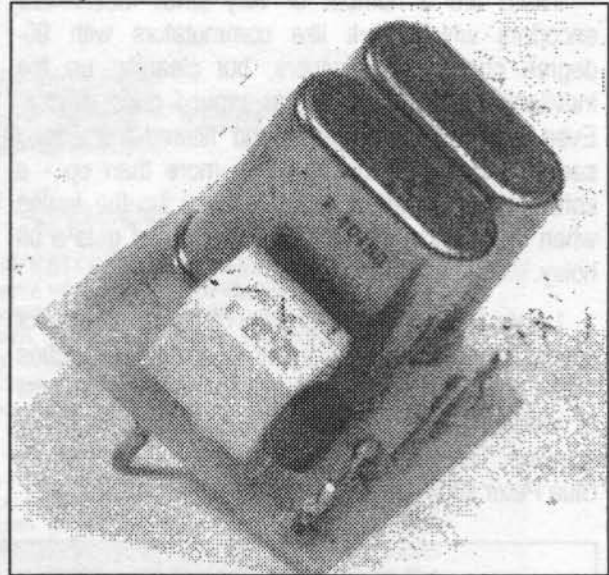
On the plus side, the RF/1F/AF stages and 10kHz-30MHz tuning range, in 5Hz steps, were much the same as the full-spec receiver, and, hooray, the spin-tune circuits were still in place (for "testing purposes only"). The front panel board was as standard, and only needed one display driver IC and a lot of LEDs replacing, together with the software to make them work.

I was a bit surprised when I fitted the channel number (7-seg) displays but couldn't get them to work, until I realised I was trying to look through 1/8th inch steel plate - the panel was not punched out behind the channel window artwork on the membrane! Just another little probl... er... solution to find. (Think Positive)

The key to making the receiver work on SSB was to replace the 1405 kHz product detector crystal with a relay-switched crystal module (having discovered after some experimentation that this was not a good place for diode switching!). This was soldered in place of the original crystal, putting the carrier insertion back on either side of the 3kHz filter (see photo).

Finding a source for specially manufactured 1.4 MHz crystals was the most difficult part of the whole job. QSL were able to help, with a bit of persuasion, but I had to buy six sets. Altruism was only one of my reasons for trying to get a few more people interested! I started with 1401.5 and 1398.5, which worked fine, but after a suggestion from USA settled on 1.8kHz offset which I was assured was more correct. (It just takes a few more microseconds to slew the synth offset to the right spot. No one will

notice.)



SWITCHED CRYSTAL MODULE FOR PRODUCT DETECTOR CARRIER INSERT.

So now we have a great SSB receiver, filters a mite wide but quite acceptable, but the displayed frequency is not quite right. If you can live with that, well and good, but as a computer programmer from the pre-PC era, I decided to unravel the EPROM software so I could nudge the synthesiser by the same amount as the carrier oscillator offset, without changing the displayed frequency.

Ignore this bit if it upsets you, but I also managed to restore the memory functions and channel scanning, as well as reassigning mode selection and a few other front panel keys which had gone missing in the /6 version.

All of which took about two years, on and off (Some of you will have gathered by now that this is not a traditional Eddystone with valves and cog wheels.)

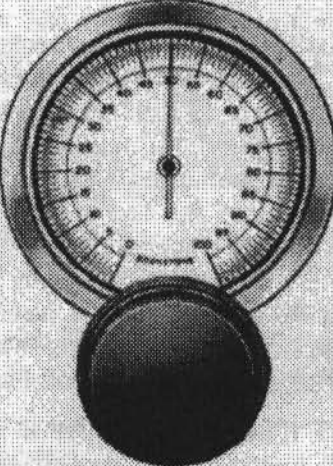
Keyboard input of frequency is one of the famous "bells and whistles" which have been added to amateur receivers in the past few years, but they have always had tuning knobs. The 1650/6 is just the opposite, and you don't half miss a twiddler when it's not there!

The model /2 and later had a special up-down encoder hidden in the tuning knob, "which we 'ave not got", and there is very little space to fit any of the commercially available optical encoders behind the front panel. (About 8mm. thick, if anyone wants to prove me wrong - please!)

The original advert for the 'Full Vision Dial' is featured below.

EDDYSTONE

Improved Dual Speed Dial



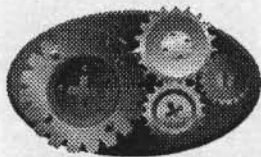
The new "EDDYSTONE" full vision dual speed dial has many features which appeal to the critical constructor. The movement is superbly silky in action without backlash on both the 20-1 and the 100-1 speeds. For high frequency work the movement is specially designed to eliminate noise. The open vision scale is clearly readable and divided into 100 graduations. Half division marking ensures accurate settings of the indicator pointer. The readings are arranged to increase as the frequency increases, which is in keeping with modern practice. The movement can be mounted from panel or baseboard. The dial face fits on the front of the panel so that no large panel gap has to be cut unless it is desired to illuminate the scale from the back. The dial can be used on panels up to $\frac{1}{4}$ " thick and takes the standard $\frac{1}{8}$ " spindle, and is beautifully finished in oxidised silver relief.

CAT. No. 1070. Code DUALX. Price .. **10/6**

In the next issue I shall be featuring an odd beastie which was obtained from an auction on Ebay (the Internet). By that time the NVCF at the NEC will have been and gone; what may turn up there is anyone's guess!

Just before I sign off, a friend in Nottingham has two Eddystones in need of TLC. They are a 740 and a 656/670. If you are interested please get in touch. (phone 01434 633913 or e-mail simon@nomis.co.uk)

73 de Simon M5POO



EDDYSTONE GEAR TEETH

Good news for those who missed the boat on the last batch of replacement cogs, I now have some more available. The bad news is that I seem to have lost the list of those who ordered too late last time, so please would those members re-order.

For the benefit of new members or any who have forgotten what this is all about, these cogs are replacements for the damaged teeth section of

etc. but the tuning gears on the later sets seem to be made of better material than the brittle plastic of the earlier gears. The teeth usually get broken when the tuning drive cord breaks and gets between the cogs, you continue turning the tuning knob without realising.

Note that the Delrin repair section replaces only the damaged part of the cog and is not the whole gear, what you have to do is carefully cut off the chewed-up section (about 5mm length) and superglue on the new section – full instructions are included. It's a fiddly job but should be well within the capabilities of most EUGers.

To order, please send an s.a.e. and either cheque or cash, £3 for one cog or £5 for a pair to:

A.J. Richards, GW4RYK, Castell Forwyn, Abermule, Montgomery, SY15 6JH. U.K.

Foreign notes are quite acceptable but *not* foreign cheques due to bank charges which will

a very steady hand and a jewellers eyepiece, so that it may be replaced invisibly later.

I did try just cutting three sides and rolling back the plastic film, but (you guessed it) I got a permanent kink when I put it back. Then I tried to smooth it out with a moderate iron through paper, and the plastic turned out to be the sort which shrinks rapidly when it exceeds a certain temperature. It pains me to go on with this horror story.

Inspired by the success of the basic conversion, and emboldened by my now comprehensive knowledge of the computer program, I decided to add a new mode: AM should be easy - just fit a diode detector and switch it in place of the product detector...

I used the same little relay-switching PCB as for the crystal switch and fitted it in the blank space on the special /6 IF/AF board where I supposed the original AM circuit would have been. It worked fine, and then a 1650 convert in America e-mailed me and asked why I didn't use the spare output pin on the AM/AGC IC, which had provided this mode originally? (There was a sound effect here in the script of Geoff kicking himself around the shack - you will have to use your imagination).

If it's not difficult, it's probably not worth doing, as I tell the American stations struggling to copy my 80 metre QRP signals with their huge aeriels. They don't often see the point - can't think why... .Perhaps they need a 1650?

Anyway, Colin sent me a copy of the 1650/2 AM circuit and I did a new PCB to duplicate it, restored the control signals and software, and bingo, the 8kHz filter has found a new lease of life winking out DX broadcasts. It usually sits there in the shack churning out our local "Magic 828" which I could equally well source with a crystal set, but they don't often come with loads of coloured lights and digital displays. Nuts need sledgehammers!

The only other replacement/add-on so far has been the 0-10-20 dB switched attenuator. I had arranged for the LEDs on the front panel to cycle round when the buttons were pressed, but until recently it was just for "future expansion".

The future has come and gone (shock) and there is yet another stick-on PCB in place of the original 3dB pad, which had been disabled in any case. There is 55dB of RF auto/manual attenuation anyway, but the extra, ahead of the RF amplifier, may help the

otherwise superb performance when operating near to very strong signals.

People keep asking me if I have sorted out a remote control program yet, including a chap in the States who wants to set a 1650 up on an antenna farm ten miles from his home in the city! I'll get round to it eventually, but at the moment I am studying DSP programming with a view to doing interesting things with demodulation and filtering.

It doesn't quite fit with the philosophy of "ethical restoration" which I have tried to apply so far to the 1650, but the /6 does have a buffered 100kHz IF output crying out for something to be connected to it. There is also a gaping hole where the sadly rare preselector would be if I could get one, so there is a lot of space for expansion.

One of the solutions for remote control would be to include a small board there to convert simple input commands from a PC into the synchronous control strings which this model uses. Smacks rather of perversity to spend so much time changing a remote Rx to local control, and then more time to make it work remotely again. But I still treasure fond memories of the day I rang up my Marconi RX from work, copied a Navtex warning from Netherlands Coastguard about a mine floating off the Dutch coast, then switched mode and frequency to obtain toothbrush factory production statistics from the Beijing news agency teletype. Gripping stuff, eh?

I have so far produced a few kits and modified a couple of sets, more or less at cost, for a few keen EUGers. The electronic mods are fairly easy using basic if sometimes tiny components. I would be happy to source PCBs and software if you want to build from scratch, and I still have one or two sets of crystals left.

I'm sure the dogs can look after themselves, but I would really like to find good homes for all those superb receivers. Let me know if you are interested.

Geoff Steedman MØBGS (in the Callbook)
or e-mail 100664.3417@CompuServe.com

**SEE ALSO GEOFF'S
ANNOUNCEMENT IN
THE "FOR SALE"
COLUMN ON PAGE
TWO . . .** ★

Ted's MailBox

A review of Mail and Happenings
by Ted Moore, Founder of EUG

Read the Label

Having been corresponding with an EUGer recently we eventually got around to electrolytics. His beef was that even in a batch of new e'lytics he had bought from a well known catalogue company he had been unable to find any which were 'spot-on' on the Capacity range of his new 'all bells and whistles' multimeter.

It was some time before I caught on to his problem. Then I carefully suggested that he read the labels on his condensers. A plus or minus of 20% is about the norm for these components, maybe even up to 50% in some cases.

Had he read this? No of course not! Now everything began to fall into place and he was much less irate. It really does pay to read such labels. Incidentally, electrolytics are meant run with some DC polarising voltage across them, honest! The same goes for mechanical relays but who knows that?

Back in my early GPO Engineering days it was well known that relay contacts which carried low level speech currents needed to be 'wetted' for good reliable use by passing a very low DC current through the contacts. Many circuits today which utilise mechanical relays seem to ignore this dictum. Same goes for diodes.

Nostalgia Trips

I recently took a week's holiday in London, it was not meant to be a 'buying trip' although I did get a few unexpected goodies to bring back.

My nostalgia was for the late '50s & early '60s period when I spent some time there, being friendly with Christine and Mandy and others - need I elaborate? It was also a time when Government Surplus was still plentiful.

What a shock to the constitution! Sure some areas and actual shops were still identifiable but other areas appeared never to have existed. So true what they say "You cannot go back".

One Lyons Coffee Bar had metamorphosed into the entrance to a ginormous block of offices, all vacant and for many years by the look of it.

Anyway back to the unexpected goodies. I found a spotless, really as new, 840A owners manual which cost me a whole 75p. Then from a little back street shop I found an Eddystone diecast speaker which had been tarted up in cream paint which has come off completely after a soak in white spirit over the weekend.

At the same place I got a whole box of miscellaneous knobs, some 50 of them. At £2.50 not bad when I consider that there are at least 20 Eddystone knobs in there.

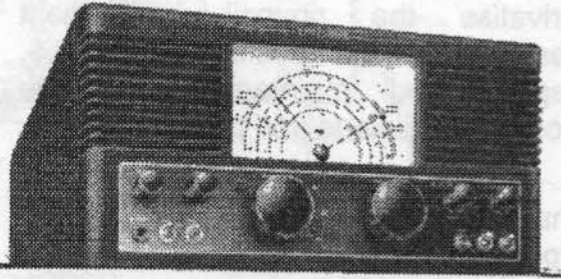
Another find was a pair of A.M headphones of circa 1945, high impedance too. I did not come back with any alien 'oldies' to inf lame the passions of those ultra EUGers but did buy myself a 'handy scanner' to while away the two mile walks to and from the bus stop to the shop.

No more holidays now until next month so I shall be able to get on with

my Lighthouse contribution and answering the mail which has accrued whilst I have been gallivanting about.

My Latest Acquisition

A 640 no less ! For Thirty Pounds ! It was horribly filthy both inside and out and had a cracked scale glass but underneath the grime it appeared to be sound enough, well at least nothing was missing.



The chap who sold it to me does house clearances for a nearby business and having had several conversations with him he did have some idea of what I was looking for.

I had bought a small Phulco table model from him for Ten Pounds recently and so he came straight to me. Just the 640, none of the usual ancillaries such as a speaker or phones and the set had certainly not seen the light of day for many a year.

Thick solidified layers of dust all over the outside and as already mentioned the cracked glass gave a foretaste of what to expect inside. It was simply a repeat of the outer surface, chassis and all components on the top of the chassis were liberally coated with the same solid muck and there was a plus of several spiders webs and many dead insects.

The Hoover made short work of the loose stuff and a brush helped to loosen some of the muck but it really only began to move with the help of a liberal dose of white spirits brushed on, left for a half hour and then brushed off again.

Beneath the muck everything was remarkably original, proving my oft

quoted theory that a layer of muck helps preserve old radios.

The underchassis was not too dirty and after a whole morning spent on cleaning, the 640 was beginning to look more as it should do. Since the glass is still pretty solid, despite the crack, it has been left in situ to protect the scale whilst another piece is sourced and more importantly whilst the set is 'played with'.

Power was applied initially with a meter across the electrolytics but after a few minutes the HT rose to well within the specified limits and nothing untoward seemed to be happening, the bench speaker gave out the normal noise and so an aerial was connected.

Lots of signals on all ranges and all appeared to work so the set was left to 'soak' for an hour whilst I did some other chores - well within range should the need arise for a swift switch off.

After the soak a few basic tests were done to establish the stage voltages as being okay, and then a quick calibration test was done with an aged but very good Advance Signal Generator (Tnx John). There was some discrepancy on the Range 1 HF end but this is par for the course with most of the older valve sets nowadays.

No other work has been done and the set gets a daily 'power up' session when it is left on a signal for a couple of hours to check its stability. No problems there so far but it has been noticed that the BFO will need re-calibrating.

For Thirty Pounds I most certainly shall not be complaining if a couple of valves are eventually needed before the 640 is removed from the bench.

Aerials, again

A letter from one correspondent who tells me that having bought and installed a vertical whip touted as

being suitable for general Short Wave use he finds that he gets better signals from a mere two metres of wire connected to the back of his receiver.

I have always been of the opinion that in many ways the 'Oldies' had it right. Back in days of yore no household felt complete without its hundred odd feet of aerial wire connected to the domestic wireless receiver.

And look at all those long lengths of copper wire that such as Marconi put up, high up in the air. They must have all known something.

My thesis is that plenty of copper as high up as possible is best, none of your fancy short and supposedly 'all-band' aerials can match this. GGL's random loop is proof of the pudding.

My present QTH, when I am here, is pretty good and I am about 27 metres ASL with my aerial wire another five metres above ground. I get pretty good results from my 60 odd feet of random wire and I also have a two foot square tuned loop for MW and Navtex use.

Being within 'spitting' distance of the North Sea I have good take off to the South and East. I just do not get as much time as I would like for listening.

Imperial versus Metric

I am forever coming across appliances which come in for repair with mixed up imperial and metric threaded screws and nuts. Okay, most folk cannot recognise one thread from the other but to continue tightening up a nut when it is immediately obvious that there is a mismatch of the screw and nut threads is needless. The next guy who gets the appliance to fix has to then replace both screw and nut to repair the damage.

I have been lucky in acquiring the former owner's box of BA brass nuts and screws ranging from 0 BA down to

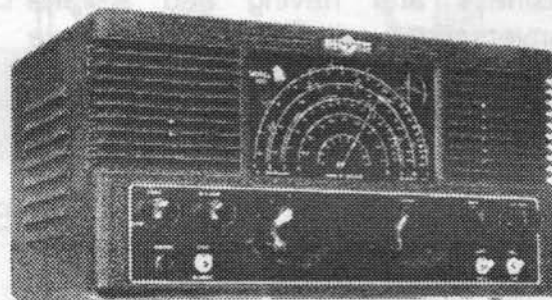
6 BA and all neatly compartmented, this is something I shall treasure and make good use of.

A Demobbed 740

Bit late in time for this but here is the tale. Steven works for a local authority in the North East and his job involves stocktaking in various departments.

Recently the decision was made to privatise the council department responsible for public works, i.e. repairs and maintenance of the council's buildings and properties.

Prior to this it had been suggested that a whole load of stuff was clogging up much needed space and that it should all be binned, Steven got this job.



A mountain of unwanted office furniture and equipment was destined for the skip enroute to the tip and he was supervising the removal of all of this junk when he came across the box containing this 740, an original Strattons/Eddystone box and packing.

Also with it came a roll of Woolworths best plastic covered aerial wire. Questions around about to long-serving employees brought out that this was destined for use in any emergency involving Civil Defence, he took this to mean War.

Permission was granted for Steven to keep this 740 from the tip and he now has it installed at home for his own SWL pleasure, even using the 100 feet of aerial wire now running across and down his back garden.

The set is without a doubt in new and unused condition and when powered up came on without any kind of a problem, although Steven has since learnt that he ought to have given it some kind of a 'soft-start' to help out the poor electrolytics.

They do not appear to have suffered though and as he wrote to me he had it 'burbling' away in the background with programmes from a German music station.

AFN on VHF

I think it was about eighteen months back that I mentioned my being able to hear a signal which was the re-broadcast programming of the American Forces Network from Germany.

Several EUGers wrote in to say that they too were able to pick this up and we 'guessed' at it being transmitted from somewhere in the Newmarket area, we never did find out for sure though.

I now have information from an EUGer, Dave, that he can regularly listen to AFN on 87.65 Mc/s whilst visiting in the Norwich area.

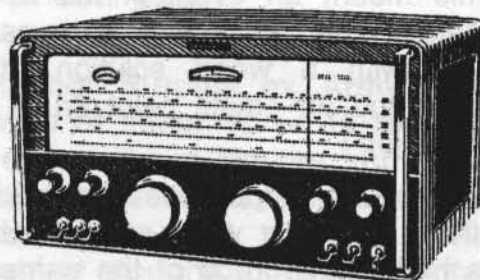
He can hear it well on his car radio but there is no RDS ID transmitted with the signal. He first heard it whilst looking for a local station when visiting his parents home and has used a standard Philips ghetto blaster to listen to it - on mono not stereo. The programming is identical to that broadcast on the 873 kilocycles Medium wave outlet.

Can anybody help us out with this one please? Just curiosity really but it would be nice to know if it is an authorised transmission possibly from one of the remaining US units in the UK.

Stratton's Beehive Trimmers

A 940 purchased recently by Alan was very, VERY, deaf on all ranges

and before opening up to trace the cause for this problem Alan had written to me to ask for advice. I duly gave him some possible reasons for this all bands deafness but in the event neither Alan nor I were anywhere near correct in our thinking.



940 H.F communications receiver

With the set out on the table and the case removed it was turned upside down so that some voltages could be measured. All appeared to be okay, if not within the tolerances shown they were not far out.

Checks showed that the audio stages were fine and the same simple signal generator consisting of a two transistor multivibrator built into a 'highlighter' case was then used to verify the working of the IF stages.

This little signal generator is an invaluable aid as it produces about a one kilocycle audio signal, near enough a square wave. It also produces many harmonics ranging well up into the VHF regions. The IFs proven to be okay it was the turn of the RF stages.

Deaf as the proverbial doornail (what is a doornail and why is one always deaf — Ted) and so the cover was removed from the compartment containing the RF, Mixer and Oscillator coils. Little to see except just a few specks of white dust but that should have been THE important clue.

It turned out that all of the concentric trimmers had coatings of white oxide on the inner surface and

this was obviously causing short circuits and/or loss of capacity. Funnily there was very little oxidation to be seen on the outside of the beehive trimmers, only the insides.

Of course they all had to have the top movable bits removed for cleaning and this meant an eventual full re-alignment. The white 'stuff' was removed with a weak solution of detergent and an artists paint brush, but what a job!

The removable tops went for a soak in a bowl of soapy water, the fixed halves had a few drops of the same liquid dripped in with a syringe. After several hours the brush was used and all the aluminium came up nice and shiny.

Whilst doing the job liberal use was made of bits of tissue placed in and around the tuning compartment and afterwards the whole set and the bits went into the XYLs airing cupboard for a week.

Alan did not attempt re-alignment, instead the whole set was delivered to Ted who kept it for a while, until he was satisfied with the result of his labours.

The 940 is now far from deaf, being very lively indeed and used to listen out on both the marine and aviation HF bands.

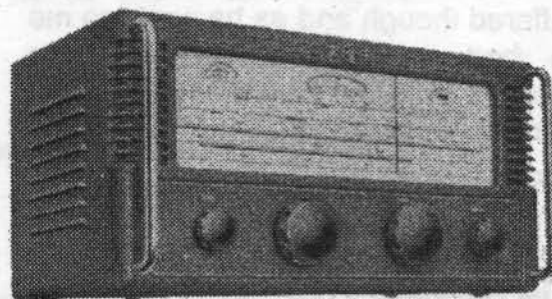
A Non-Standard 670A

The set in question was bought at a rally in Blackpool last year and has been in use ever since by Colin. No thought was given to its 'innards' until a friend pointed out that the magic eye tuning indicator was a bit indistinct.

Together Colin and his pal opened up the set to investigate the cause of this phenomenon, with thoughts such as a low emission tuning valve in mind.

It turned out to be a feed resistor which measured up in the region of Infinity, too high for the digital meter to

register anyway. With this replaced the tuning indicator came back to life, the value was found by obtaining a copy of the circuit diagram from a local amateur. Along with the circuit was an article from an old PW which depicted in colour the 670A.



Surprise, surprise, as the 670A they had been working on had an apparently non-standard scale plate. Yes it said 670A in the top left hand corner and all of the frequency markings corresponded but there were none of the band markings underlining the frequency figures, none of those red stripes indicating a broadcast band.

Going by the serial number on the set it dates from January of 1964 and so it may be that this is either one of those pre-production models or a very early production model.

It is a good receiver and being the only Eddystone in Alan's possession it gets a good thrashing most evenings and weekends, the lack of a BFO is no problem since the listening is always of foreign broadcast stations using but a short random wire up in the loft.

An Unusual Find

A recent car boot sale in the Midlands brought a very rare find for one EUGer, one very lucky EUGer.

On a stall having no connection with radio or electronics and amongst a pile of household bric-a-brac Tim discovered this pressed steel rectangular speaker case bearing the EDDYSTONE logo. Since he is a veteran of such sales he kept his

emotions to himself and haggled the £1.00 asking price down to 50 pence - a whole fifty pence

It proved to be the complete and only slightly scratched case for a 1960s Stratton catalogue number 899 speaker unit. Just the case since it contained no speaker unit at all, in a two tone grey finish and a coat of furniture polish brought up the colour nicely and Tim is 'real chuffed' with his find.

So far no speaker unit has been fitted and he is on the lookout for a 5 inch speaker with the original 3 ohms impedance, failing this he will have to fit a modern 4 ohms unit. This will not cause any problems when used with his 830/7 but as he says, the original or a near original type would be best.

Doublets ?

Some months back a letter from an EUGer arrived asking about 'doublet aerials' as mentioned so often in Eddystone literature. The literature often implies that due to their very nature local interference is largely balanced out in the two halves of the aerial and feedlines.

Now after several months of use the writer has only praise for his home grown doublet. Using flat twin mains lead he has a sixty foot long top section centre fed with a twenty foot length of the same twin lead.

A piece of plastic serves as the centre insulator and the joints are soldered and then encapsulated in resin. The lead-in comes into his upstairs room 'den' through a hole drilled in the glass window pane and sealed around with more resin.

A certain amount of local QRM used to be experienced from a nearby sodium vapour street light and other QRM apparently from a neighbours shop was often a nuisance on medium wave. In both instances the doublet appears to have considerably reduced

the pick up of this interference and our EUGer is very happy with his doublet aerial.

The EF50 (and 54) Valves

These high-gain valves had an enviable reputation in the late thirties and forties and many are still in use by amateurs in home-brew rigs.

A recent find at a club rally sale was of a box containing eight of the EF50 and three of the EF54 variety. All are new and boxed and when tested on a fellow club member's Avo Valve Tester they show up as in perfect order.

Plans are being made and there is much perusal of old magazines and the ESWM booklets for a suitable circuit to use for the construction of a receiver utilising at least some of these bright red valves. EUG will be kept informed we are promised as and when the project takes shape.

(NOTE FROM GRAEME:- The ESWM booklets of 1946 & 47 (Nos 5 & 6) only feature VHF converters & Rx's using these valves. Nothing for HF. But several EUG back numbers contain classic EF50 receiver projects.)

S.400 IF Frequency

Mea Culpa again ! I have been taken to task by Ian over the IF for the S.400 version of the S.358 series.

Ian states, quite correctly that it is in fact 110 kilocycles and that having owned and serviced his S.400 since the mid-fifties he can guarantee this information.

Incidentally he also states that his S.400 is reputed to have come off a trawler used in the North Sea for downed airmen rescue. His benefactor, from whom he got the set way back had salvaged the S.400 from the trawler when it was returned to 'civvy' use after the war.

Apparently the trawler set to sea

and just 'loitered' about when air operations were going on. When an SOS was heard they DFed it and set off to the site. So now we know.

Modded EC10s

For some reason this particular model seems to attract the attention of those who seek to do mods supposed to increase performance.

I have had a number of both the EC10 and the Mark II version which have had such unwelcome mods attempted, none were really effective and I have always removed the offending bits and put the set back to its former circuitry.

This time the mods were in two places, the first stage had been modified to take a silicon transistor type BC338 with disastrous results.

The other mod was in the AF stages and where some of the original resistors had apparently gone high in value other modern resistors had been simply bridged across the dud ones. Not much good when the new ones had completely different values. Also the 1.25 muffs electrolytic had been replaced with a 25 muffs (C75).

It took a while but the whole thing was tidied up and the pcb now looks more as it should do. The set was powered up and apart some fine tuning of the RF and mixer stages all was well.

I recall an EB35, similar circuit bar the output stage, which had been modified by the fitting of an LED tuning indicator.

There were a large number of cut tracks on the main pcb to permit this circuit to work and so when removing all evidence of the mod I ended up by bridging seven cut tracks with 22 swg tinned copper wire.

This same EB35 also had a small hole drilled in the top corner of the scale plate for the LED to stick

through. I ended up by smoothing the edges of the hole, sticking a small patch on the back of the scale plate with super-glue and then filling in the hole with Tippex, it was almost unnoticeable.

The Smoke Theory Revisited

A couple of years back in issue number 60 we had a theory by ANON which stated that it was really smoke which made all of our radio gear work. He proved his theory by pointing out that whenever smoke was seen to be escaping from a receiver, or similar piece of equipment, the item in question stopped working. QED, - letting smoke 'escape' caused the gear to cease working.

All sounds good doesn't it ? Anyway when Joe saw smoke coming from the back of his 820 FM tuner and it ceased to work he recalled this Newsletter item. Sure enough the smoke signalled a failed mains transformer.

Investigation showed that the transfo had failed because the electrolytic had failed, not because of a fault in the transfo itself.

A new condenser was easily sourced but finding a suitable mains transfo took some time. The 820 tuner is back working but this time a precaution has been taken, a 200 mA fuse has been soldered directly into the secondary output wiring of the transfo.

This simple precaution could save a lot of trouble if taken with most Eddystone models. It was done in the 750 model and think seriously about incorporating it into your Eddystone. Those rewinds cost a fortune !!!

Rustlers

Not the cattle robbers but rather those sets which develop rustling sounds, sometimes of a quasi continuous nature and at other times

simply when one or another control is operated. A recent repair job on a broadcast receiver of 1950s vintage had this paper rustling sound whenever the tuning control was turned.

Easy-peasy this one and a clean up job on the variable condenser using a vacuum cleaner and a long bristled artists brush soon removed all of the offending dust particles.

Some time back the same thing happened when the tone control was turned on an ancient Murphy. First thought was the tone control pot and this was liberally sprayed with switch cleaner.

A handy hole in the metal back of the pot helped and some was sprayed into the joint between the rotary spindle and the housing.

No good ! No difference at all and so further investigation was needed.

The only other component connected to this pot in the circuit — apart the AF output transfo — was the waxed paper-insulated condenser of 0.005 muffs. This was swapped for a new polyprop type and the problem was cured. Later testing of the offending condenser showed that its internal impedance changed according to the level of AF signal applied.

Now we have another, an Eddystone too. This was an 840A which developed the horrible rustling sound. It was always there from warm-up and no movement of controls made any difference to it.

Some of you may know what caused this as it used to be very common in broadcast sets. Go for the coupling condenser between the very high impedance anode circuit of the AF amplifier valve and the grid of the output valve.

This is usually of the mica variety and was so in this set. Not only was it

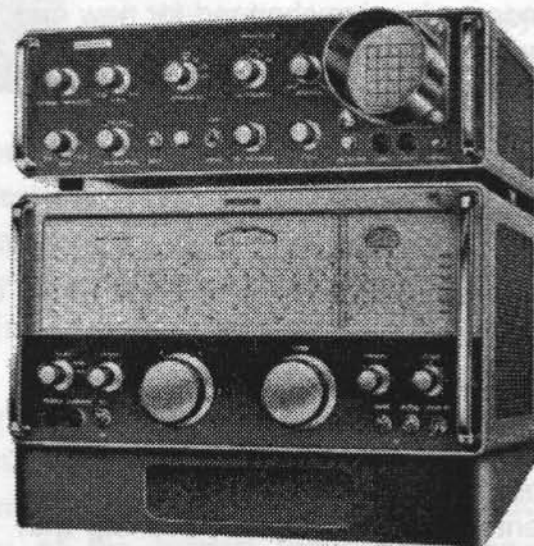
noisy in circuit but it appeared to be developing a low potential difference across its terminals. Even after having been left shorted out overnight on the bench it was possible to put a DVM across this mica condenser and measure some 20 to 30 millivolts.

How ? I do not really know or understand the how, or the why but it does happen.

Another source can be inside a faulty valve. Years ago I used equipment chock full of SP61s, high gain pentodes. It was usual to test these new SP61s on an AF test rig before installing them in the Repeater amplifier, a surprising number failed the 'noise test' and were returned for free replacement by the manufacturer, no questions asked.

EP17R Panadaptors

One EUGer was recently presented with two of this model panadaptor, both complete but not working. Since he has an S.770R in his collection he decided that at least one would have to be made to work.



Initial investigation showed him that in the first unit the extractor fan had burnt out and some components such as condensers had been heat damaged, wax running all over under the chassis. Also two valves were

proven to be U/S. The second EP17R had a badly stuffed up fan too but when cleaned out and lubricated it started running okay. HOORAY

Then further checks showed that a number of resistors and condensers had been swopped under the chassis, not all were of the correct value, or working voltage.

These were replaced with the correct components as per the schematic. Quite a bit of the wiring had insulation which whilst not fit to be condemned did look 'iffy'.

A whole lot was replaced especially in and around the power supply part of the chassis.

New filters for the fans were cut from a piece of filter paper supplied for use with Ventaxia fans and when fitted did not appear to change the operation of the fans, neither the original in the second unit nor the replacement fitted to the first unit.

When powered up the first unit showed wildly varying deflections on the crt tube and the four decoupling condensers were changed for new and more modern types. Apart from cleaning one of the adjustment pots this was all that was needed to have a fully functioning panadaptor.

There were still problems with the second unit and this was eventually traced to the sweep transformer which is in an aluminium casing.

A duff condenser inside the case was the cure here. Two of the pots for setting the trace position on the crt screen needed to be replaced eventually, no amount of cleaning with switch cleaner spray helped.

They were easily sourced and this second unit is also now working albeit with some valves which are below par. The best of all the valves went into the first unit, which is now in use with the 770R, and so the replacement of the

low emission valves in the second unit can await a surplus of pocket money.

Mains Transformers - & Voltages

Remember all the Hoo-haa over the change a couple of years back from 240 volts nominal back down to what we used to have, way back, 230 volts?

Well I was thinking about this whilst doing a repair to a nice old Philco radiogram for a customer. I think it must have been a late thirties model and it had the usual arrangement of 'four plus rectifier' using the UX based valves.

The lady was quite definite that absolutely nothing had gone wrong with it since her husband had died in 1963 and that she had it on everyday, all day long.

Now something had finally happened, the type 80 rectifier had an open circuit heater. It was easy to source one and after a couple of days the set was burbling away happily again, but with one difference. It had come in for repair with the mains voltage adjustment firmly set on 200/220 volts and I had reset it to the 230/250 position.

Since it had been working almost daily for so many years on the lower voltage position I would not have been surprised had the valve emission suffered and maybe the set would have refused to oscillate on the higher position.

No problems at all and Long, Medium and Short waves give a good account of themselves with little more than a bit of scrap wire for an aerial. One 84 year old lady now has her family heirloom back at home.

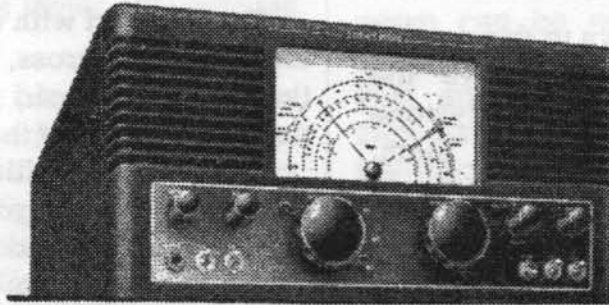
Best of Luck from Ted

**Don't forget to write to me at
'Ted's MailBox' c/o:- 63 Wrose
Road, Bradford BD2 1LN.**

HEAT REDUCTION IN EDDYSTONE 640 RECEIVERS

By Peter Lankshear

One criticism of the generally excellent Model 640 Eddystone is that in high ambient temperature conditions, the internals of the cabinet can become undesirably warm and it is significant that the same cabinet when used in later models has additional ventilation grilles and louvres.



One recommended but unofficial method of reducing heating is to replace the 6V6 with a smaller output valve, especially if headphones are being used. The type 358 Eddystone receivers had this as a standard option where a L63 (6C5 or 6J5) general-purpose triode could be substituted for the EL32 pentode, to reduce the anode dissipation. However, this substitution was accompanied by a change of bias resistor. The 200 ohm resistor used for the EL32 would have left the triode seriously under biased.

This same situation applies to the 640. As can be seen from the table, if a 6J5, which has a maximum anode dissipation of 2.5 watts is substituted directly, it will dissipate 3.6 watts, and consequently be seriously

overloaded. A 470 ohm bias resistor will limit the anode heating to a safe 2.5 watts, providing an overall heating reduction of more than 6 watts.

A 470 ohm bias resistor can also be used with a 6V6. The available audio output is still of the order of a couple of watts, more than enough for most applications, but it is debatable if the heating reduction of about 2 1/2 watts in this instance is worthwhile.

An even greater reduction can be achieved by using a 6L5G. This valve is somewhat similar to a 6J5 or 6C5, but instead of having a 300ma filament, the 6L5G requires only 150ma to heat the cathode, is still available from American suppliers and is actually cheaper than the 6J5.

TESTS WITH OUTPUT STAGE OF EDDYSTONE 640 RECEIVER.
H.T. 225 VOLTS

VALVE TYPE	CATHODE RESISTOR OHMS	BIAS VOLT-AGE	ANODE CURRENT ma	ANODE WATTS	TOTAL WATTS (ANODE + FIL.)	HEAT REDUCTION WATTS
6V6G	270*	10.0	37	8.3	8.3+2.8=11.1	0
6V6G	470	12.5	26	5.9	5.9+2.8=8.7	2.4
6J5GT	270* ++	4.2	16	3.6	3.6+1.9=5.5	5.6
6J5GT	470	5.3	11	2.5	2.5+1.9=4.4	6.7
6L5G	560	6.0	11	2.5	2.5+0.9=3.4	7.8

* Original Bias Resistor value. ++ Not recommended for the 6J5.

For most applications of the 640 model, a 6V6 output stage is capable of far more power than is really necessary. A general-purpose triode, if used properly, can provide several hundred milliwatts of audio - quite adequate for most "shacks".

However, with the standard 2.5ohm speaker there is an insufficient load for a small triode, seriously restricting the power output. This can be easily remedied by using instead a readily available 8 ohm speaker. ★

EUG PRIZE CROSSWORD NEWS

Not quite as many entries this month as last time, perhaps the spec sheet on the exceedingly rare VHF/UHF model 1995 didn't catch the eye of our puzzlers. Who knows?

Anyway, let's get down to this week's winners, who will already have the coveted data-sheets in their Eddystone files. There were eight of them, including our first overseas winner:

Ernie Beamer, G4TKY, of Lincoln

Mike Gaydon, of Kent

Garry McSweeney, G14CFQ, of Belfast

Tor Marthinsen, of Tønsberg, Norway

Jack Read, of Cheshire

John St Leger, G3VDL, of Devon

Geoff Steedman, MØBGS, of Leeds

Tony Williams, G3MCB, of W. Midlands

And one regular winner didn't read his clues carefully! But we took pity and let him have a prize (and we'll spare his blushes!).

Here are the answers for those who were too hesitant to send their entries!

ACROSS: 1 Regional One. 6 Non-slip. 8 Spec. 9 Superhet. 11 Spade. 13 A Part. 14 Repeller. 16 Tach. 17 Neutron. 19 Overloading.

DOWN: 1 RPO. 2 Ill use. 3. No pips. 4 Laser. 5 Excitation. 6 Noise ratio. 7 No Y amp. 10 Heater. 12 Blanco. 13 A round. 15 Ether. 18 ORG.

First-time entrant, veteran member Ernie Beamer, G4TKY, wrote the following to accompany his answers:

"After reading the EUG Prize Crossword News in the Feb 2002 issue of the Lighthouse, I was surprised to learn that out of the total membership only twelve entries had been received. This kickstarted my 'Little Grey Cells' which proved a very useful and rewarding exercise.

"I do the Times 2 Crossword on a daily basis - not always successfully admittedly, but the E.U.G. is a decidedly different kettle of fish - much more taxing.

"I started off with (to me) the obvious answer to 17 across, and from what was then a blank grid fumbled my way through the rest of the clues.

"Colin is a brilliant compiler. His clues combine a good mix of cryptic and radio orientated types.

"So many thanks for a wonderfully interesting mag, and who knows, if I can pluck up the courage I may have a go at crossword No 7."

WELL DONE, Ernie, and thank you on behalf of Colin for your kind words.

Do you know, I've just been reading up the origin of the crossword-puzzle. An Englishman living in the USA got the idea from a Victorian parlour game called Magic Squares! It was first let loose on the readers of *New York World* in 1913. Cryptic clues, apparently, are peculiar to Britain!

In my search for yet another attractive and unique piece of Eddystone ephemera I have found a few glossy leaflets for the incredibly rare SSB Military Transceiver Model 5500.

This mobile rig of 1986 featured six pre-set channels in the range 2-16 MHz with an output of 150 watts PEP.

Now if Tor, from Tønsberg, Norway, for whom English is a second language, can produce a perfect entry, I'm sure there are plenty more of you out there waiting to have a go!



E.U.G. PRIZE CROSSWORD No. 7

COMPILED by COLIN CRABB G4HNH

Photocopy or write out the answers so as not to spoil your copy. Send to Graeme Wormald G3GGL at 15, Sabrina Drive, Bewdley, Worcestershire DY12 2RJ, England, to arrive not later than 20th May 2002. See previous page for further details.

ACROSS

1) In certain valve circuits, the external conducting path by which the grid current returns to the cathode (4,6)

8) This radio society meeting is generally held annually (3, abb.)

9.) Adjustable resistor (8)

10) Alessandro — 1745-1837, Italian physicist who invented the electric cell (5)

11) The switching transistor in a switch mode power supply is commonly referred to as the — (7)

12) British manufacturer of the Mini Clipper one-valve Rx kit in the early 60's (5)

15) Common British military communications vehicle (5)

18) See 19 across

19) and 18 across. Plug for the opposition (5,7)

21) Ponder an EUG related web site and follow its title with the associated call sign suffix (5,3)

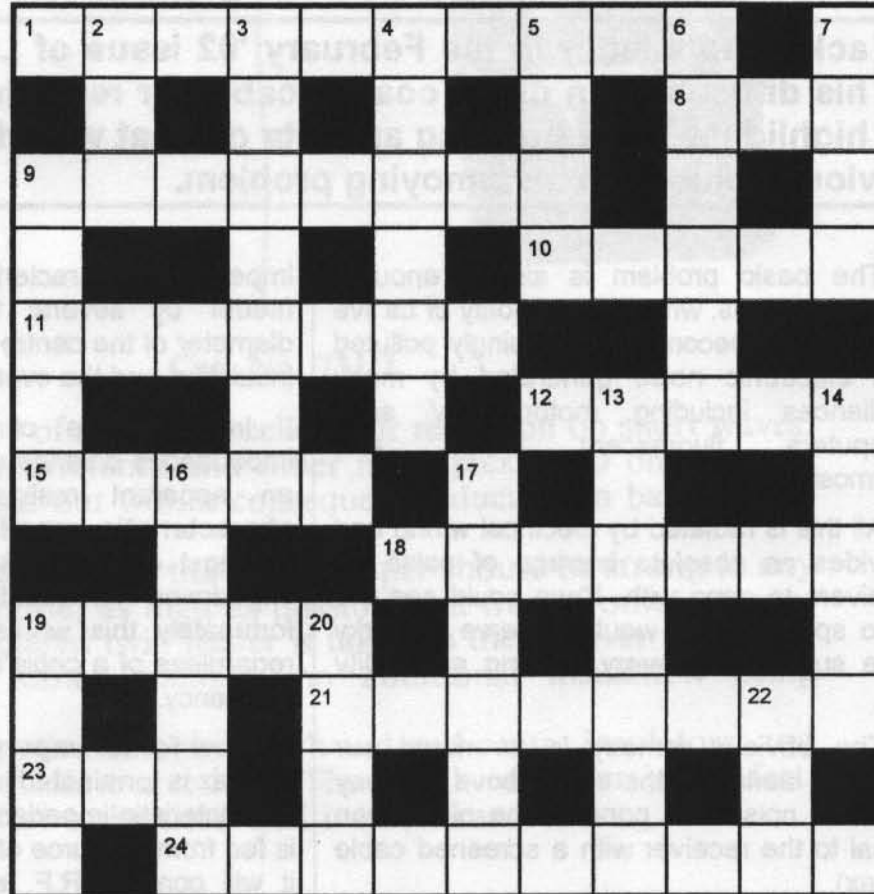
23) British honours distinction (3) (abb.)

24) Unusual description of Bakelite manufacturers! (5,5)

DOWN

2) Abbreviated reference to a famous South Bank concert hall (3)

3) Mains reduction resistor



common to universal Eddystone receivers (7)

4) Two Eddystones of the same marque, similar condition and price are offered for sale, which one would you buy? (6)

5) The NTSC played an important part in the development of this transmission and reception system (2,2,) (abb.)

6) Don't get screwed up, your colours have been fastened to the mast (6)

7) First world war phonetic identifier for the letter M (4)

9) This British radio firm developed a professional Communications Rx in 1954, featuring the Wadley loop drift cancelling system (5)

13) These musicians could also have been protagonists of a successful British WW2 blind bombing system (7)

14) — Sound, British manufacturer of a broadcast quality ribbon mike, popular during the 60's (5)

16) Vertical aerofoil that controls horizontal movement in an aircraft (6)

17) Impatient affirmation in the north east (3.3)

19) Common Eddystone xtal (4)

20) Significant digits in the binary code system (4)

22) William — W6SAI, famous US author on the subject of antennas (3)

A BEGINNER'S GUIDE TO COAXIAL AERIAL FEEDERS

By Peter Lankshear.

Jack Read's letter in the February '02 issue of Lighthouse about his difficulties in using coaxial cable for receiving aerial feeders highlights some puzzling aspects of what would appear to be an obvious solution to an annoying problem.

The basic problem is simple enough. Urban locations, where the majority of us live anyway, are becoming increasingly polluted with electronic noise generated by many appliances including motors, TV sets, computers, fluorescent lamps, and thermostats.

All this is radiated by electrical wiring and provides an absolute barrage of noise for receivers to cope with. If we could see the radio spectrum we would observe a murky haze surrounding every building and utility line.

The obvious remedy is to mount our receiving aerials in the clear above or away from the noise and conduct the nice clean signal to the receiver with a screened cable (co-ax).

Unfortunately, as Jack has found, it is not as simple as that! To put it simply, coax will only work properly if matched to the aerial. Matching is to electronics what a gearbox is to a motor car. If you don't have the right gear ratios your car won't go at all well, and by the same token an unmatched feeder will cause an aerial installation to be very inefficient.

First then what is coaxial cable? As its name implies it consists of a centre conductor surrounded by insulation, which in turn has an outer surrounding conductor, commonly braided copper, but which can be a solid tube. OK then ordinary shielded cable and microphone cable must be coax too? Correct – they are – although for R.F. they may not be very efficient. Unless it is used correctly, what is called coaxial cable is just concentric shielded cable.

Any conductor, even a piece of straight wire, has inductance, and there is capacitance between any two conductors.

Impedance characteristics, governed in a feeder by several factors including the diameter of the centre conductor, the type of insulation and the overall diameter.

In the case of a feeder, the two impedances balance each other out leaving an apparent resistance, which is the **characteristic impedance**. Coax is rated, amongst other things, by its characteristic impedance – frequently 50 or 75 ohms and fortunately this works out to be constant regardless of a cable's length and operating frequency.

Now for an important point. If a length of coax is terminated in a resistor equal to its characteristic impedance, and the other end is fed from a source of the same impedance, it will conduct R.F. energy very efficiently and is said to be matched. Furthermore, the current travelling through the outer conductor will concentrate on its inner surface, effectively isolating the signal from outside influences.

Unfortunately, when a coaxial line is operated at other than its characteristic impedance all sorts of nasty things happen. It will behave more like a kinked garden hose than a free-running conduit and this is where we get into trouble with coaxial feeders connected to receiving aerials.

Even the simplest of aerials, for example a piece of wire hanging out of an upstairs window, is very complex electrically. The basic aerial is a **dipole**, which is a piece of wire in free space, i.e. not near anything else, and half a wavelength long. It is also known as a **Hertzian aerial**.

Note that below about 2MHz, the practical problems of supporting a dipole in free space become insurmountable. A 1MHz dipole aerial would be 150 metres long and

The solution is the **Marconi** aerial where half the aerial is reflected in the earth and needs only to be $\frac{1}{4}$ wavelength long to resonate. This is the category of the random wire aerial used by most EUGers and why good earth connections are recommended.

If a dipole is cut at its centre it will be found that **at its resonant frequency** it has the characteristics of a 75 ohm resistor. (This also applies to odd multiples of a half wave in length but is academic given the space available in most locations.)

It can, therefore be connected directly to a 75-ohm coaxial line, with minimal losses and the feeder will not pick up interference. If only one frequency is to be received, this is fine, but your typical Eddystone receiver covers from about 500kHz for which a dipole would be 300 metres long, to 30MHz which has a dipole of 5 metres.

This is a ratio of 60 to 1 and to persuade a bedspring or a piece of wire hiding in the picture rail to operate efficiently over this sort of frequency range is a tall order. It is a tribute to receiver design that they will in fact handle this sort of treatment, but there are better ways.

If a coaxial line is connected to a non-resonant aerial, the cable is no longer a resistor and its capacitance, which can be quite high, will effectively bypass much of the precious signal to ground before it reaches the receiver and it may no longer be immune to interference.

This is of course, where Jack Read's missing signal went. Except at the frequency where Jack's aerial is one quarter wavelength long, the feeder simply acts as a capacitor shorting signals to earth.

It is possible to manipulate the characteristics of a random aerial to match a feeder or receiver, and from time to time Ted has published details of aerial couplers to do this. However, the coupler has to be connected to the **aerial** end of the feeder – not between the feeder and the receiver, and must be retuned every time the receiver tuning is changed.

This is fine for a single frequency operation, but for normal use gets to be very difficult when the receiver is in the house and the aerial terminates at the bottom of the garden!

Around about now someone will point out that car radios have coax between the aerial

length is short, the cable has a very thin centre conductor to give low capacitance, and what capacitance there is forms part of the receiver input tuning.

One solution is the **Active Aerial**, often used in military and commercial installations, which matches the aerial to the coaxial feeder electronically. An amplifier, presenting a very high resistive load and connected directly to the aerial, which is usually a vertical whip, acts as a wideband transformer to provide an accurate 50 or 75 ohm resistive feed to the feeder which can be of any practical length and which has negligible losses.

The cable itself carries DC power to the amplifier, which can be quite compact and often incorporated in the aerial mounting base. However, active aerials do have some problems, not the least being their tendency to be easily damaged by thunderstorms and they are not so good above about 5 MHz.

A fuller description of active aerials is the subject of a separate article. (*See next*)

Various noise reduction aerial systems have existed since the early 1930's. All these systems appear to have relied on balanced twin feeders, which introduce far fewer capacitive losses than unmatched coax.

In the case of the Belling Lee system, shielded twin cable is used together with complex coupling transformers. Eddystone had two types, one with open transposed feeders and another type with a thin flexible feeder cable was especially for use on board ships. (To cope with twin feeders is one reason for Eddystone receivers having two aerial terminals.)

Unfortunately, this article has not been of much help in solving the problems of EUGers who want to install noise free aerial systems, but Graeme and I have been doing interesting research into some commercial systems and may be able to come up with some suggestions before long. ★

Graeme writing now. A little further in this edition of Lighthouse I am featuring an article about the two Eddystone aerials mentioned above. The one with transposed feeder spreaders (commonly called 400-ohm feeder) was introduced in 1935. The later one using twisted twin feeder, much like speaker cable, was introduced after WW2.



Letter from Ken Gummer (RS 87509) Kent

Comments about computer hash

Thank you, Graeme and the Team for another interesting issue of 'Lighthouse'.

I read with interest the computer hash article by Jack Read (*issue #71, p.35*). The problem that Jack has is a very real one these days and it will take time and patience to remedy.

Given the constraints that he mentions in the penultimate paragraph (*huge arrays, etc.*) I would approach it this way:-

[A] Give the vertical at the end of the garden another trial, assuming that it cannot be elevated upwards.

(1) Use an RG62A/U co-axial cable with a capacity of 39pf per metre instead of the RG70 with 67pf per metre.

(2) Ensure that the screen is fully braided.

(3) Try test connections of the RG62 screen to earth via a spike adjacent to the vertical and at the point where the co-axial reaches the ground from the shack.

(4) Bond the RG62 screen well to the set.

[B] Identify how the hash and other noises are reaching the receiver. With the aid of a battery receiver with a ferrite rod, set to L.W. and tuned to 240kHz.

(1) With the ferrite rod (usually) parallel to the ground "sniff" around the shack receiver:-

(a) the co-axial aerial input.

(b) the mains power input lead, noting any offensive noises.

(2) "Sniff" around the shack for noises from:-

(a) house mains wiring in walls, under the floor,

(b) central heating pipes or radiators,

(c) security alarm wiring or equipment,

(d) telephone wiring and equipment (if any),

(e) gas supply piping,

one or more of which might be introducing "noise" to the receiver.

[C] Turn the power off at the electricity consumer unit and repeat the "sniff" tests as in (2) above.

If the mains input is clearly an offender I would consider a commercially made filter unit to be fitted adjacent to the receiver.

If the hash and noise are due to another offending conductor, e.g. water or central heating and radiator pipes I would consider two things:-

(1) what would be the effect of re-locating the receiver away from these pipes, etc.

(2) Ensure that the whole heating system, including a metal bath, is properly earthed back to the consumer unit. (Imagine the shack receiver being separated from a metal bath by just a 4" brick wall!)

If the work this far is successful then a suitable aerial amplifier would be considered to restore any co-axial losses.

If the results are disappointing, I would consider a horizontal wire dipole of suitable length with the feeder replacing the co-axial RG62. The dipole to be sited as high as possible observing proximity to the house.

In either case above it may be necessary to use the portable radio to "sniff" the whole house for a complete assessment.

Before I moved to my present QTH I needed to locate the precise route of the underground electricity cable from the house to the road. The buzzing from the battery radio helped me to plot the exact route.

I hope that Jack has success, one way or another, with his venture and does not give up too soon.

**Regards & 73, Ken.
(RS87509 - K. Gummer)**

(Note from Graeme, I used a LW portable set successfully to find terrible QRN in a gas boiler !)

The Great QRN* Debate

Continued by Graeme Wormald G3GGL

I doubt if Jack Read realised that he would have opened such a debate when he wrote last month about his radio interference problems. "Oh where, oh where has my signal gone?" he said.

Local interference to radio reception is nothing new. The only new thing about it is its variety. In the 1930's the airwaves were polluted by crackles and hash from unsuppressed electrical devices of all description, plus unsuppressed car engines, tramcars and trolleybuses.

Nowadays, all these devices are suppressed by law, but a whole new raft of equipment has joined the medley, radiating a whole new form of man-made QRN* (*the Q-code originally used by radio-operators to mean 'static' interference).

These are devices containing non-linear circuits, which produce a 'comb' of harmonics stretching through the RF spectrum. The most common such sources are domestic colour television sets, which are more or less universal and are frequently left on all day.

Closely following are electronic games and computers, although these are not usually kept going for such long periods.

However, the measures to be taken are the same for all: namely, keep the receiving aerial as far away from the source as possible and use a feeder system which brings the wanted signal to the receiver without allowing unwanted QRN to enter or the signal to leak away.

Readers will now have read the two preceding features written by Peter Lankshear, an expert in this field. They may have decided to build the simple and effective Active Aerial which he describes. This should cost the average constructor no more than £5 if rallies are attended, or maybe £10 at the outside if everything has to be acquired new.

Those who wish to purchase ready built commercial versions will have to pay something from £100 to £350 if the adverts in the radio hobbies press are scrutinised (kits are available at much lower prices).

Which leaves us with 'remote' passive aerials, such as the Eddystone classics shown on the next two pages. Although the technical debate surrounding such aerials is complex, the fact is that they are a fruitful source of cheap DIY experimentation.

This is the way my non-academic mind grasps the theory. Most people use a simple inverted-L as a general coverage aerial from 100kHz to 30MHz. The matching goes by the board but the sets have more than enough gain to compensate.

The snag is that the aerial cuts straight through the area of greatest QRN, namely the house and its wiring.

Let us assume that the far half of the aerial is up in the clear and away from the QRN. And now let us imagine a mirror image of this aerial with the two furthest halves up in the clear, fed with two down leads which are close together (in terms of wavelength).

These two leads will be carrying the received signal in anti-phase ('push-pull') and any signal picked up by them will be in phase and will be ignored by the Rx.

There is no question of the system being matched, as in the coax-fed matched single-band dipole or the previously described active aerial.

The feeders will have standing waves on them, but don't let that worry you. So has the inverted-L! Just make one and try it.

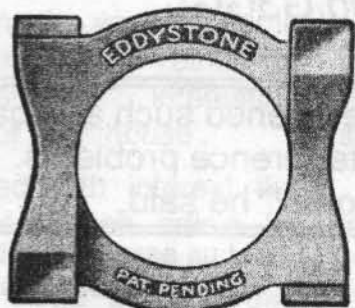
But bear in mind that it will only work as a low-noise aerial when used with a balanced-input 400Ω aerial connector (ie most Eddystone valve sets). A coax fed Rx will need a screened balun at the set end.

Those wishing to purchase one ready-to-go will find them offered in the radio press. Waters & Stanton have the new WDP-30 for around £50. It comes with a 10M top and 10M of coax. It claims to work! Has anybody got a report on one yet?

★

Crossfeeder Block

FOR ELIMINATION OF MAN-MADE INTERFERENCE
ON SHORT WAVE AERIAL SYSTEMS.



CAT. No. 1004.

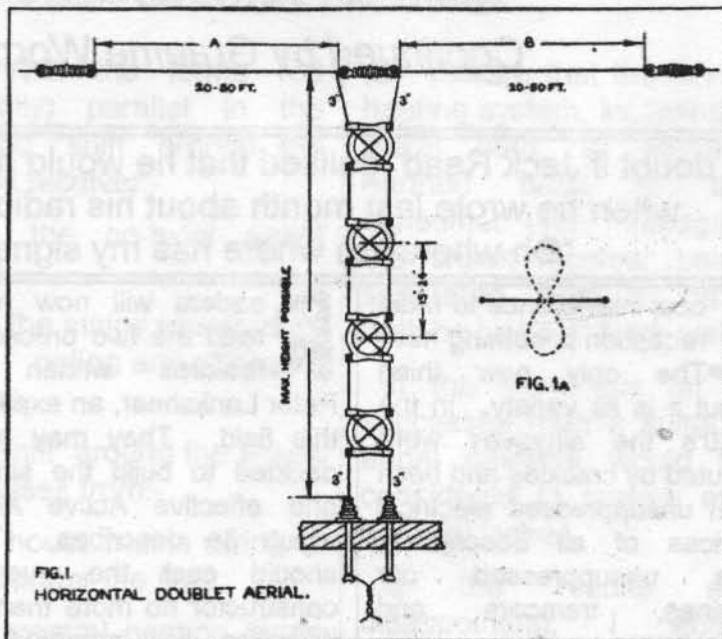
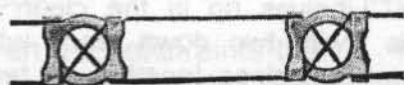


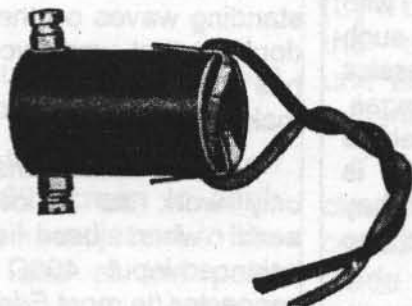
FIG. 1
HORIZONTAL DOUBLET AERIAL.

In many cases reception of weak short wave signals is impossible owing to man-made interference from electrical apparatus in the near vicinity. By the use of a doublet type aerial as shown, erected as high as possible and out of the general field of interference, and the employment of the special "EDDYSTONE" Crossfeeder System of lead-in, this man-made static can be very largely eliminated. Full details will be supplied on request.

The Crossfeeder Block is made of high grade vitreous porcelain and is highly glazed so that it is suitable for prolonged outside exposure. The Block has also many other uses, including transmission lines in connection with transmitting aerials.

CAT. No. 1004. Code CROFE PRICE 8d.

Coupling Unit for Crossfeeder Aerial Leads



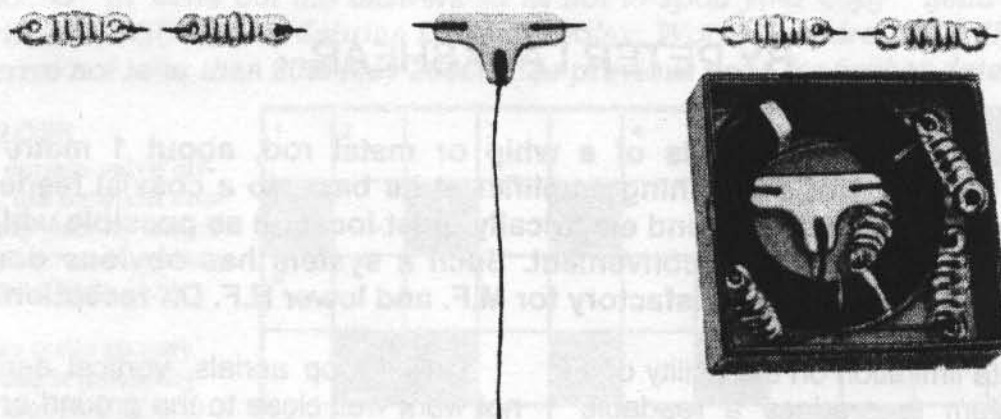
This unit is for coupling the two leads of a Crossfeeder aerial system into the Receiver. The normal practice is to connect the two output leads from the unit to the primary coil in the grid circuit of the set, which must not be earthed. The unit comprises two resistances in series with each lead. Assembled in a suitable housing with terminals and input leads.

CAT. No. 994. Code REDRE .. PRICE 2/6



Doublet from the Eddystone catalogue of 1936. There is no intention for the aerial to be resonant as may be deduced from the arbitrary leg-lengths of 20-50 feet and the feeder length of "max height possible". The coupling unit contains two 500Ω non-inductive resistors, one in series with each leg, presumably to reduce the "Q" of the aerial and help with its wideband properties.

RECEIVING AERIAL



Cat. No. 731/1

The doublet type of aerial is excellent for reception on short waves. The electrical interference and other noise picked up on the twin feeder is balanced out with a consequent reduction in background noise.

The two sections forming the aerial proper should be strung to any convenient supports, as high as possible and free of other objects. The flexible insulated twin feeder is taken to the receiver through a small hole or other opening, no additional insulation being necessary.

The aerial is supplied complete with end and centre insulators, and is ready for immediate erection. The length of feeder is 100 feet, to allow the aerial to be sited well in the clear.

EDDYSTONE DOUBLET AERIAL

On board ship the lead-in portion of a single wire aerial must necessarily be brought close to metal work and attention must be paid to providing adequate insulation. Electrical interference radiated off the ship's mains is liable to be picked up by the lead-in wire. The Eddystone Doublet Aerial has several advantages over a single wire aerial. The two arms forming the aerial proper can be strung in any convenient position (as high as possible), and the flexible twin insulated feeder brought in through a ventilator, porthole, etc., without the necessity of any additional insulation. The pick-up of electrical interference will be much reduced and first class reception becomes possible. The aerial may be taken down and re-erected many times with little possibility of damage.

Cat. No. 731 (50 ft. feeder) Price £2 : 17 : 9

Cat. No. 731/1 (100 ft. feeder) Price £3 : 3 : 3

Eddystone Doublet 1955. No intention of it being a single-band aerial. But how long are the legs now? It was intended to be fed directly into the balanced Ae terminals of all Eddystone sets of the era.

ACTIVE AERIALS

BY PETER LANKSHEAR

A typical active aerial consists of a whip or metal rod, about 1 metre long, coupled by means of a matching amplifier at its base, to a coaxial feeder. The aerial is mounted in an as clear and electrically quiet location as possible whilst the receiver can be located where convenient. Such a system has obvious domestic advantages, and can be very satisfactory for M.F. and lower H.F. DX reception.

The ultimate limitation on the ability of a receiving system to produce a readable signal is noise. Noise is picked up by the aerial and is also generated in electronic equipment. In a well-designed system, at frequencies below about 5MHz, atmospheric noise generated in the aerial is predominant. Ideally the only aerial noise will be atmospheric, producing a steady hiss, and, unlike man-made noise, this cannot be reduced.

Although an aerial should therefore be located as far as possible from man-made noise sources in an urban location this is not always practicable.

If atmospheric noise is stronger than a signal, no amount of amplification will improve reception. Nor will a bigger non-directional aerial improve the signal-to-noise ratio.

With modern equipment, there is little point in having an aerial longer than is necessary to raise the atmospheric noise to a level of 15 or 20 db above the receiver noise. At medium frequencies, this length for a vertical aerial is quite short, but there is a catch.

A short aerial cannot be connected directly to a conventional receiver or feeder without serious loading, resulting in a considerable loss of signal. Even if a receiver can operate successfully connected directly to a short aerial, the environment inside a building is unlikely to be electrically quiet, and the structure absorbs the electrostatic component of signals.

Unlike loop aerials, vertical aerials do not work well close to the ground or inside buildings.

One solution is to mount the short aerial in the clear and connect it to the receiver via a coaxial feeder, with an amplifier matching the aerial to the feeder.

At the receiver end of the feeder is a power supply and a means of directing the signal to the receiver. An active aerial amplifier presents a very high resistive load to the aerial and is matched to the coaxial feeder, which can, if required, be of considerable length.

Signals from the aerial are "actively" transferred to the feeder without attenuation. At the receiver end is a small coupling unit and power supply. DC power is fed up to the amplifier through the coaxial cable, with simple networks at each end separating RF and DC voltages.

Active aerial installations can be compact, tidy and efficient. They do, however, have imperfections. One problem is that they can generate their own signals!

Being completely untuned, they respond continuously to every signal in the spectrum. All amplifiers produce distortion and although a well-designed active aerial unit is very linear, strong local signals can produce harmonics and intermodulation.

Harmonics appear as multiples of a station's frequency. For example, harmonics of a transmission on 900kHz will appear on 1800, 2700, 3600, 4500kHz and so on. Intermodulation is the result of

two transmissions beating together to produce combination signals, the most likely being sum and difference products.

For example, a 567kHz transmission could beat with a 900kHz signal to produce mixtures of both programmes on 1467kHz and 333kHz. Although active aerials will operate on the shortwave bands, they do not perform as well as larger conventional aerials.

Atmospheric noise steadily decreases with increase in frequency until the noise generated by the aerial amplifier and the receiver dominates. Only a larger aerial can swamp electronic noise and this creates the possibility of overloading discussed previously.

If you do not live near to a transmitter, and there are no high-powered transmissions in the district, it could be worthwhile experimenting with a longer aerial for better shortwave results.

Unfortunately, lightning flashes can damage aerial amplifiers, even with the power disconnected. If the aerial is accessible when it is not in use, it might be possible to earth it with a clip, or even with the aid of a relay. This should be sufficient protection for any lightning short of a direct hit.

Like all vertical aerials, active aerials are susceptible to rain and corona static,

and, being non-directional, cannot discriminate against unwanted signals.

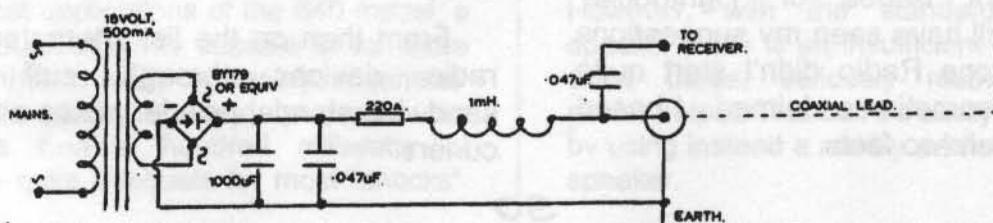
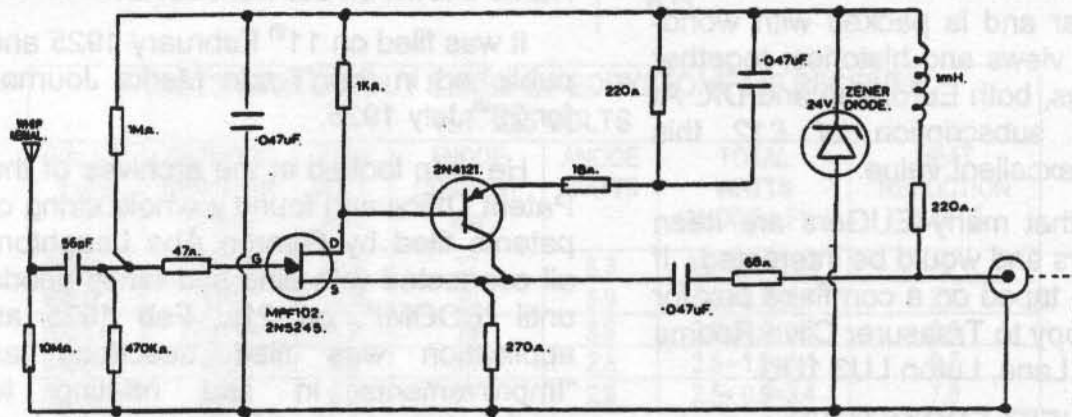
Despite these minor shortcomings, active aerials are justifiably popular, and the combination of a good loop and an active aerial can provide a potent medium wave DX system.

Below are details of a proven circuit which can be assembled readily by an experienced constructor. It consists of a field effect transistor to present a high impedance load to the aerial and a transistor to couple to the coaxial cable, with unity gain overall.

Construction is not critical and the amplifier should be mounted in a waterproof housing at the base of the aerial. (As well as being appropriate, an Eddystone box is ideal).

75 ohm TV feeder is suitable for the coaxial cable. The power supply transformer could be a small "plug pack" and the 1000 mfd capacitor should have a rating in excess of 25 volts, whilst the other capacitors should be ceramic. Resistors can be 0.25 watt.

Note that the Zener diode is NOT used as a voltage regulator but as a surge protector. If it conducts, it could produce unwanted noise. The aerial can be a metal rod or similar, and it should be mounted clear of buildings or metalwork. ★



RADIO RAMBLINGS

Jottings from my Notebook



By
*Graeme
Wormald
G3GGL*

BEWDLEY. APRIL, 2002

Spring Greetings to all our members in the Northern Hemisphere and commiserations to our friends under the Southern Cross who are having shorter days.

Time seems to be flying at the moment, not helped by my getting involved with ENT surgeons and then leaking all over the place! But the result (being able to breath through two nostrils instead of one) will be a blessed relief when everything settles.

So let's start with our first Jottings.

MEDIUM WAVE CIRCLE

Some of you will recall that I am a member of another of our more eccentric British radio groups, The Medium Wave Circle. Members are MF broadcast DX hounds and are catered for with a 40/60-page magazine called "Medium Wave News". This is issued to members ten times a year and is packed with world-wide news, views and histories, together with loggings, both European and DX. At an annual subscription of £12 this represents excellent value.

I know that many EUGers are keen MW listeners and would be interested. If so, send £1 taped on a cornflake box for a sample copy to Treasurer Clive Rooms at 59, Moat Lane, Luton LU3 1UU.

THE EARLIEST EDDYSTONE . . .

In recent issues of 'Lighthouse' members will have seen my suggestions that Eddystone Radio didn't start quite as early as sometimes claimed. I based this debate on two facts.

First of all that we have seen no printed sales matter dated pre-1926 and secondly that Stratton & Co joined the British Broadcasting Company in September 1925. Thor Marthinsen in his letter (Lighthouse # 71, Feb 2002, page 20) reminds us of the fact that Stratton Laughton (eldest son of George Laughton, founder of Stratton & Co in 1912) claimed to have started the radio business in 1923.

I suggested that Stratton Laughton was confusing his own interest in radio with the commencement of Eddystone and asked if any further evidence could be found (same issue as above, page 24).

I didn't really expect much more but I was wrong. Peter Carney is the son of Stan, (old time engineer from Eddystone), and a keen history buff. He opened up the archives of the Trade Mark offices and found the Logo and Name shown on our front cover.

It was filed on 11th February 1925 and published in the 'Trade Marks Journal' for 29th July 1925.

He then looked in the archives of the Patent Office and found a whole string of patents filed by George Abe Laughton, all connected with pins and fancy goods until "BOOM!", on 21st Feb 1925 an application was filed described as "Improvements in and relating to electrical condensers." It was published on 8th Oct. 1925.

From then on the list alternates from radio devices through cuff links, sandwich stands, powder boxes and hair curlers.

Peter then goes on to build up a good argument to cut into this fairly solid evidence in favour of 1925 being year one (which technically it certainly was). Let's read his mail.

“ The pageboy cut covers the ears as shown in the attached photos of silent movie star Colleen Moore.

As far as I can tell the fashion was succeeded by the shingle which was still long at the front but very short at the back (looks the same under a cloche hat) and then the eton crop, which was very masculine, short all round and slicked with brilliantine. But many people may have used the terms loosely even at the time.

I've attached some snippets on the subject from a couple of articles I found.

I've also attached a biography of Coleen Moore, whose film *Flaming Youth* in autumn 1923 “turned the tide of fashion and films”.

“Because of *Flaming Youth*, the Roaring Twenties would officially begin in 1923, and two people would be credited for lighting the fuse that sent the decade into orbit - Colleen, the Jazz Baby and F. Scott Fitzgerald, the voice of the reckless youth and disillusionment. He proclaimed, “I was the spark that lit up ‘*Flaming Youth*’ and Colleen Moore was the torch. What little things we are to have caused that conflagration!”

I am sure this film is what caused the hair-pin crisis.

As for the trademark they could have started making components before filing the trademark application

or even before they thought up the name. Maybe initial sales were unbranded and just used the company name like the hairpins.

In this case they wouldn't have advertised in radio magazines. Maybe the brand name and trademark application came as result of growing confidence due to unbranded retail sales. You do gain common-law rights to a trade-name by using it even without registering it. In dad's Twin some of the components (transformer, resistor clip) have the Eddystone name but not the lighthouse. The plug-in coils and valve holders have the lighthouse but not in the circular design of the trade-mark which would seem to indicate they were in production earlier than Feb 1925. In the sound recording GSL mentions the decision to create the radio section but says nothing about the brand.

As well as an idle workforce they would have had an idle salesforce. The salesforce could have gone out to get orders from retailers on day one taking orders and promising delivery dates on parts that didn't exist.

The salesmen would have been highly motivated (ie. lied through their teeth and promised the earth) because their jobs were on the line. The structure of the market would have been similar to haberdashery i.e.. small local shops.

There had been a gradual trend towards short hair since the war for numerous reasons so maybe they had been eyeing the radio market for some



time and could consequently launch products quite rapidly. GAL was a benevolent employer who may well have been motivated by a desire to avoid dismissing people as well as replacing lost sales. I expect he was a man of foresight too.

I imagine that with the resources available and a crisis atmosphere it would have taken a few weeks at most to start pilot production of components. I wonder what the very first products would have been? My first instinct would be coils, transformers, or rheostats as they were used to han-

dling wire but equally the materials and skills for making hatpins and display equipment could easily be turned to make condensers.

So it's possible they were already considering the commercial possibilities of radio when in late 1923 the fashion fallout from the film *Flaming Youth* triggered their decision to start a radio section, and a year or so later they thought up a great brand for it.

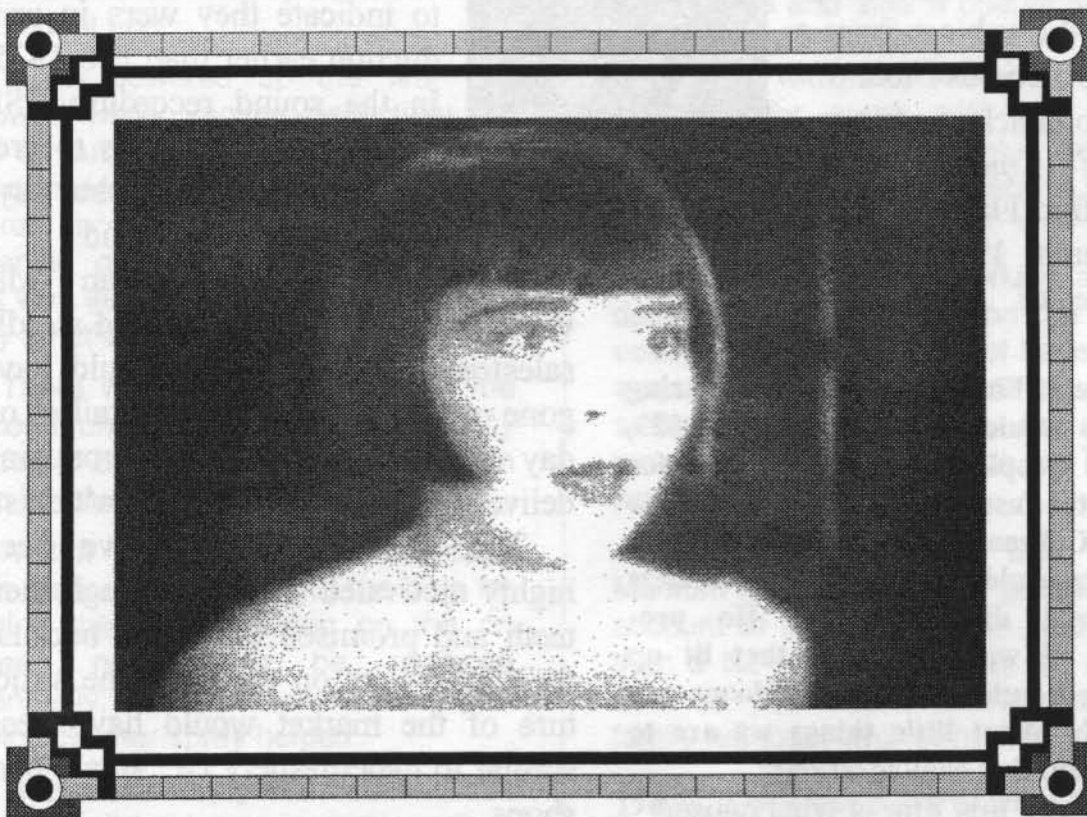
Plausible?

Sincerely,

Peter Carney

Well, yes, Peter! I couldn't argue with that. All I can say is: "will everybody look out for any printed word about 'Eddystone', 'Stratton & Co', and

'Radio' before February 1925." In the meantime, Peter, give us a close-up of the delectable Miss Moore (no, Ted, nothing to do with you!).



Jazz Baby Coleen Moore's incredibly fashionable 'pageboy cut' as she appeared in the film 'Flaming Youth' in the Autumn of 1923.

The consequence led to the inception of "Eddystone Radio" in 1925 after the collapse of the hairpin market in 1924.

(Hollywood strikes again!)

I know this history business is one that will run and run! I've actually got more details to put in but I'm going to call a close for this month. We'll have a review next time round.

MEMBERS QSLs

More QSLs have dropped through the letter-box. I thought the traditional letter-press QSL was fading away in favour of the 'singing and dancing' colour-photo computer jobs. But not this month!



Dick King in Hertfordshire sends us his new "name-related" callsign together with vintage operator! Dick notes on the back that he uses a 130ft end-fed at 6ft. That's what I like to hear! No trouble with the Planning Officer about that.



A new member but an old callsign, Keith is based in West Sussex and is a DX-hound, being a member of the Chiltern DX Club and DXCC Honor Roll.

Whilst speaking of old callsigns, I must mention that my old friend Ron, G8URU, came up on the EUG First Sunday Net today sporting the call M3URU. Much to my surprise! Ron

had kept it very quiet. He is 200 miles away and I had a good signal from his throttled-back TS-530.

I don't think he'll be upset if I tell you that he suffers from a devious nervous condition that plays havoc with his short-term memory. He can send Morse fine but he has a mental blank when he tries to take it. He had a very distressing experience at Morse Camp last year when he discovered that he couldn't even receive at fives.

So the new Morse Appreciation license has come as a Godsend to him, and many others too. Let's have no knocking of it. Ron has been a professional electronics engineer for over 50 years and can put most of us to bed with his capability.

He also shows us that a ten-watt ssb signal on 80 can keep up with the rest of us. Well done Ron.



Dennis, G4LAG, called in on the First Sunday Net in March and exchanged QSLs. I was fascinated to note that as well showing an arrow to his own QTH in Norfolk, and a big blob on the Thames for London, his card also had printed on it a blob in Central England for Bewdley! Thank you, Dennis.

SLINKY FOR SALE

Members may recall Ted's description, in his Christmas MailBox, of his 'Slinky' aerial. It was being sold as a child's novelty toy, a 4" spring which would walk itself down a flight of steps.

Well, Richard, G4ICP, has sent me a copy from a vintage QST, (c.1980 by

the adverts surrounding it,) of the Teletron Corporation's new Slinky dipole! Honestly.

SLINKY!

**a lot of antenna
in a little space**

new Slinky® dipole* with helical loading
radiates a good signal at 1/10 wavelength long!

*patent No. 3,858,220

FIG 1 PERSPECTIVE VIEW
FIG 2 TOP VIEW
FIG 3 FRONT VIEW
FIG 4 END VIEW

FOR TUNING, ADJUST NUMBER OF EXPANDED TURNS
SOLDER COIL TO COILS
FIBERGLASS INSULATOR CARD

• This electrically small 80/75, 40, & 20 meter antenna operates at any length from 24 to 70 feet • no extra balun or transmatch needed • portable — erects & stores in minutes • small enough to fit in attic or apartment • full legal power • low SWR over complete 80/75, 40, & 20 meter bands • much lower atmospheric noise pickup than a vertical and needs no radials • kit includes a pair of specialty-made 4-inch dia. by 4-inch long coils, containing 325 feet of radiating conductor, balun form, 50 ft. RG58/U coax, PL259 connector, UG-175/U adaptor, 100 ft. nylon rope and instructions • now in use by US Dept. of State, US Army, radio schools, plus thousands of hams the world over.

Money Back Guarantee
when returned within 2 weeks

TELETRON CORP. AVAILABLE AT ALL LEADING DEALERS. IF NOT, ORDER DIRECT

Suite 100
Box 84
Kings Park, N.Y. 11784

Complete Kit #80-40-20 **\$39⁹⁵** postpaid
(N. Y. residents add sales tax)

name.....
street.....
town..... zip.....

include check with order • we ship UPS upon receipt of order • C.O.D.'s \$1 extra

So here it is; the original rubber-duck radiator ('cos that's what's inside one)!

JOE'S WOBBLATOR

Members may recall that in last month's 'Lighthouse' I threatened to build the snappy Low Cost Sweep Generator described by Joe LeKostaj, K9LY, on page 28.

Well I'm pleased to report that I DID build it and it's a cracking piece of gear. My first trial (after the trial of getting it going!) was on my 940, which I had re-

aligned in the traditional way no more than a year ago.

I was surprised to discover that the crystal filter peak (which you use as your alignment point in the book) was half way down one of the skirts and at least 20db below what it should have been. Don't ask!

It was the work of minutes to re-align it using its own crystal filter as a reference point. No sig genny, no output meter, no nothing but the scope and the wobblator. Remember the old adage: a workman is no better than his tools. Well it really shows here.

But before you all dash out and get the bits I'll tell you my 'problems and answers'. (I've spoken to Joe about these and he's quite in agreement that they're legit!)

The requirement for a 0-2v dc source with a fine voltage adjustment CAN be a 3v battery (or stable psu). I used a 2k 10-turn trimpot across a battery and monitored the output of the tap with a digital voltmeter. It works quite OK in spite of what Joe says (and saves an awful lot of trouble!).

My next problem was a bit odd; the fixed resistors shown at Rb, Rc and Rd turned out to be slightly adrift, not allowing me to trim onto centre-frequency. I have no explanation for this (other than working tolerances) so I would suggest that these are mounted on vero-pins, thus easing any possible re-fit.

My next problem was frequency drift. About five or ten kc/s in as many minutes. A pretty obvious one, this, but nevertheless a trap which I fell into.

The hi-stab 1000pf condenser between pins 5 & 6 on the function generator was not hi-stab enough. In fact, it wasn't high stab at all! The next best my junk-box could provide was 1% 2000pf items, so I used two in series. Problem solved. So beware.

Joe assumed one would know about where to lift the signal out of the Rx but I wasn't too sure. In fact I ended up feeding through a 5pf condenser from the detector anode. Fine. The result is a perfect envelope of the IF response, like the book says, with a mirror underneath. (Like a painting of a lakeside view.) I just moved the shift control so as to lose the bottom half and give me a double-sized picture of the top. Amazing!

One other thing. The two variable pots in the output level (Course and Fine) should really be linears, not logs (audio tapers, as Joe calls them). None of these values in the output networks are critical; I used 3 x 100 ohms in the output pad. No problem; we're not taking measurements here; we're looking at shapes.

Thank you, Joe, for a nice weekend project. I liked it.

NEXT WEEKEND PROJECT

Nobody reading this present edition of 'Lighthouse' could possibly fail to realise that Jack Read's plaintive feature in our last issue "Where, oh where, has my signal gone?" (page 35) has sent out ripples galore!

I've managed to rake up some old "Doublet" information, and I've got more left over in the 'futures' file. Ken Gummer has sent Jack a set of helpful procedures to follow, which we publish for all to see. Peter Lankshear, our NZ boffin has contributed a learned treatise on co-axial aerial feeders as well as another on Active Aerials.

This latter features the circuit of a 'sure-fire' unit and (I have promised myself) will be my next weekend project. I'm not saying *which* weekend, but hopefully in the not too-distant future. I can then mount it high on a stick above the roof and hope the Planning Inspector doesn't spot it! Peter has been excused Pt 5 of his "Repairs for Beginners" series until the June issue!

MORE SIGNAL COMMENT

I'd just like to throw in my two-pennorth about Jack Read's feature (as if we hadn't had enough!)

I must admit that I was slightly puzzled by Jack's description of his actual aerial. I'll quote it here to save you looking back:-

"The antenna I now use is an ex Anchor Surplus ex Army sectional whip of either 12 or 16 feet, as one sees on Land Rovers and armoured fighting vehicles in transit on the motorways. It sits on a flexible rubber doughnut, which contains a broadband matching transformer, and outlets to a BNC connector for coaxial cable . . . At present it is simply connected one conductor to the whip and one to the ground-plane rather than using the built-in matching transformer. This appears to give best results, but doesn't seem right."

I was puzzled by the description of a "broadband matching transformer". It didn't sound right for a transmitting aerial (which is what Jack is talking about).

A couple of weekends ago I visited the Grand Military Rally at Malvern, a huge affair at the Three Counties Showground, which makes the NEC pale into insignificance. (One of my other toys is a 1943 Willys Jeep, as members may have seen.)

Several traders there were offering the "flexible rubber doughnuts" (much more modern than my 19-set aerial base). So I took the opportunity to examine this "broadband matching transformer".

The outcome is this: it's not a "B.M.T." but an aerial current transformer. Just like that inside the variometer of the 19-set or an 18-set Tx. Nothing to do with matching anything. Beware!

VY 73, Graeme, G3GGL

"Eddystone Specified"

A Series of Articles featuring Constructional Projects In which the use of Eddystone Components is specified. It was first published in 1935.

ONE VALVE SUPER-HET. SHORT WAVE CONVERTER

BATTERY MODEL.

13.5 TO 85 METRES.

For converting any broadcast receiver which employs one or more H.F. valves for use on the short wavelengths.

This converter is for use in front of a standard broadcast receiver and enables the set to receive signals on the short wavelengths between 13 and 85 metres. The converter works on the super-heterodyne principle, a screened grid valve being used which works as a combined anode bend detector and frequency changer. The converter is worked from batteries, a high tension supply of 100/150 volts being required and a 2 volt low tension accumulator. The adjustment of voltage for the screened grid valve is automatically dropped in the converter itself by means of a resistance and decoupling condenser. A small 4.5 volt bias battery is used to bias the grid of the valve for detection and $1\frac{1}{2}$ to 3 volts is required, according to the amount of high tension voltage in use.

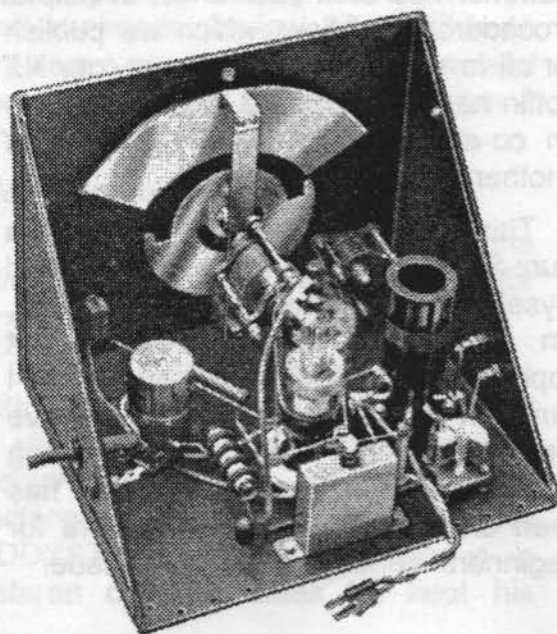
The valve used is a Mazda screened grid high frequency type SG215.

CONSTRUCTION.

The converter is built into an Eddystone 2-piece Metal Cabinet which is compact in size and gives complete screening. For the convenience of assembly, the back of the cabinet should be first removed. The actual lay-out of the parts and the wiring connections are quite straightforward and afford little difficulty. The following points are, however, mentioned for greater clearness.

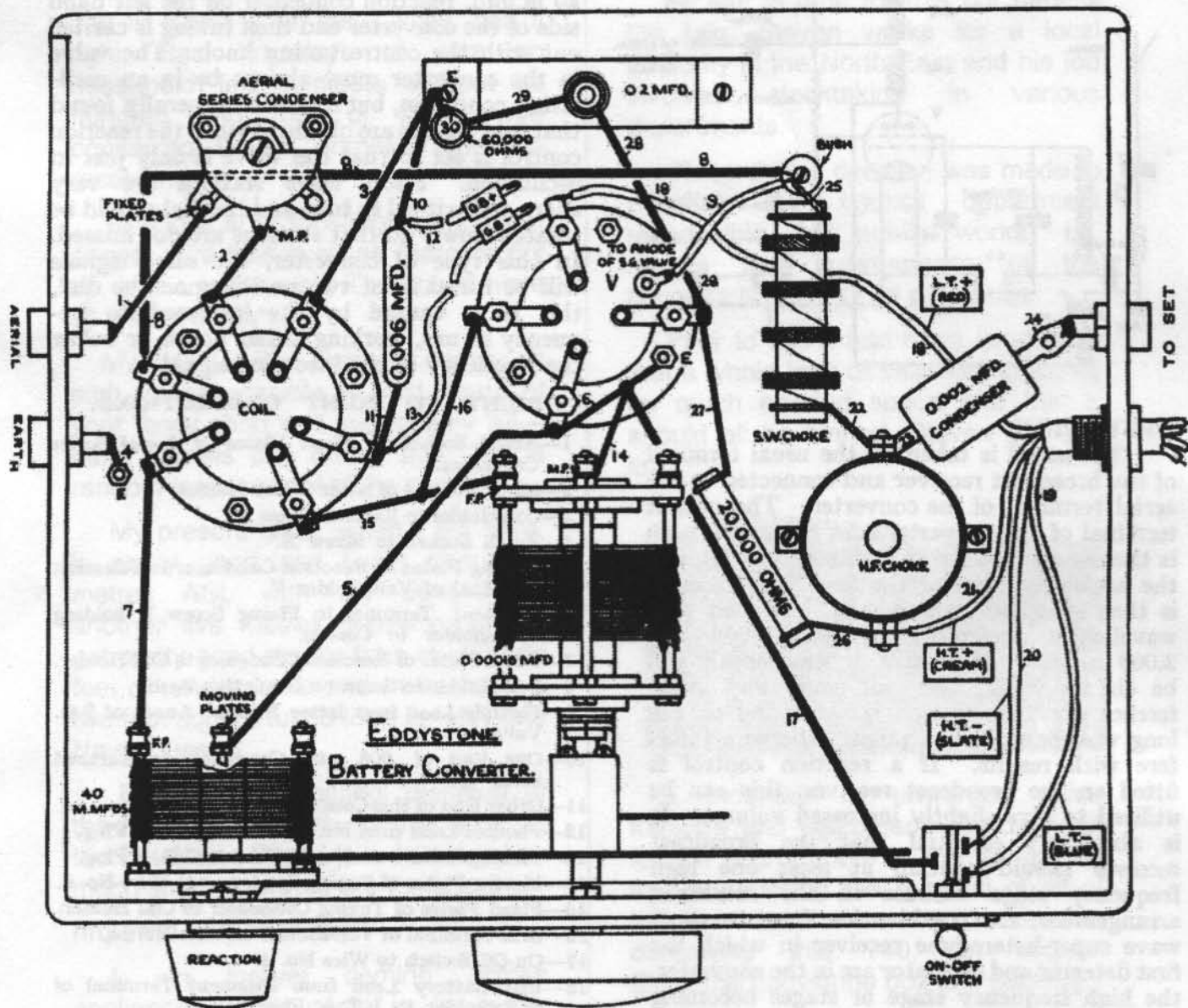
The valveholder should be mounted with lead washers between the pillars and the cabinet and also under the heads of the fastening down screws on top of the valveholder ring. Round head and not countersunk head screws should be used. This is advisable to prevent possible fracture of the valveholder, which is made from the special low loss insulating material "Frequentite." Lead No. 4 from the earth terminal is taken down to a screw and not bolted to the cabinet baseplate and the paint should be scraped away so that good metallic contact is obtained. The short

wave high frequency choke is supported by the wire ends of the choke itself, one side being mounted by means of a small $\frac{1}{8}$ " 6BA tapped pillar on the base-plate. Lead No. 9, which is a flexible lead for connecting to the top anode connection of the screened grid valve, is also taken from this bush. Lead No. 14 from the moving vanes of the condenser is taken down vertically to lead No. 6 which, in turn, is taken to one of the screws used for bolting down the valveholder to the baseboard. The head of this screw should be in good metallic contact with the underside of the base-plate. The 60,000 ohms resistance is mounted in a vertical position, the higher end (lead No. 29) connecting to the top of the .2 mfd. condenser and the lower end (lead No. 30) to the fastening down screw of the same condenser. This screw must also make good metallic contact with the base-plate. The paint should also be scraped off the condenser case itself at this point so that the case of the condenser is also earthed. The case of the condenser forms the other terminal of this unit.



BATTERY SUPER-HET. CONVERTER—continued

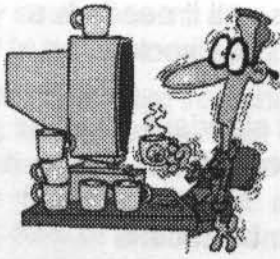
WIRING PLAN



LIST OF PARTS.

	Price		Price
1 Eddystone 2-piece Metal Cabinet, No. 974/B	29/-	1 4-way Battery Lead with spades and plugs	2/9
1 Eddystone Disc Drive, Cat. No. 970	10/6	1 3 point On-Off Switch	1/6
1 Eddystone Air Dielectric Trimmer, No. 978	3/6	1 "M" type Condenser, .006 mfd.	1/6
1 Eddystone Scientific Variable Condenser, 160 m.mfd.	7/6	1 "M" type Condenser, .002 mfd.	1/-
1 Eddystone Microdenser, 40 m.mfd., with Knob	4/9	1 Erie Resistor, 20,000 ohms	1/-
1 Eddystone Screened All Wave Choke, No. 982	5/-	1 Erie Resistor, 60,000 ohms	1/-
1 Eddystone Special S.W. Valveholder, No. 949	1/5	1 4½ volt Tapped Bias Battery	9d.
1 Eddystone 6-pin Base, Cat. No. 969	2/3	1 Threaded Bush	3d.
1 Set Eddystone 6-pin L.L. Coils, comprising 1 each 6LB, 6Y, 6R	14/-	2 Bias Plugs, + and -	..each 2d.
1 Eddystone S.W. H.F. Choke, Cat. No. 948	2/9	3 Sockets—2 red and 1 black	..each 2d.
1 Eddystone .2 mfd. 1 terminal type Condenser	2/-	1 ½" tapped 6BA Pillar, No. 3P	.. 1d.
		3 ½ Bushes (for mounting coil holder)	..each 1d.
		Screws, Nuts, Lead Washers, Wire, etc.	.. 1/8

Plus Royalty of 1/3 if kit is purchased complete.

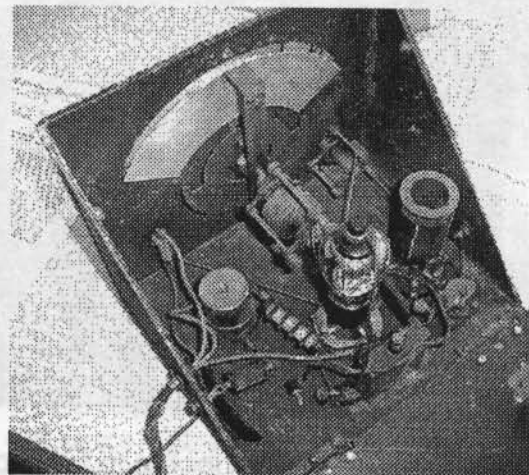
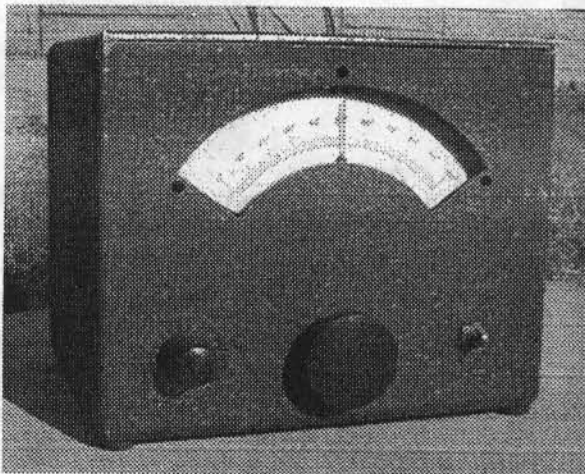


POO'S PONDERINGS

'Stray thoughts from an absent mind!'
by Simon Robinson M5POO

The last two months have been some of the windiest I can remember up here in the Arctic Circle. Sleepless nights with prevailing gales threatening to open up my roof to the stars, fences down, trees down and worst of all, the HF aerial down! At least my next door neighbour's dog now has an en-suite outside toilet in the form of my back garden!

In the years prior to the Second World War, Eddystone produced a diverse range of components for home construction. Included was a diecast box, which opened up diagonally from front to back. This useful cabinet was used in many "Eddystone Specified" projects, many of which featured in the popular 'Short Wave Manuals' of the period.



Two such boxes arrived at POO recently in a rather sorry state. One was definitely a homebrew nightmare and could not be identified as anything Eddystone. The other however turned out to be a "One Valve Superhet Short Wave Converter" featured in manual 2. Elsewhere in this issue of 'Lighthouse' we have featured the original article for your viewing pleasure. In the words of Oscar Goldman, "We can rebuild him – better than before". Until then it will be treated to some TLC and warmth! Does anyone have an intact escutcheon that will fit the set shown above?

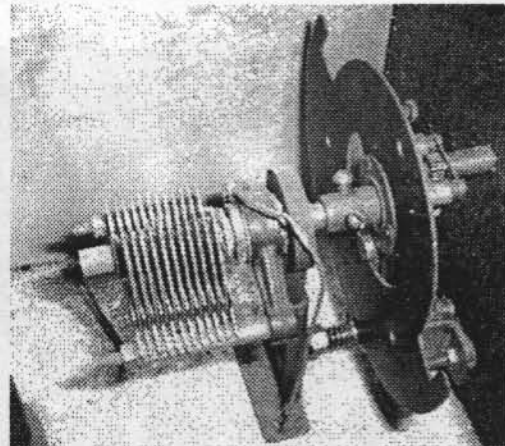
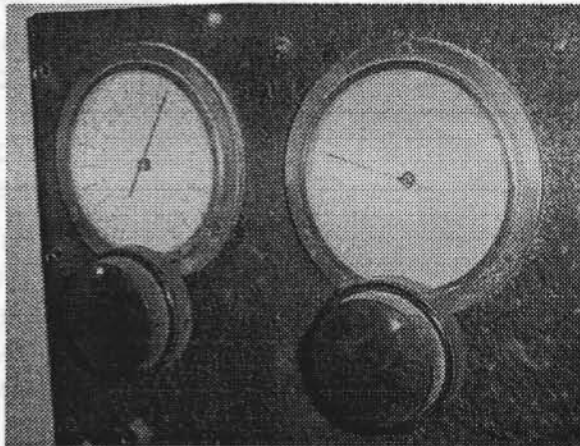
The front panel of the converter (above left) makes you wish your new FT1000MP was as simple to use with only three basic controls. Internally (above, not on the left) the converter is equally uncluttered and I've tried to use the same camera angle as in the original article.

Fortunately all the plug in coils and components are there, so all it needs is a nut and bold rebuild. Even the original SG215 valve is still in it's socket!

The converter was simply connected to the aerial input of a standard broadcast set, then the aerial connected to the short wave converter. Three, six pin Eddystone coils were used to cover 13 to 85 metres. Many of you will remember an identical principle being used with older communications receivers to obtain better reception on the 20, 15 and 10 metre amateur bands.

Full Vision Dial

One of the most elusive of Eddystone components from my point of view has been the rather pretty 'Full Vision Dial', again produced before the war. It turns out that Eddystone only made them for a few months and their mortality rate was rather high. A large (ish) batch was made for the Armed Forces but not many were in fact used. Consequently Z & I Aero Services, the valve people, had a large quantity of brand new and boxed dials as part of 'War Surplus'.



Despite this I've been unable to track one down. Imagine my delight when I was given an old homebrew project containing not one, but two dials! Finished in "Oxidised Silver", although mine seem to have missed out on the silver, they will clean up nicely and are still silky smooth to operate after years of neglect.

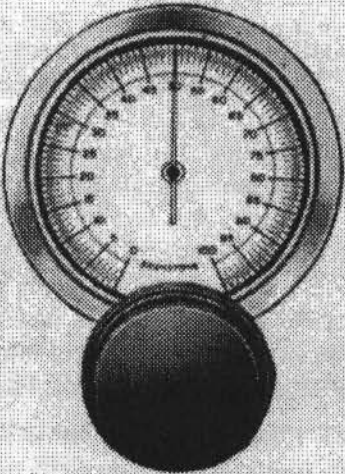
Slow motion drives of the ball bearing type tend to get lumpy when unused, requiring new balls (painful) and / or machining of the shaft (more painful) in order to restore a smooth action (ooer!). The full vision dial uses tiny gears, which survive the test of time rather better if kept lubricated. They actually have a remarkably smooth dual speed action (wow).

The pictures above show the brace of dials with a close up of the mechanism on the right. With luck and a bit of imagination you should just be able to make out the gearing on the far right of the picture.

The original advert for the 'Full Vision Dial' is featured below.

EDDYSTONE

Improved Dual Speed Dial



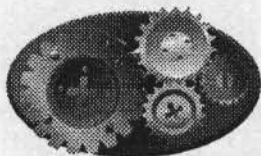
The new "EDDYSTONE" full vision dual speed dial has many features which appeal to the critical constructor. The movement is superbly silky in action without backlash on both the 20-1 and the 100-1 speeds. For high frequency work the movement is specially designed to eliminate noise. The open vision scale is clearly readable and divided into 100 graduations. Half division marking ensures accurate settings of the indicator pointer. The readings are arranged to increase as the frequency increases, which is in keeping with modern practice. The movement can be mounted from panel or baseboard. The dial face fits on the front of the panel so that no large panel gap has to be cut unless it is desired to illuminate the scale from the back. The dial can be used on panels up to $\frac{1}{4}$ " thick and takes the standard $\frac{1}{4}$ " spindle, and is beautifully finished in oxidised silver relief.

CAT. No. 1070. Code DUALX. PRICE .. 10/6

In the next issue I shall be featuring an odd beastie which was obtained from an auction on Ebay (the Internet). By that time the NVCF at the NEC will have been and gone; what may turn up there is anyone's guess!

Just before I sign off, a friend in Nottingham has two Eddystones in need of TLC. They are a 740 and a 656/670. If you are interested please get in touch. (phone 01434 633913 or e-mail simon@nomis.co.uk)

73 de Simon M5POO



EDDYSTONE GEAR TEETH

Good news for those who missed the boat on the last batch of replacement cogs, I now have some more available. The bad news is that I seem to have lost the list of those who ordered too late last time, so please would those members re-order.

For the benefit of new members or any who have forgotten what this is all about, these cogs are replacements for the damaged teeth section of tuning cogs on sets such as the 840A, 750, etc. They also fit the later sets such as the 940, 830

etc. but the tuning gears on the later sets seem to be made of better material than the brittle plastic of the earlier gears. The teeth usually get broken when the tuning drive cord breaks and gets between the cogs, you continue turning the tuning knob without realising.

Note that the Delrin repair section replaces only the damaged part of the cog and is not the whole gear, what you have to do is carefully cut off the chewed-up section (about 5mm length) and superglue on the new section - full instructions are included. It's a fiddly job but should be well within the capabilities of most EUGers.

To order, please send an s.a.e. and either cheque or cash, £3 for one cog or £5 for a pair to:

A.J. Richards, GW4RYK, Castell Forwyn, Abermule, Montgomery, SY15 6JH. U.K.

Foreign notes are quite acceptable but *not* foreign cheques due to bank charges which will probably exceed the amount of the cheque.

An Eddystone S.750

Or let the Buyer Beware!

By Roger Bebbington MØBWP

When I asked Graeme about the history of the 750 and how the 85 kc/s second intermediate frequency was decided upon, he sent me the following wonderful explanation, which I have included in full.

"The Eddystone 750 was Stratton's first double superhet (discounting the 'not quite double' 400B of 1943 in the last Issue) and also the first 'slide-rule' model. It was manufactured between 1949 and 1958 and targeted at the high street market. During this time the price increased from about £48 to £78. Out of the 2,783 models produced about a hundred or two were 'badged' as the HR100 for Marconi and used as land-based communications receivers.

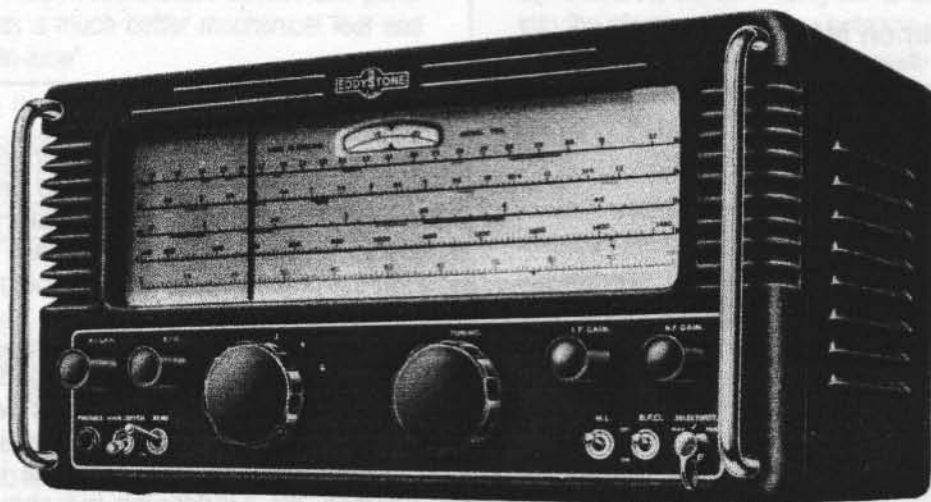
The choice of an IF for any particular set is always the subject of a certain amount of compromise. The yardstick is 10% of signal frequency plus or minus 50%! Hence 10.7mc/s for 107 mc/s which originated with RAF VHF R/T in 1940 (100 – 124 mc/s) and which in essence is still the same.

This is why any general coverage set has problems. The first British domestic superhet radios of the early 1930s had an intermediate frequency of around 110 kc/s. But when SW bands became fashionable in the mid 1930s this was useless; far too much image (or second channel) interference. Hence the arrival of 465 kc/s, which is really only good up to about 10 mc/s. And this was where the S.750 stepped in to overcome the problem and at the same time create good selectivity

10% of 1700kc/s (the first IF) was 170 kc/s, which is in the LW band. So they halved it arbitrarily; I think it's as simple as that. Anyway, it gave them what I think is the best set of the 1950s for their troubles."

(That's the end of Graeme's bit!)

Now for Roger's Eddystone 750 story



This 750 had been in a dusty loft for at least 10 years, but was in working condition when I bought it. All its owner had done was wipe the dial glass clean with a damp cloth, connect it to an aerial and plug it in. The radio was very dirty both inside and out but was otherwise apparently untouched and with the original black crackle paint finish.

Of all the valved Eddystones the 1950s slide rule ones are by far my favourites and are probably the most handsome of all the Eddystone styles. They are the ones I set out to collect when I became interested in valved radio again.

So far they have proved by far the most difficult to obtain in any sort of reasonable condition in this part of the world (*Merseyside*). Of course, all these radios are now 50 years old, but I suppose I half-hope to find them in new condition. (Wishful thinking!)

I have seen many in all sorts of condition and paint finishes, so this one was duly purchased at a reasonable price along with some other equipment, which I did not want but was part of the deal. I considered it a worthwhile trip round the Manchester ring road in the rain to buy the radio.

A spare weekend on my hands would be plenty of time to strip and clean this Eddystone, or so I thought. In the event it took me quite a while longer. In fact, I'm still working on it.

I had noticed that the tuning was quite stiff to operate when I bought the radio and that there was plenty of dirt behind the tuning scale glass. When the case was removed, it became obvious that at some time in the past a spray lubricant had been used.

It had been aimed in the general direction of the two pulley wheels at each end of the rear of the dial plate, with some over-spray on to the dial faceplate. Also a good spray had been aimed at the reduction gearing which had over-shot onto the front of the chassis and, worse, contaminated the vanes of the first section of the tuning condenser. Unfortunately the lubricant had long since dried up, more or less gluing 50 years worth of dirt to the radio.

The tuning condenser which is mounted on its back and is coupled to the scale drive spindle by means of a "ratio arm", had accumulated a lot of dirt and grime. I thought that the tuning condenser cover, which is on every photograph of a 750 I have seen, had been discarded along with most of the valve covers.

But on closer inspection there appears to be no provision made to fasten a cover on to. So I think that this model Serial No IB 0178, September 1950, which is early in the

production run, was manufactured without one. *The radio includes C85, a 500pf condenser fitted across the primary of the AF output transformer, not fitted on later models and omitted on my circuit diagram.*

Geared Reduction Drive

After the front of the radio had been removed the geared reduction drive was the first to be cleaned. Even after cleaning, its action was still very stiff and one of the split gear sets was set heavily in mesh. *The tension springs were quite compressed.*

It was obvious that the unit had been dismantled at some time in the past. There were telltale scratch marks around the retaining circlips, etc.

I decided that the whole thing would have to be stripped down; not a job I approached lightly and would have avoided if it had been at all possible. The real cause of the problem was found to be that the rear lower split gearing shaft, *viewed from the rear of the radio*, had partially seized to its bearing hole in the back plate of the reduction unit.

I suppose that this was caused by dried-up lubrication, together with a steel shaft rubbing on a steel bearing-hole. So until the bearing hole and gear shaft had been polished smooth again, any amount of lubrication would not have improved it.

The radio took me considerably longer than a spare weekend to clean and mechanically repair, but now looks quite presentable and the tuning is silky smooth.

The set has had an assortment of valves fitted over the years including a metal WW2 vintage RCA 5Z4 rectifier. It works very well as a short wave receiver, but the noise level is far too high to attempt to copy any QRP CW, which is my main interest.

As well as noisy carbon resistors and suchlike I suspect the radio has a dry joint problem. When I came to refit the front of the radio after cleaning it, the solder holding four wires connected to various controls had crumbled away.

Restoring the radio electrically is going to be a longer-term project but I intend to send the full details for Graeme to print in a future edition of 'Lighthouse'.

'Per Ardua Ad Eddystone'

★



**Personal Reminiscences
about living with
“... an Eddystone”
at work and at home
(and related history)
by Tom Toth
G4ORF
Part Two**

In our last Issue Tom Toth described how he left his birthplace, Budapest, during the Uprising of 1956, settled in Farnborough, learned English and continued his education.

Starting work as a New Boy in the Semiconductor Development Labs of ST&C he discovered the wonderful world of research and Eddystone receivers. He saved up to buy himself an EC10 and promptly started to reconstruct it! Tom continues his narrative . . .

Somewhere along the line an experimental Q-multiplier was fitted to the receiver, which worked well, but was slightly temperamental as one tuned across the frequency range, requiring frequent adjustment.

Just then a ceramic ladder network filter, with nominal 3kHz bandwidth became available. Assuming it could be applied, without modification to the receiver, then this was the answer for selectivity optimisation for SSB. It was fitted (with a suitable shorting switch) between the mixer load IF transformer output and the first IF transistor input.

The network had its own input and output transformer, so bias-

ing could be rearranged to the same values as before. I had no idea if the two IFs were exactly the same frequency. Not having a means of obtaining test equipment for a reasonable time (I had to spend time on studying as well, so experimentation had to be fitted in as and when time was available) there was nothing to do but to own up and contact the Eddystone Service Department. In due course I received a reply, that if I take my receiver to Imhof's in London, they will pass it to Birmingham.

“Oh, they don't like people messing about with their design....” I was told at Imhof's! “Have you got the circuit diagram of the modification?”

At this point I realised that my cherished receiver has also become a test-bed for ideas.

When the receiver was returned, I was discretely advised that the company actually liked the modification and "....while you are here. You are one those people, ...have you got a circuit for an S-meter? Mr. Xxxxx here would like to have it for his EC-10...." "Oh well", I thought.

The EC-10 was in use for many years, both in London & in Hampshire. Some time after my move to the south, for something like 12 or 13 years, it was not even switched off. In all that time it had only one fault, the BFO oscillator transistor became non-functional.

It occurred to me that there is no point working for the company who used to make the OC171 if I can not find out why it failed.

So, one day I turned up at our Failure Analysis Laboratory and jokingly said "I have a customer complaint!"

"Oh, who is the customer.....",

"It's me", and I put my hand out with the device.

"...Ah, I bet it is suffering from the "whisker" ...said my colleague without any further thought. He then promptly opened the case and pointed out the dreaded tin whisker. I still have it somewhere.

As a matter of interest, as the stressed (pressed metal) case releases the tension with time, it grew a very fine tin whisker that eventually shorted out some of the electrodes. It was said that one can burn out the whisker, by passing a

heavy current through it at a very low voltage.

I tried this technique, using a transistor curve tracer, where one can monitor constantly of what is happening, but it was of no use. (Whisker :1 - Writer: 0)

One early modification to the receiver was a front panel positioned switch, to bring the RF gain down to minimum. This switch and the shorting of the antenna input with high speed low power switching diodes seemed quite adequate to mute the receiver when used with low power transmitter. I think now that a shorting relay across the input would have been a better solution.

Eddystone's fly-wheel tuning makes the sets into excellent spectrum analysers & signal tracers.

Connect receiver to source via a good attenuator, switch to SSB and give the tuning dial a gentle spin in the right frequency area. May not be sophisticated, but when the beat note is heard a signal is detected.

Having a calibrated S-meter makes the receiver even more useful. At this point it was now clear, that if possible, a few other receivers with the right frequency range will have to be acquired as and when they become available, for use as instruments and as receivers.

I have thought quite a lot about improving on bandspread, without doing any serious modification to the receiver, but as usual time (or lack of) got in the way. Then, one day Eddystone brought out the EC-10 Mk2 and the project was abandoned.

Reception of LF was provided for by building a simple converter,

using one of those famous Plessey integrated circuits, initially based on a 5MHz crystal that I just happened to have.

Over the years the EC-10 was used not only for experimentation and listening but for monitoring HF broadcast. Through this activity I eventually gained a few more friends as well, at the Austrian and Australian Broadcast companies.

One of those friend, the late Mr. Herbert Kuhnle used to be the engineer in charge of frequency & transmitter planning and report evaluation at the Austrian Radio Short Wave Service. He once commented (while we were monitoring the quality of wine from the Vienna Wood), that his job would be substantially easier, if every country had a few real enthusiast with technical knowledge like myself. (Thanks EC-10!)

Soon after my move to Hampshire, the EC-10 was taken in to work for use as a ..."tuned amplifier and detector"..., now what gave me the idea for that?

Internal construction of the EC-10 taught me that every good design must be easily serviceable, preferably without total dismantling. I made very good use of this principle in my days of test equipment design and colleagues often favourably commented on this fact.

In one of the magazines reviews I have read a comment about the look of the EA-12, that it is quite suitable for use in one's living room. It reminded me of the first time my mother saw the EC-10, gently touching it and approvingly commenting that the design and finish of the receiver is unusually beautiful!

And that comes from a person who believes in antique furniture only!!!

There is one regret though. At one point I purchased a second hand 770R, on which I spent quite a lot of time cleaning it inside, in between the dial & glass and outside, replacing obvious faulty components and generally getting it ready for restoration to full working order.

As the restoration was nearing completion, I found it difficult to carry on working on it. Eventually, I sold it, complete with a set of new valves. To this day I have deep regrets for my hasty decision, especially as the receiver by then reached quite a high standard.

I think every newcomer to radio should have an old EC-10 or similar receiver, that will encourage them of looking beyond the dial. Restoring old sets is another excellent way of learning and knowing that something positive has been left to future generations.

I have very much enjoyed my association over the years with the various Eddystone receivers and have every intention of carrying on in the same way. EUG membership placed my interest into an even higher level. For now I just try to collect as much information (and hardware) as possible for future use, like data sheets of semiconductor devices, test equipment etc., and when retirement comes, I will have something worthwhile to work on.

So, the shy question all those years ago about that grey box has not only been answered, but provided me with a lifelong interest and friends. It cannot be bad!

Thomas E. Toth G4ORF

The Eddystone S.400B

In our last Issue we published details of this unusual variant of the Eddystone S.358 wartime communications receiver. I asked Pat Hawker, G3VA, radio historian and journalist par excellence, for his comments on this technical curiosity . . .

Dear Graeme,

Many thanks for your letter of February 5 and for the always interesting "Lighthouse".

I have read the items on the Eddystone Model 400B [Air Ministry R.1448] receiver with considerable interest. Clearly the use of the "frequency changer product detector" must have been a significant development for that period.

It would, combined with the 110kHz IF and the tuned audio filter, have provided very selective CW single-signal reception without the requirement for a crystal filter (which often proved unpopular with wartime operators).

I have never noted this combination before in any other receiver (and indeed until these articles had never come across this model either as 400B or R.1448). It is interesting that Eddystone regarded the set as a double-superhet some years before the term product detector was introduced.

My feeling is that Ted was correct in suggesting that this model was developed specifically for use in connection with the RAF Air/Sea Rescue Service, although I am not sure whether it would have been carried on the launches or at the RAF control stations for this service or possibly on and at both.

I had a brother-in-law who served on the air/sea rescue launches both in the Channel and off the West Coast of Africa — but not as a radioman. I doubt if he would remember anything about the radio gear, and in any case I have not been in touch with him for over ten years.

One of the consequences of this design (covering the AM broadcast bands) is that the operator could not have been distracted by listening to broadcasts — not unknown in the wartime Services!

In regard to the comment on the last page (Another picture of Eddystone at War), I agree that some wartime HRO models omitted the crystal filter which as mentioned above was often not switched in by intercept operators. However, I do not think that many operators would prefer the 358x to the HRO - primarily because of the PW dial on the HRO, and its general sturdiness.

The Marconi CR100 with an audio filter was I believe quite widely used. There was one at Hanslope Park SCU intercept station.

At the Weald SCU1 clandestine control station in 1943, we had about 10 HROs, one RCA AR60 (prewar set), one AR88 and one Eddystone 358. I am afraid that we used the 358 only for listening to broadcast entertainment stations! Maybe it was not well maintained, but I am afraid its performance did not really compare with any of the other receivers.

I did in 1939 and 1940 borrow an All World Two (from Charles Bryant now GW3SB) and used many of the excellent pre-war Eddystone components (still have a few in use) but feel it was not until post-war that the firm really made progress in the HF communications receiver field — but that product detector was an excellent idea!

73 and sincerely,

Pat Hawker G3VA

G6SL/P

Special Event

Station

G6SL was the callsign allocated to Stratton & Co for use in their Eddystone Radio factory at Balmoral Works, Bromsgrove Street, Birmingham, between the Wars. It is now held by our Patron, Chris Pettitt, GØEYO, former Managing Director of Eddystone.

This event was originally intended to celebrate the 90th anniversary of the registration of Stratton & Co as a Limited Company. The recent news of the end of Eddystone Radio in Birmingham leads us to celebrate its life and recognise the passing of an era.

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SUNDAY, JULY 7th
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