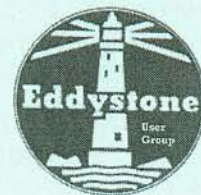


Lighthouse

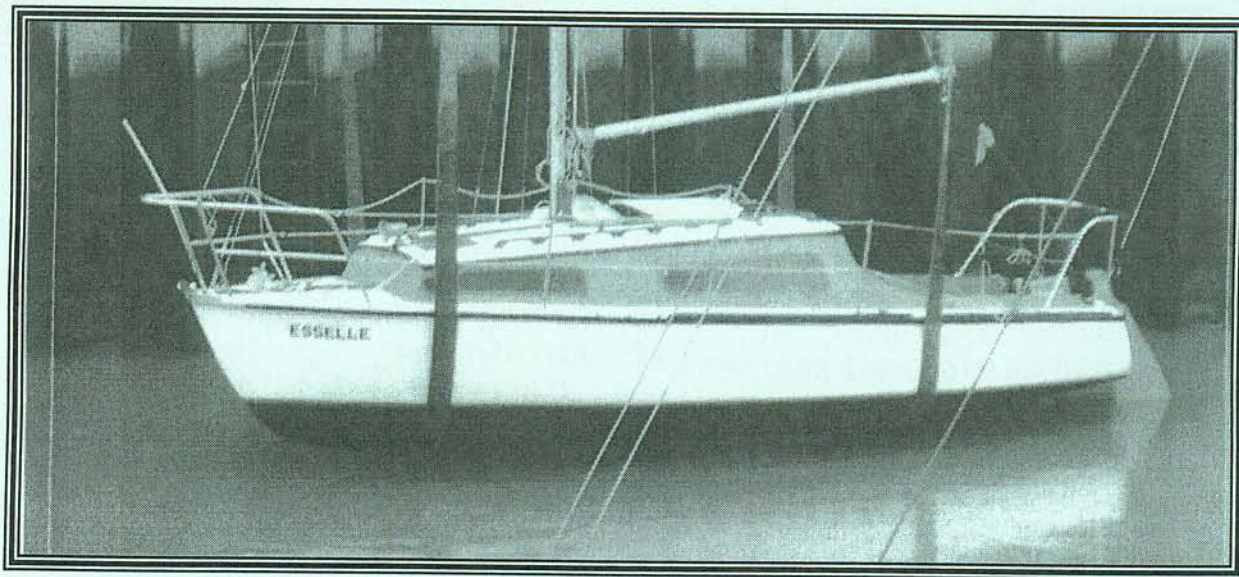
Founded 1990

The Magazine of the
Eddystone User Group

Issue 90, April 2005



The Yacht "*ESSELLE*" is gently lowered into the Wisbech Marina, March 2005.



Operating as G3EUG/MM by Ted Moore, G7AIR, she has just made her maiden 80-metre QSO from the Wash. 5/9+ in Bewdley. Well-done Ted!

EDDYSTONE USER GROUP

A non-profit-making Group for
Eddystone Radio Enthusiasts.

**Founded in 1990 by
Ted Moore, G7AIR
Issue 90, April 2005**

Membership details:-

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CAMBS PE13 2AY
TEL: 01945 467 356**

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EDDYSTONE 1650/6



Eddystone 1650/6 (Ex-GCHQ special remote control rx, released 1995).

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Remote control option with software
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30 enthusiastic users so far – join the
“1650 Club”! Phone for more details.

Geoff Steedman MØBGS, (Leeds),
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100664.3417@compuserve.com

A large number of test equipment manuals have been donated by a

member and are available via Ted
Moore G7AIR 01945 467 356:-

MARCONI TF 1101-1152-1152/1-
1152A/A1-144H-1370A-801D/8/S-
2600-2603-2175-2330A-2018A-
2019A2171.

TEKTRONIX 308-DL502-DF2-466-
7D01-TM501-475-P6451.

RACAL 9902-9906-9903-9057-CT569.

ADVANCE H1E. **GOULD** OS 300.

COSSOR CDU 150 CT531/3

HP 6116A-1825A-1804A-8640B.

**These items will be sent by Ted
against a donation of £5 each to
EUG funds. (Many thanks Alan)**

Eddystone S.870 complete except for
power connector; dark green. Also
S.680X working, nice and tidy, grey,
professionally hard-wired as re NZAF.
No case. £100 pair. Call David
Parkins, 0191 284 0897 (Newcastle-
upon-Tyne) prefer buyer to inspect and
collect.

WANTED

Wanted: case for 830/940 series;
also case for 670C/840C/EB34,
Call Ted, G7AiR, on 01945 467 356.

**Wanted: copy of handbook for
c.1959 Panda Cub valve AM Tx.
Graeme G3GGL details bottom left.**

**Wanted: mains input connector 2
point and plug 2 pole fixed, and or
mains socket polarised with earth
contact and its mains plug for an
Eddystone 870A receiver project, also
the Finger plate blue/grey in colour.
Also Wanted mains transformer drop
through chassis type for Eddystone
E.C.R. receiver to fit a 2.5" square
hole. Please telephone Andrew
Humphriss on 01789 262 872**

**Wanted: Frame Aerial for 1925 Curtis
8-valve double circuit superhet
receiver (will exchange for 1925 and/or
Burndept frame aerials or will
purchase for cash. Failing this, I would
welcome precise details of the Curtis
frame aerial, circuit and valve line-up.
Also wanted c.1957 Perdio transistor
radios type PR1, PR2 and PR4
(usually in red plastic case) and any
Perdio leaflets or advertising material.
Also wanted c.1959 Henry's (Radio)
Ltd 'QUINTET' transistor pocket radio
(usually in a red plastic case) in kit or
built-up form. Gordon Bussey, Tel: -
0108 660 2240**

**Wanted: Eddystone/Marconi
"Seaguide"/EC10M to fit on boat.
Contact Ted Moore 01945 467 356.**

**WANTED: Speaker 6" x 3", 4 ohm,
or plinth speaker complete.
Call Bill GMØKMG, 0141-562-4571.**

BACK NUMBERS OF LIGHTHOUSE are available on CD-rom and DVD: -

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to Issue 84 (April 2004); £5 each incl. p
& p to UK, overseas £6 or equivalent in
local banknotes (\$ or €) airmail.

On DVD Vols 1-60 on one disk £20 UK
(incl p & p), overseas £21 or equivalent
in local banknotes (\$ or €) airmail.
(#61-84 being prepared on DVD soon)

**EXTRA CD – DVD: there is available
a small quantity of DVDs (as just
described) which were made with
one EUG Newsletter omitted (No 16)
These are available at the knock
down price of £6 each post paid.
Order all CDs from Graeme G3GGL
details on opposite page.**



Chris's Column

Readers will know that I am a regular E-bay watcher. Well I have also been known to buy and sell a few items on there as well. Most of the items I try to buy I get pipped at the post by someone else, which is just as well as I have run out of excuses to give the XYL as to why do I needed that particular item. (Remember the days when you could get away with "I am just repairing it for someone").

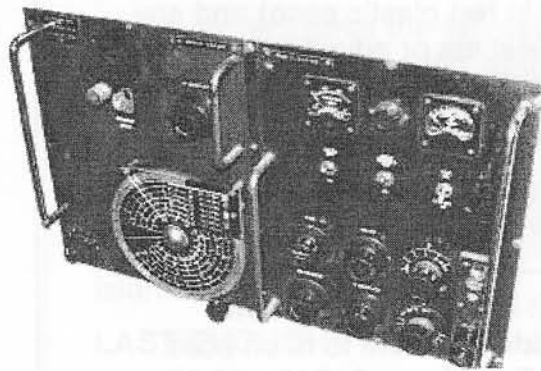
If anyone has ever wondered why American receivers became to be used so much in this country during wartime, there is an interesting reference on the subject by Joan Nicholls who worked at the Army Y station at Beaumanor in Leicestershire.

Joan states in her book on Beaumanor "Before the war, short wave receivers were not available in this country. The staff at Fort Bridgewood built their own (*I believe a reference to the R100 receiver*). There was only one firm whose Managing Director was a short

wave enthusiast and had a radio business as a sideline producing a few sets" (*surely a rather understated reference to Strattons*).

She goes on to state, "In America there were over 80,000 short wave amateurs in 1937 with Interstate and world wide contacts. This created a demand for good quality receivers and led to our acquiring National and HRO receivers through Lend Lease. The first HROs arrived at Bletchley in February 1941 followed by SX28s and AR88s"

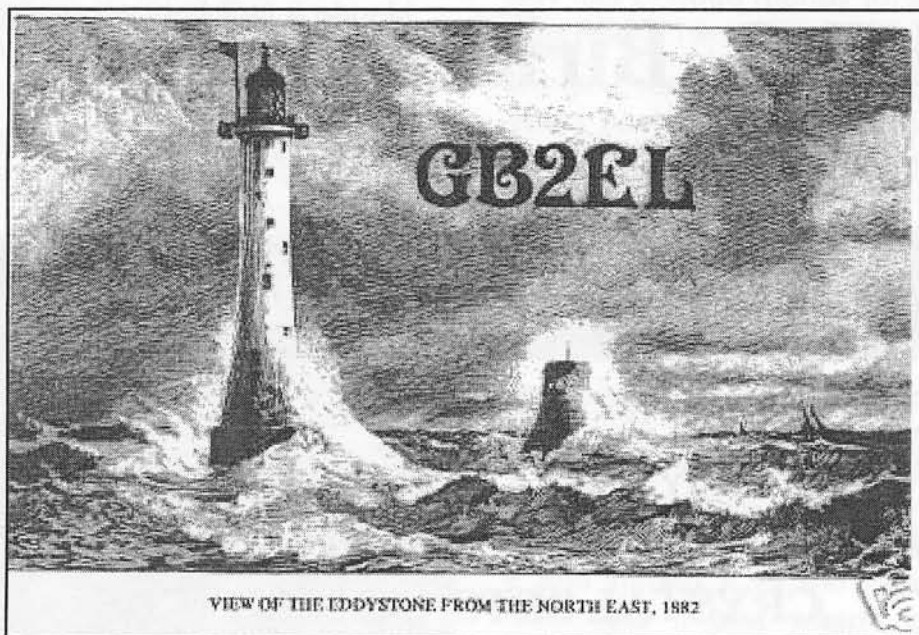
Some of our readers will know that I have an interest in collecting receivers that were used for wartime intercept work. These include the AR88, HRO, Hallicrafters Super Skyrider SX28, Eddystone Kilodyne Four and even the Eddystone All World Two Valve Kit receiver. (refer to the many interesting references on the RSS in previous issues of the Lighthouse and Graeme's "Secret Service" feature this month).



Well imagine my surprise when another holy grail of intercept receivers the DST 100 appeared for sale on E- bay in February.

It is believed that only 100 of these were made and they covered 50kHz to 30MHz in seven ranges. Well I had to have it didn't I?. I started bidding and it eventually it was sold for £155 to "railprintman" when the seller closed the auction early for reasons known only to himself.

I was most disappointed; I doubt I will see another example of this receiver again. (Unless one of you has one stored away somewhere)



I decided to console myself with a less adventurous purchase. A QSL card for GB2EL a special event station celebrating Trinity House. The card shows a view of the Eddystone lighthouse from 1882. This is a confirmation of a contact made in 1981, and the reverse has a brief history of Trinity House and of the Eddystone Lighthouses..

Only cost me £4.50.

We shall be meeting EUG members again at the NEC Vintage Fair on Sunday 1st May. Graeme, Ted, James and myself will be there and we look forward to renewing old acquaintances. Look out for our 'Lighthouse Logo' at the same place as we were last year

Vy 73

Chris GØEYO

Patron, Eddystone User Group

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EDDYSTONE

BROADCAST

Les Crompton, sales Manager of Eddystone Radio before the "crash" of GEC/Marconi, brings us up-to-date about the transmitter division, which has risen from the ashes (with a new logo . . .)

Eddystone Broadcast supply complete FM transmission systems to the international market.

Eddystone is a name that is legendary in radio, and has had a market-leading international presence for over 70 years. Broadcasters worldwide have come to rely on Eddystone as being their solution with innovative products that offer low cost of ownership, exceptional reliability and a high return on investment.

Eddystone Radio, formerly part of GEC Marconi, was purchased in 2002 by Sound Broadcast Services and re-launched as Eddystone Broadcast to

reflect the wider range of solutions both in the current portfolio and on the design table.

Eddystone Broadcast's new 7600 series transmitters are based around a high efficiency, broadband, 300W RF amplifier module, industry standard switching power supplies and controllers all of which are common across the entire output power scale from 500W to 20kW. The reduced footprint (standard 19" rack up to 10Kw) and common spares holding of the range provides real benefits to the end user.

Highlights of the product range:

- Compact lightweight 'hot pluggable' 300 Watt amplifiers which can be removed and replaced while the transmitter remains on air.
- Common identical amplifier modules reduce the cost of ownership and of course all amplifiers are completely broadband.
- Hardware based system controller overrides the microcontroller in the event of a fault, ensuring the transmitter always stays on air.
- Advanced TCP/IP addressable microprocessor based controller displays parameters, controls modules and built in exciter controller/changeover.
- Lightweight industry standard wide voltage range power supplies, again common to the entire range at all powers, are also completely hot pluggable.

Overview of FM Transmitters:

The S7600 FM transmitter range is an evolution of the highly modular architecture for which Eddystone Broadcast transmitters are known. The use of 300W hot-pluggable Power Amplifier modules means that removal of amplifiers can be carried out with minimal reduction in output power. The design also features highly efficient hot-pluggable switched mode power supplies, which also provide ease of servicing.

Both PA and SMPSU modules are lightweight and common to the entire 7600 range from 500W to 20kW, resulting in greatly reduced spares holding costs for networks and groups.

The drive input is fed to an internal multi-way splitter, which provides the PA module input drive. Each power amplifier uses dual packaged MOSFET's mounted on a substantial heatsink assembly with minimum airflow over RF components, DC

power is fed to the RF modules from the 2 switched mode power supplies. Internal control and self protection in case of reverse power, excess current or over temperature is handled within each individual power amplifier module with all monitoring being micro-processor derived. Each module transmits its internal parameters to the central transmitter controller/monitor and parameters are displayed on an easy to read backlit LCD screen.

Outputs from the power modules are combined via a highly efficient multi-way common rail Wilkinson combiner. The combined RF output is then fed to the output coupler and harmonic filter.

Eddystone Broadcast low power transmitters have self-contained redundant cooling fans mounted on the rear of the transmitter. This cooling system can be ducted if required and bespoke systems can be provided to meet special requirements.

Special features:

- Compact Amplifier and PSU Modules are replaceable On Air
- Fully compliant with ETS 300 384 specification for FM transmitters
- Designed to meet or exceed all relevant European and FCC specifications
- Easily configured into a wide range of system architectures
- Uses highly efficient SMPS power supplies with PF correction
- Comprehensive remote control and monitoring facilities via RS232 or TCP/IP
- LCD display ensures easy local monitoring

The Eye of the Storm

Les Crompton, Eddystone Broadcast



No, not a victim of the Tsunami, but a result of the
January storms in Scotland!

This Eddystone, which is one of the new range of 500 watt FM Stereo transmitters, is located in Western Scotland where the January gales topped 120 miles per hour (*almost 200 Km/hr*).

It carries the transmissions of the new community station, "Two Lochs Radio" on Cliff Hill, Renfrew-shire on 106.6 MHz.

When the electricity supply was restored to the area the station managers were astounded to find their programme was still going out! Yes, you are looking at a working Eddystone. It gives a whole new slant to the meaning of "reliability" . . . ♠

The Consequences of Good Things

coming to an end . . . *the Importance of Silver Linings
and an Eddystone 830/4 for \$50 (£20 in English)*

By Brian Cauthery VE3DFC

Eddystones are without doubt "good things" and the accuracy of the axiom in the matter of all good things coming to an end . . . well, I suppose that it cannot be doubted. It's just that as I struggled with my mobile rig on November 1st, 2003, in the knowledge that my 40, 50 and 60-year-old gear very seldom gives trouble ---- the imminence of the end of my favourite 830/4 did not enter my head. Four days hence, the evening of November 5th, the 830 would be stricken . . .

November 5th at 8.00pm EST was the Boatanchor Net. A weekly event for which I mobilised the 830 and my Hammarlund HX50 SSB-CW-AM transmitter (owned from new in 1962). At 7.45 I turned the rig on and went back upstairs to make myself a cup of coffee.

The smell of burning which greeted my return to the radio room was overpowering. One could say that the warm-up was well advanced. The ghost of Guy Fawkes was in the rig. Main switch off, leaving lights only.

Smoke pouring from the 830. A flicker of flame from the Eddystone's power supply end and . . . poured the coffee through the ventilation holes . . . flames extinguished to the accompaniment of a smell like a mediaeval rendering plant . . .

I removed the case from the 830 . . . what a mess! The cause? A short to the case by the center dial illumination bulb connection. The LT winding powering the dial lights shorted to ground on one leg. Molten PVC insulation festooned from the green/yellow wires; greasy smoke-stains everywhere. And the 2-amp fuse did not blow.

The overheat problem had been building up for some time. The connection plate below the mains transformer showed severe signs of thermal distress around the connection studs. After removal of the transformer and a detailed examination of the rectification area and connections it was apparent that any connection to the 140 and 3300 ohm wire-wound resistors had been damaged by the conducted heat. The insulation on the base of the stand-off supports was carbonized.

In pursuit of a new or good used 830 transformer, I called into all the swap nets. I visited all the possible transformer sources in and around Toronto. I called the commercial restorers of old radios . . . all without success.

Then one evening three months later I received a call from John Gillespie of the Vintage Radio Hospital in Hamilton, Ontario with the message that Carola Radio in Edmonton, Alberta, had a non-working Eddystone 830/4 in which the mains transformer was undamaged.

A telephone call to Carola Radio confirmed this. The price asked was \$50.00 Cdn + freight. During the

conversation it transpired that they also had a Gonset G66B / G77A / PS 3206 mobile receiver, transmitter and power supply which dates from 1956. So I bought the Eddystone and the Gonsets sight unseen.

I have bought six or seven radios over the telephone and upon receipt of them I have always found that the sellers understated the quality of the piece and eight days later when the parcels arrived I was quite delighted with the Eddystone and the Gonsets.

If I had the ability to influence the laws of the universe, I would like to make it policy to have a silver lining after a serious set-back. One could tolerate adversity, strong in the knowledge that the silver lining would soon be at hand.

I opened the parcel containing the well-packed Eddystone 830/4 – the front panel was a little dingy; there was a small dent in IFT 3 case and ½" of grey paint off the coil box cover. All else was as though a few weeks had passed since it was put into service in 1968. The silver lining had begun in earnest!!

This 830 is a gem. Only one component within the radio had been replaced since new . . . C159, the .05 heavy duty cap across half the mains transformer secondary.

It wouldn't work because there were several dud tubes; C113, the audio feed cap to grid one of V9 had a broken lead; one of the 3.3k wire wound dropper resistors to the 0B2s was open circuit.

Other than the slightest heat staining by the screen droppers to the IF tubes there was no sign of heat distress beyond the power supply area. The stand-offs to which the 140 ohm wire-wounds are connected had carbonized but not bad enough to conduct.

All the above shortcomings were

corrected in one evening, at the end of which I connected up the power shorting links plug, antenna, ground and speaker then switched on.

The tuning was stiff from lack of lubrication but the \$50 830 worked on all bands! The audio wouldn't reduce to zero but I remembered the 100 mfd at 50 v electrolytic cathode to ground on the 6AT6 and that problem was disposed of.

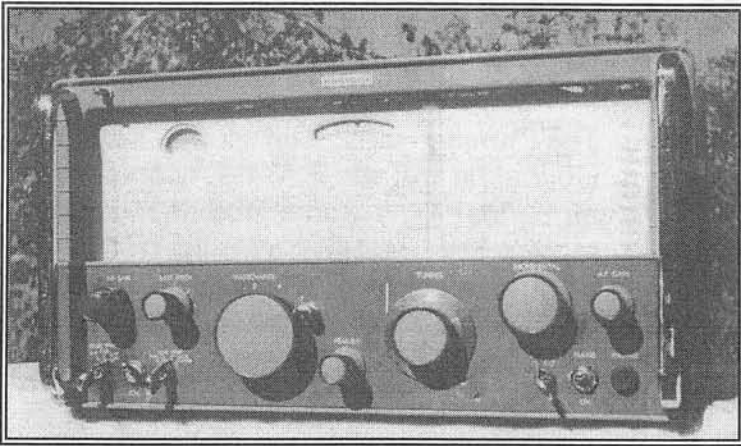
At this point I began a serious look around this 830. The year-month-day production label was missing from the main tuning capacitor cover but a new metal plate on the back panel told me the guarantee was implemented on April 9th 1968 by CRC (no mention of CRA).

So I deduce that the build date was late 1967 or early 1968. The build quality is vastly impressive, the precision and symmetry of the component placing looked like a parade ground. Eddystones are always impressively assembled but this one exceeds any other that I have seen in the orderly nature of its construction.

At this point I realized that the Burgess micro-switch that brings the crystal gate into circuit was intermittent. I replaced this with a spare and a comprehensive test of all tubes resulted in four being replaced. The rest were 90%+ on the tube tester.

All my other 830's have been earlier productions, this one is four or five years later and the differences are . . . well, nice to have. It has Ediswan "Clix" tube bases; green high density polyethylene insulation sleeves on the through-chassis pins which support the B+ (HT) . . . this has higher heat resistance.

The dial plate is pale cream in colour instead of the darker buff of my early 60's 830's; the finger-plate is die-



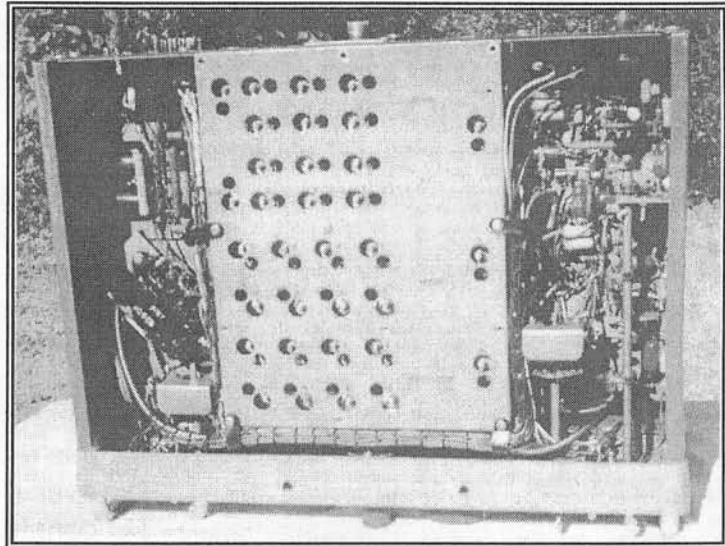
The 830/4 on a brilliant October day. Note the two holes, the SS flange behind the tuning knob and the graticule at ten o'clock.

You can just see the rim wear in the sun's reflection caused by the drive system.

The underside . . .

A study in industrial artistry, which deserves an award for good planning-

Not to mention durability.



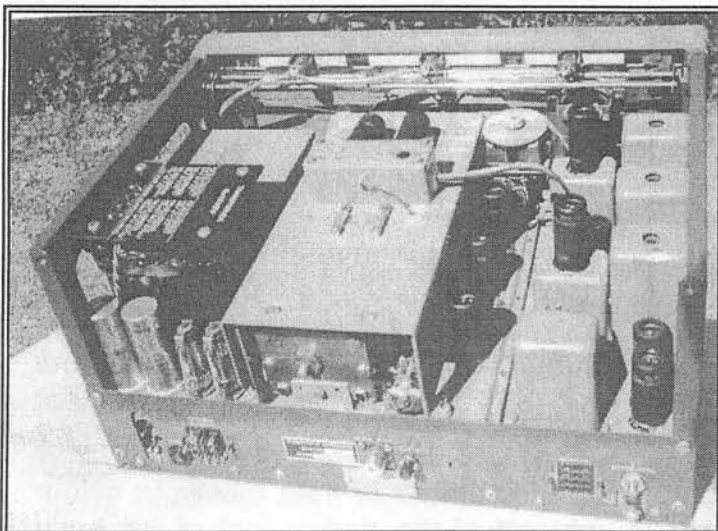
The rectangular plate bottom centre reads:-

LF MF Tunable Receiver.
Type EDY 6713 Serial No
66. Eddystone Radio Ltd.

The stick-on label above
left reads:

Guarantee in accordance
with CRC 207 Begins
April 9 1968.

CRC is a Govt of Canada
Dept of Purchasing group,
which distributed the
Eddystones.



stamped (rather than the silk-screen painted lettering) and the RF and crystal positions are picked out in red.

In the picture of the front panel (see last page) note the unusual tuning knob with the stainless steel backing flange, the white graticule line at ten o'clock and the two holes drilled through the finger-plate with BA tapcons set into the cast frame. The edges of the holes in the finger-plate are painted the same colour as the plate so I conclude that it is an Eddystone modification. But what did these holes support? Marks on the finger-plate indicate that a plinth had been bolted there and the outer edge of the SS flange behind the drive system of some kind . . . could it have been an autotune addition?

I cannot think of anything else which would leave these marks. I have never come across any other 830's with this mark and hole combination or this type of tuning knob. Any ideas?

I noticed that the background noise seems to be a little less than the (already low noise) character of the other 830's and a weak signal comparison on 21 MHz showed that the \$50 Eddystone was a rather better performer than even my chronically grungy but excellent 830 purchased about 20 years ago. A VTMV comparison confirmed this. The main fault was the stiff tuning and dusty state of the front panel plus lack of lubricant on the gears. Then the slackness on the stainless steel cursor drive wire and I realized that the cursor wire had been replaced and the front panel had been removed to achieve this.

I removed all the knobs and then the finger-plate. USE A THIN-BLADED KNIFE TO DO THIS AS ANY BENDING WILL CRACK THE PAINT AND YOU WILL NEED A NEW

PLATE. This process revealed all sorts of interesting discoveries. The stiffness in the small controls was due to corrosion (tarnishing) of the plated shafts where they pass through a brass bushing. Those with no brass contact were clean. The mounting of the RF trimmer capacitor also showed this blackened tarnish. I polished this off the affected parts with "Trim Brite" and added a small amount of 20/50 oil before re-assembly.

Of the four tapered brass bolts which mount the front panel on the coil-box, one was tight and three were loose . . . That combination is no help in the maintenance of accurate alignment between the chassis and the front panel.

The rack and pinion which drives the Incremental Tuning system had been removed and replaced in such a way that the Red side had about 130 Kc/s swing and the Black side about 65 Kc/s swing. The trunnions on which the rack runs were bone dry.

To solve all this I took the gear system apart, cleaned, lubricated and re-aligned it all and tensioned the backlash springs in the correct direction on the tuning drive gears. Then I put the whole front panel and controls together and mounted it on the four locating bolts.

With the aid of a 90° set-square I determined that a five-thou shim on one anvil face was needed for a correct alignment. Now the tuning is like that of any other Eddystone.

With the removal of the mains transformer from the smoke and flame damaged radio I was able to cut sections out of the insulation between the bottom (Paxolin) connection plate and the actual windings. The damage to the interior of the transformer is serious. The copper wire is brittle and heavily discoloured. This is especially

true of the connection studs on which the 140 and 3300 wire turns are soldered.

In an earlier Lighthouse, a suggestion was made that metal-clad resistor mounted on the side-wall of the power supply area would help – I agree. There is space to lift the transformer itself on .350"-thick washers to give ½" clearance. This would improve the ventilation of the power supply compartment. One must however remember that it has taken 40 years for these problems to arise.

I was at the point of the comfortable knowledge that the repair and restoration process was complete when I realized that Range 1 was suffering from a frequency jump. Every time the radio was touched there was a two to three hundred Kc/s frequency change. I checked the voltages and resistances once more, as before; they were within 10% of those intended by Eddystone radio. Every wire in the oscillator section of the coil pack seemed to cause the frequency shift, especially the bundled ones.

The Range 1 coil mounting screw had been over-tightened and stripped. A new BA screw corrected the twin faults of a loose coil and an intermittent ground connection. I took this opportunity to tighten all the coil mounting screws. Most of them had creep stretch with the passage of time and were easily snugged up half a turn.

The final on-air test revealed a further problem. The Incremental Tuning suffered from "wind-up". The friction within the rack and pinion bearing surfaces was sufficient to cause wind-up, this even after judicious lubrication.

The problem manifests itself as first a stalling in the rotation of the Incremental Tuning Scale, followed by

a quick leap in rotation to catch up with the lost motion.

A second removal of the front panel was needed to get to the pinion gears and to their bearing surfaces where I found the same tarnishing and oxidation mentioned earlier. The oxide of brass decreases the clearance between the steel bearing-pin and the bore of the gear, causing a partial seizure. I disassembled the pinion gears, cleaned the bearing surfaces and re-lubricated them. With the problem solved, I re-assembled the mechanical pieces, re-installed the front panel and this time everything functioned correctly . . . My \$50 830/4 was like new in all respects. I now realised why the rear part of the radio was so clean and the front panel so dusty and grubby. The set had been in one of Canada's famous OSF (Obsolete Store Facilities) for many years with tons of other wonderful radios.

It had been stored on a shelf where the shelves above and below protected the chassis and back of the radio from the accumulation of the dust and dirt but the front panel was exposed to all the detritus thrown up by the fork-lift trucks running around the aisles.

So, and the end of this fortunate story, the silver lining has provided a wonderful 830, for a very attractive price . . . one which has been great entertainment to overhaul. However I am still in a quandary. I could not possibly take the mains transformer out of the Edmonton 830 (the purpose for which it was purchased) nor can I assign the offensive name "parts set" to the long-serving 830/4 that Barbara bought for me 15 years ago. So does anyone know where I can buy a good mains transformer for an 830? Your price willingly paid.

Brian R. Cauthery, VE3DFC

E Bay Watching

by Chris Pettitt GØEYO

This month I will concentrate on Eddystone items sold in the past few months, which have attracted very high prices, mostly because of outstanding condition.



First up was an as-new EC10 in original cardboard carton exactly as it left the factory 40 years ago.

This sold for £250 and the bidder described it as in mint condition probably never used.

A very nice example at a top price.

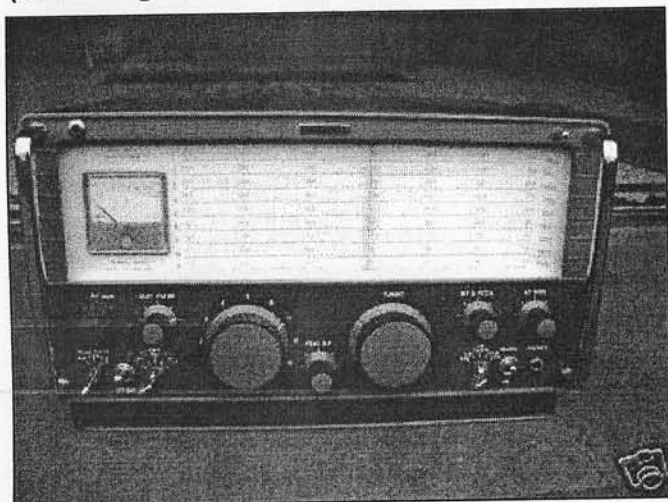
EA12's have always got good prices but even recent excellent prices were bettered with this example which sold for £283. The seller described it thus; -

"This Eddystone's in really nice condition and not far off mint. The all-important scale plate and fascia plate (behind the knobs) are perfect, but there are a few very minor marks to the case. The light grey surround to the

front panel is not chipped as they so often are. Apparently the S meter on this model is usually cracked, but this one's perfect, as is the lettering on the fascia.

Had several goes at photographing the front of the set but for some reason the camera took an intense dislike to the scale plate and insists on making a right pig's ear of it; please be assured that it's perfect, and incidentally the radio seems to have lived all its life in a non-smoking environment.

All original knobs and switches are present and correct, and there appear to be no modifications to the set; it's in good working order, pulling in loads of signals on all bands (listening to a top band contest



as I type this) and all the controls do what they're supposed to do. the only exception is that the standby switch does not entirely silence the audio when on high volume.

Comes with original factory handbook"

It certainly looks a nice clean set from the photo and the purchaser would seem to be a Midlander given his nom de plume.

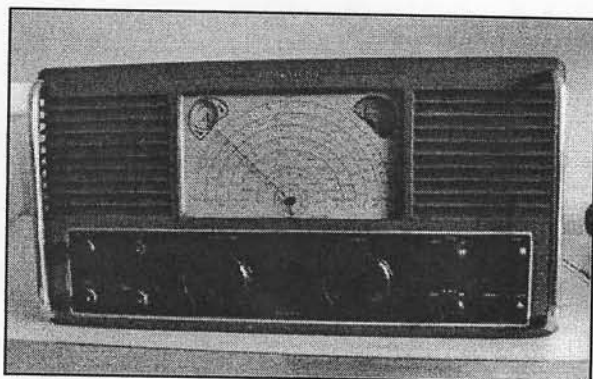
A nice S870A caught my eye because of its wrong description: -

"This fabulous example of a genuine Eddystone radio is still working on several bandwidths, and is in fantastic condition as you can see from the pictures. This would not only be a great buy for any collector or radio enthusiast



but would also make a great design feature for anyone's home. As well as being a radio, its a piece of Bakelite (Bakerlite) art, with a fabulous dark green case with only a few scratches and chips (no serious dents). These are very rare, even more so when working on several bandwidths. Several helpful eBayers have pointed out the case is metal (which I can confirm it is), probably steel and is painted dark green over the metal. I've been told the model is S870A (not 5870a as I thought) with the A denoting the extra waveband making five in total"

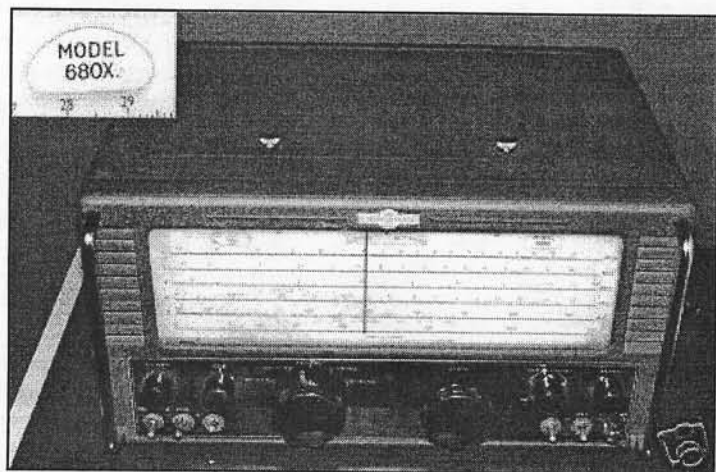
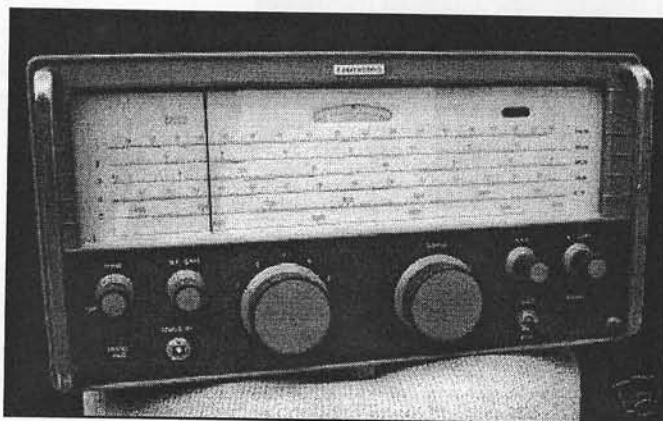
Still a nice example that eventually sold for £109.



Even older sets got good prices as long as the condition was good.

An S504 described as being in nice clean condition went for £115.

And an 840C reached a good price when it went for £107 despite having a broken toggle switch and mains connector.



Even I thought the 680X which needed a good clean up but sold for £156 was cheap in comparison to one that sold last October for £250.

As a regular E bay observer I would say that our favourite receivers are getting more and more expensive and perhaps should be considered as investments for the future.

Well that's all for now, happy hunting,

Chris Pettitt GØEYO

The Duffers' Guide to Valve Set Fault-finding – (part five).

By Graeme Wormald G3GGL

It has been very gratifying to receive positive feedback from members who are finding this series helps in their understanding of valve sets. There are many people, and I'm one of them, who are incapable of following any mathematical or academic explanation of radio-related technology. This has triggered Tor Marthinsen, our very academic Norwegian Correspondent, to react quite strongly to our last episode (AC/DC power supplies).

Tor is a fanatic for detail and made the point that **"THERMISTORS ARE THERE TO PROTECT THE PILOT LAMPS AND THE TUNING INDICATORS IN EDDYSTONES!! OTHERWISE THESE WILL BE DESTROYED . . . "**

I suggested to him that he put us wise with a treatise on the subject and he has done just that! You'll find it in this Issue a few pages hence.

In the meantime I'll try and give a few words about oscillators, as promised six months ago . . .

Discounting the requirements of transmitters, all post-war Eddystone valve receivers have at least one oscillator stage in them. Most have two and several have three.

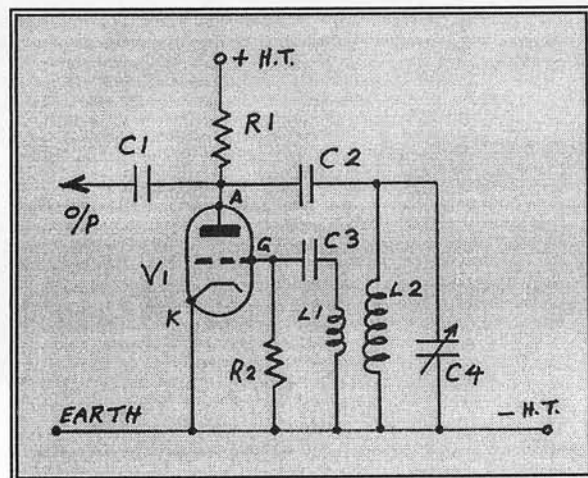
For the record, they all have a "local oscillator" as part of the frequency-changer because they are all superhets. (We'll deal with that aspect in another Issue.)

Most of them have a beat-frequency oscillator to resolve Morse and S.S.B. and the double-superhets, such as the 750, 888, 830 and EA12, have another "second" local oscillator to change the first intermediate frequency into the second (or narrow-band) I.F.

But let's consider now the question of oscillation and how it happens.

If a triode valve is so arranged that its output circuit is coupled back to its input circuit, in such a way that the voltage applied to the grid is opposite

in phase to that which exists in the anode circuit, then the valve will operate as an oscillator.



This means that it will generate an alternating voltage in the form of a sine-wave (i.e. 'radio waves' in our case), the frequency of which is determined by the circuit constants, that is to say the coil (L1) and condenser (C4).

The above circuit represents the basis of the majority of self-excited (i.e. free-running) valve oscillators that will be found in receivers. Let us consider it in detail piece by piece.

The valve, V1 is shown as a triode. There is no virtue in using a pentode for the job; the pentode was designed not to oscillate! If one is used it will usually be found to be strapped as a triode.

An oscillator is self-starting; that is to say that the tiniest impulse of "cosmic noise" (or whatever) appearing on the grid "G" will re-appear at the anode "A" magnified to a certain degree.

This impulse is blocked from reaching the H.T. (and hence to earth) by the load resistor R1 (typically 47k).

The output feed condenser, C1, is typically 10 pf and will be of higher impedance (i.e. high frequency resistance) than C2, (typically 100 pf). This condenser (C2) serves the purpose of stopping H.T. from shorting direct to earth via L2 but at the same time allowing the impulse to reach the resonant (tuned) circuit, L2 and C4.

This resonant circuit has the property of turning these "random" impulses into a sine wave, the frequency of which is determined by the value of these two components.

It actually occurs when the impedance of the coil L2 equals that of the condenser C4. The current flowing through each (and hence the voltage) is in opposite phase to precisely 180°. The resulting impedance is considerably greater than each separately and will have a magnifying effect on the sine wave.

An analogy can be made with a hard bat and a rubber ball being bounced on a hard floor. As long as the bat is coming down as the ball rises then an oscillation is maintained.

This sine wave is induced into the aperiodic coupling coil, L1, which transfers it through the grid condenser C3 (typical value 50 pf) onto the grid. The grid has zero static bias and when the sine wave goes positive then a D.C. current will flow, the circuit being completed by the grid leak, R2 (typically 22k).

The grid condenser (C3) will stop this negative voltage leaking away during the negative half-cycle from L1 and the oscillator therefore operates in Class "C"

There is, of course, a hell of a lot more to it than this, but you can go to the big books previously mentioned for that. The principal is established. It's like a Class "C" amplifier with grid leak bias being driven by its own output. As long as the current in the circuit is continually being replaced by the feed of H.T. via R1 it will keep on going.

FAULTS

The condensers shown in this circuit will all be good quality silver-mica and should be reliable. Both R1 and R2 carry D.C. currents during their operating life and may therefore go high, but easily checked. The coils L1 and L2 (which are wound on the same former) are unlikely to fail unless they suffer from the dreaded "Green Spot", in which case they will have gone open circuit. The tuning condenser C4 will almost certainly be air-spaced and will last forever if kept dry and clean.

In addition, of course, there is likely to be a whole raft of wavechange switching and trimming devices which will be susceptible to dirt and damage. An aerosol tin of switch-cleaner should always be to hand.

In a further episode we will consider the actual use of oscillators in a radio receiver.



“Per Ardua ad Astra”

by Jack Read

It must be three or four years since I mentioned in these columns that I was planning some experiments in the field of amateur Radio Astronomy. Since then silence; which is a fair reflection on what came out of the headphones! At last, though, earlier last year I did a couple of experiments that actually worked, so it hasn't all been a complete waste of time.

My early mistake had been to try to “listen to” the Sun: a great fizzing ball of radiation up there, known for flares and energy bursts, well researched and reported by others and a “piece of cake” for the novice to start on. Indeed, at night one might even expect to pick up energy reflected from the moon!

I made up two long yagis for the radio astronomy frequencies of 136MHz and 151MHz, coupled to appropriate low noise amplifiers, and waved them around in the garden when the sun shone, whilst the neighbours looked on and said nothing.

I picked up our computers, the neighbours on the right's computers, the neighbours on the left, and some down the road. The sun was strangely silent. I decided to forget the moon for the time being.

Re-reading the books and magazine articles it was clear that phenomena occurred, but only occasionally and not for very long. It would be necessary to set up a permanent monitoring site with continuous recording, and look for events and anomalies; and this I was not equipped to do.

One can go to the internet and dial up <http://sec.noaa.gov/today.html> which reports solar disturbances, but

necessarily after the event; and offers forecasts of the probability of future events. But for me it never seemed to happen. Deeper reading revealed that most sun “spotters” did not look for direct radiation but monitored the effect on terrestrial radio caused by solar emission bursts disturbing the ionisation layers above the earth. Continuous monitoring of a distant VLF station was recommended. So I dismantled the Yagis, put the bits in the garage, and sat down to give it some thought.

I picked up the RSGB book called the Space Radio Handbook by John Branegan which said in essence “Listen to Jupiter, listen to meteors: any fool can do it; and basically he was right!

Jupiter, it explained, radiates continuously on 18 to 24MHz, centred on 21MHz, and can be picked up as soon as it appears above the horizon. So I cut a 21MHz wire dipole and hung it across the back lawn shoulder high on an east-west axis, that is to say “looking” south, and used KStars (see <http://www.kde.org/>) which provides a star map with the positions of the planets throughout each day, all year.

Shivering on what felt like the coldest night of the year I waited until Jupiter

popped up over the house, and there it was: a broad band of strong steady signal from 18 to 24MHz. An hour later I tumbled into bed elated: something had at last worked!

But was it a fluke? Was it actually Jupiter, or just some broadband hash as plagues this area? To try to resolve the issue, for the next night I set up a screen of chicken wire, somewhat longer than the dipole and about 4 feet wide, which could be raised and lowered to mask off different angles and directions. With trusty assistant recording the signal strength I raised and lowered the screen and true enough when in line with Jupiter the signal was cut off: anywhere else the signal came through. Not conclusive, because it could still have been some other source in line with Jupiter, but it was good enough for me. Big smiles and tick the box!

Listening to meteors proved equally easy. There are five big showers each year: the Quadrantids between 3—5 January; the Lyrids between 19—24 April; the Perseids 9—13 August; the Leonids 12—16 November; and the Geminids 8—16 December. To listen cut a dipole for 48.25MHz and hang it up horizontally on a N—S axis, looking East. Tune in with the receiver set to CW and listen. You should hear several 'pings' a minute as the meteors streak across the upper atmosphere, leaving trails of ionisation which live for a second or two. With the larger, longer burning-ones you can hear the Doppler shift as they pass overhead.

Of course you are not actually listening to emissions from the meteors in the proper radio astronomy sense. What you are listening to is the carrier waves from eastern European television transmissions being momentarily reflected by the ionisation trails, so it's

a bit of a cheat; but at least it works! the best time of day is 6 am, local, as the earth is turning into the shower. 6 pm is the minimum. The question you will now ask is which Eddystone model did I use for all this. Ah, well, actually I used an Alinco broadband scanner I just happened to have! I had at the outset bought a 770R, as used by the famous local radio astronomy establishment in its day, but without the accompanying 250 foot dish found the front end signal/noise ratio inadequate. I could just about hear the noisiest meteors, but Jupiter did not get through at all.

Which leads me to a question on which to end. I have acquired for the 770R some military grade 6AK5 valves (Raytheon 5654) with a view to improving the signal/noise ratio. But what does "military grade" actually mean? Does it mean better electronic performance. or improved physical robustness, or what? Any answers?

Jack Read

Post-script from Graeme; many thanks, Jack, for a great insight into something not many of us think about. Any answers re mil spec etc, sent to me in Bewdley will be sent on and published for members' information.

Just one query, Jack, have you tried fronting the 770R with one of these wideband low noise TV/FM amplifiers readily obtained from Argos, Index, etc. ?



Ted's MailBox

A Review of Mail and Happenings

By Ted moore G7AIR, Founder of EUG

"Esselle"

Well the boat is now in it's natural element ! Launched on March 19th using a massive crane to hoist it from the boatyard, over the dockwall into the river. A quite daunting operation but done professionally by the local company.

Some adjustment to ballast fore and aft was necessary but all is now okay.

A fair few friends there to see it happen, some with fingers crossed but whether this was for her to sink or float I hate to think ! During the day Clive came up too, an EUGer from Cornwall. He came on board and took a few photos. Then more visitors in the afternoon, I never realised I had so many pals, I was not alone until late afternoon and could then do some basic checks.

No water coming in below, floating nice and level, considering all things a successful launch day. Messed up my paintwork a bit, those workmen did, but all to be expected.

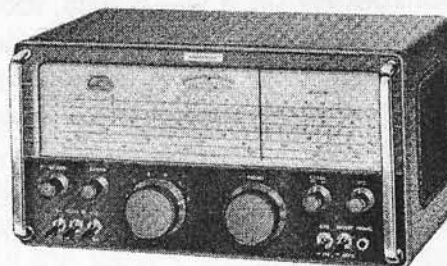
A first attempt on the third Sunday net came to naught. I could just about hear GGL but only because I know his voice so well could I make out that he was calling CQ 80, when I went back to him he did not even hear me. And then some idiot came up on the frequency playing music ! A pretty powerful transmission too since GGL tells me it was clearly heard over in Gl land and elsewhere in the UK. A shame that this happens on the air but

still some folk like to have these ego trips. I gave up and took the boat out for a trial run down river to the Wash and back. A nice day with just a breeze and what better way to spend a Sunday a.m. than sailing. I shall experiment until I get a decent aerial system which I can load up properly. Then EUGs very own /MM station will be on the air.

* * *

My 960

After having been left languishing on the bench since November this job was once more started and I have to report that it is now singing merrily, still some tweaks needed but that is not urgent. The conclusion is that a bodged repair under the small pcb holding the oscillator tranny had caused a full short taking the zenereed 6.8 volt supply to earth.



In an attempt to clear this or maybe even whilst causing the short Mr Bodger had simply chopped away at all wiring and components which were in the way. Not having another set for comparison I had to re-trace all of his wiring to check it out' using both the scematic and the underchassis wiring

of an EC10.

Luckily these two do have similarities in their switching circuitry. I have not attempted to remove any of his wiring, opting simply to correct the faults he had made.

The scale plate and glass were cleaned before being re-fitted. Even here it became necessary to replace the washers he had left out between the gearbox and the casting in order that the vernier scale did not touch. So far sensitivity and selectivity are not on a par with my 940 however I am sure that both these parameters can be improved upon, given time.

* * *

“QUT”

Thanks to the three EUGers who got in touch re this which is being churned out in the 80 metre band for hours on end. None of the given explanations seem to fit the case of a poorly keyed cw note that never sends anything on the same channel except a repeated "QUT".

Peter in Germany says that all the QU-series are concerned with Search & Rescue Ops, so does Frank in the IOM but one other suggestion is that it might possibly be some unlicensed personal beacon for Ionospheric monitoring, this does seem most likely and I shall go with this explanation until I hear a better one.

The single letter beacons too have probably been explained by Peter, originating in the former Eastern Bloc countries on numerous frequencies throughout the HF bands.

* * *

Thermistors

A long missive from EUGer Tor in Norway giving the why and the wherefore of these devices, actually non-linear resistors. His technical info

re those which might concern us is reprinted herewith,-

CZ1 CZ2 CZ3 CZ6 Philips

Length

31mm 22mm 10mm 32mm 36mm

Diameter (incl. leads)

8.2mm 6.7mm 4.4mm 9.5mm 8.5mm

Resistance @ 25°c

3KΩ 5.5KΩ 1.5KΩ 3KΩ 3.5KΩ

Max Current

0.3A 0.3A 0.2A 0.45A 0.3A

Resistance at Max curr;

44Ω 38Ω 35Ω 27Ω 44Ω

Volts at Max current

13V 11.5V 7V 12V 13V

P diss; at max; curr;

4W 3.5W 1.5W 5.5W 4W

I take it that we now know all we need to know about these devices. (Note from Graeme: see "Power Supply Problems in Eddystone AC/DC Receivers" by Tor Marthinsen elsewhere in this Issue.)

* * *

Ærials

Does anybody really comprehend how these things actually work ? I mean, when used in our hobby.

Okay, the theory works well in practice if we are considering commercial installations which are usually in a clear site, well above the ground. But for us with bits of wire strung around a few feet off the ground things simply do not act as they should. There are the usual pundits who claim to know it all, if only that were so.

I have had some success with home made wire dipoles which when resonated onto 80, or 40, or even 60 metres, are invariably just not of the specified length. Feeding them with balanced twin seems to bring better results than with coax.

Now that I need a very short system for use on the boat I am having to start all over again, experimenting with every conceivable type of skywire.

I did try to match the whole mast plus steel rigging but could get no better than 2:1 SWR and an apparent power out of 7-8 watts. This was using the commercial MFJ tuner with built-in artificial earth.

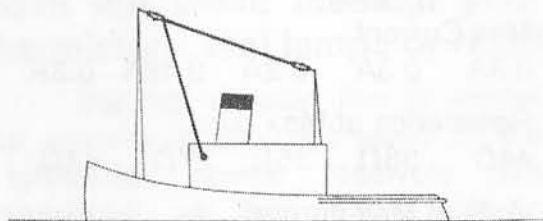


Fig. 10. A suitable aerial for use in a tug or similar vessel.

(Note from GGL: "How about this, Ted?")

I never did rate this bit of gear and shall swap it for anything Eddystone-related. My best results so far are with a home brew ATU using two 200pF Eddystone condensers in a 'T' circuit with a tapped coil enabling me to use it on either 80 or 40. So far using this ATU and about 50 feet of wire running from the cabin to the stern of the boat, then up to the top of the mast and then back down to the pulpit, I can seemingly load up to about 30 watts.

By the time you are reading this GGL and others ought to have worked me operating /MM from out in the Wash. We have a sked on for 3695 on LSB on Sunday the 27th March - fingers and toes crossed.

More on this next issue, or contact myself or GGL on the landline for future /MM skeds. I am hoping to do this on a fairly regular basis being as /MM working is so rare; many of our members will want to add a Maritime Mobile QSL to their collection.

* * *

Photocopied Manuals

The demand for these has increased

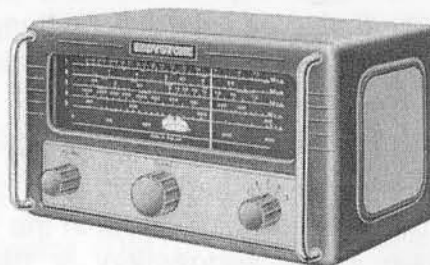
considerably of late and my young assistant is working several evenings a week to get them out. The orders are usually sent out within two or three days so if I do not have an original left your photocopy will be on its way pretty soon. Of some models I do still have originals, one or two models I have dozens of them ! You might just be lucky.

* * *

870A Problems

For such a simple set this was a bit of a headache. One of my own sets that is in daily use developed this nasty tendency to simply go off tune after some hours of running.

Noticeable on Radio 4 Longwave and VERY noticeable on the other bands. First off I determined that it was going low in frequency and that the local oscillator injection voltage dropped when this happened.



Now most condensers which caused such problems go low in value when they do become faulty so it pretty much ruled out these components. You can more or less say the same about inductances too, if they go faulty they will reduce in value.

So what the heck is left ? I tried swapping the frequency changer valve and found no improvement at all, very mysterious.

A squirt of switch cleaner on the range switch did not help either, by now I was thinking that my age-related problems had suddenly worsened. As a last desperate measure I began re-

soldering the tags on the frequency-changer valve base. Abracadabra !!

The problem had disappeared after this and some weeks later has not re-appeared. Definitely something to think of in the future.

A dry joint which had evidently become high resistance with time.

* * *

Sickening !

No other word for it is there ? To remove all of the valves and sockets, most of the resistors and to try to substitute FETS for each valve !

This is what some miscreant had done with a 640. Of course, when I agreed to have a look at it for the new owner I was not aware of this butchery. As it happened all I could do was throw up my hands and ask him to take it away - quickly.

There was no way that I could attempt to re-build this poor 640, not even with the cash offered would I try. Having paid almost £100 for the set the new owner was far from happy and seemed unable to understand my refusal.

* * *

The 750

In conversations recently with GGL and others I came across one idiosyncrasy with this model. Over the years I have had numerous people contact me regarding the circuit of the 750 output stage and the schematic as published by Eddystone. NO, there is not an error in the cathode circuit of the N78 output bottle as depicted on the published schematic !

There never was, nor was there meant to be an electrolytic by-passing the R42 resistor. The omission of this component is to provide negative feedback and hence improve the quality of the received audio.

Yes, it does reduce the stage gain of the N78 but then as with all Eddystone Receivers there is so much gain available throughout the previous stages that this is permissible. I have had, on several occasions, to correct people who having bought a second hand 750 discovered that somebody had fitted a 25 μ F or similar.

They then called me to tell me that the schematic, which I supplied, was incorrect in that it did not show the component.

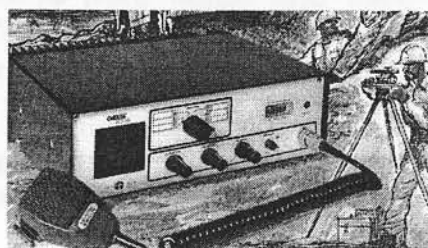
A similar situation used to occur with some of the AC/DC sets where a 1 or 2 M Ω resistor was found going back from the anode of the output valve to the previous stage.

This reduced hum and again provided some feedback. On several occasions I have had folk phone me to say "Hey I have found out how to increase the gain of the xxx model, just diss the 2 M Ω " - well yes but they also had an increased hum level, maybe not so noticeable on non high-fi speakers or 'phones. Believe me, ninety-nine times out of a hundred those guys at the Bath Tub got it right, so leave it alone. Mods are not necessary if the set is as per the published schematic. It will do what it was meant to do.

* * *

The Orion 5000

My Orion is now set up on the "Esselle" and has it's own dedicated 100 Ah battery. Once the brouhaha over a suitable working aërial has been sorted it will be in regular use, after all that is what Eddystone equipment was meant for, TO BE USED !



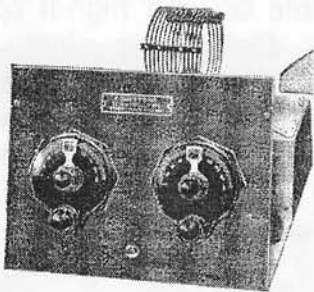
Several EUGers have verbally chastised me for putting a 'rare' set like my 960 on board. What would they have me do ? Put it up on a shelf to be simply looked at ? I could have done that without having to spend so much time repairing it.

Anyway with a bit of tweaking to give maximum performance on 80 and 40 it was used for a spell of QAPing the other night. A fair enough performance from what was after all one of the very first generation of solid-state receivers.

* * *

The Scientific Two

One of our EUGers down in Colchester has come up with what appears to be one of this ilk. Apparently they never were produced by S & L except as a kit set and so the type of 'box' or cabinet used was down to the constructor. Many and varied are the cabinets employed in those early sets.



This model is fitted with the large, heavy gauge coil, mounted horizontally in the centre of the baseboard. As the new owner says, it looks a bit like a tank coil out of a SWB8 (only Marconi aficionados will get the allusion !). Having supplied him with the info which I have I am hoping to hear that he has been able to get it singing.

* * *

Propagation

No not a gardening item, but seriously, the Ionosphere does seem to have

changed over the long term. Both GGL and I - and no doubt others of our generation - will recall fondly how 40 used to be the best band for inter-UK working, at almost any hour of the day or night. We can also recall those low(ish) powered transatlantic stations booming in on Short Wave in the early hours. Those transatlantic Dx signals on Medium Wave.

What ever has happened to the Ionosphere ? Or are we maybe just old fogies indulging in reminiscences which are not entirely accurate, except in our imagination ?

I am of the impression that the truth is that the æther -that invisible medium - is becoming less and less conductive of radio waves. A bit like the changes in our weather patterns ? Discuss please.

* * *

NAVTEX

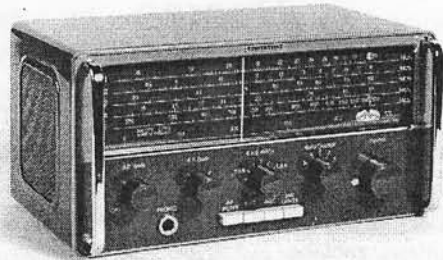
I have purchased and fitted one of those dedicated NASA Navtex receivers for the boat. It is about six inches by five and about one inch deep with a large LCD display. The intriguing thing is that within this space it contains not just the necessary display circuitry but also a very selective dual channel MF receiver switchable at will from the 490 Kc/s National channel to the 518 Kc/s International channel.

Even without the active aerial fitted on the mast and using just about ten feet of 'throwout' wire I can print the navtex messages from all around Europe and Scandinavia. Signals from Murmansk and Reyjavik come through with only the occasional uncorrected error. A very intriguing new toy for me to play with. A big improvement on the small RTTY/Navtex decoder, plus monitor, plus Comms receiver which I have been using at home up until now.

The Variety of EC10s

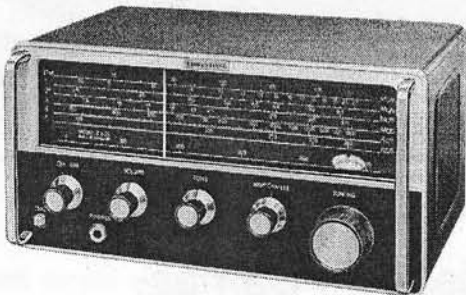
Why do I need to have SEVEN EC10 receivers in my collection ? All the early, so-called Mk I version.

Well simply because they are all different in some way from each other. Honestly there are FOUR different styles of knobs - as original. There are THREE different styles of scale, thin or thick lettering, and even scale figures at slightly different positions on the scale plate.



There are also THREE different versions of PCB with some component placing differences. I even have one with ferrite beads fitted on the Base leg of all RF and IF trannies, as original ! Colours ? I have three different schemes. And yes I am still on the lookout for other possible combinations.

Similarly with the MkII, TWO different PCB layouts. THREE colour schemes, and TWO different versions of scale plate. Minor differences it is true but they are MY reason for having so many of a particular model.



The EB35 and the 870 are other examples where differences abound. Colour schemes, and in the case of the EB35 different marks of PCB, different

VHF tuners, an extra IF stage on a mini pcb etc; all reasons for having more than one of a kind.

Take the 990R series. Several varieties here too. The positioning of the toggle switches, the order in which they are fitted and marked on the finger plate, I have two different sets. The scale plates three different, with very fine lettering, broader lettering, slightly different scale positions, rack mount, table, all intriguing enough to warrant my having several of each. And still looking out for others.

* * *

Life Expectancy (of Components)

Most would say, if asked, that the one component most likely to fail in one of our "steam wireless" sets is a valve. Well of course practice proves them wrong. I regularly do a test on the valves in sets that I am servicing and find that even after thirty years the valves are A.O.K.

But then I get down to the nitty-gritty and find a load of duff resistors, both fixed and variable, and a couple of dud toggle switches, maybe some faulty by-pass condensers, even a couple of electrolytics lacking any capacity at all.

Carbon track pots; with DC across them have a short life before becoming noisy. The valves are remarkably reliable and long-lived considering their fragility and complication.

Not used originally in Eddystones but found in many other marques are those tough old tin-can types such as the 12A6, 12SK7 of which many millions were made and used during WWII. They bounce okay, and still come up smiling.

It is rare to find a dud unless somebody has put 12 volts across the heater of a 6 volt type. And the bonus

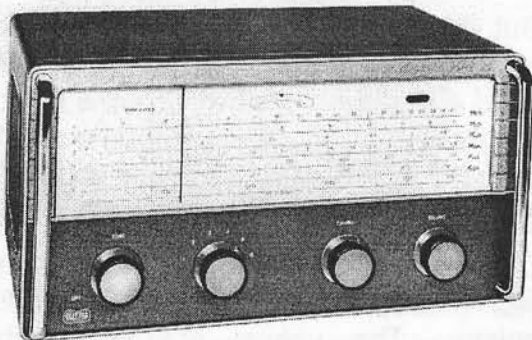
is that they all come ready screened. A 6V6 of this type was removed from a 640 receiver. The can bore the date of 1942 and yet when tested it gave readings every bit as good as those given by a new stock 6V6, so why swap all the valves in that set you have recently acquired? They are probably okay, just test them and refit them if okay.

* * *

A recent acquisition

This is a nice enough MIMCO-badged version of the 670C. As bought it works okay but sooner or later I am going to have to remove and replace all of those nasty grey plastic RS decoupling condensers which somebody has fitted in the past.

They are the world's worse and most of those that I have checked out are leaky to some degree. Luckily I have boxes of good 0.1 and 0.001 types to do the job, thanks to one of our Welsh EUGers, thanks Dave.



Another problem to be resolved is that a previous owner has fitted a mains lead using cooker type power cable! Seriously heavy duty this when the set itself draws less than a half amp; even 3 amp cable would be a bit over cautious.

The range knob is not original although it does match the others, I shall have to keep a look out for the correct one. Gain seems to be okay but I believe that the set will benefit from a complete

re-alignment as there is evidence that all of the cores in the RF and IF stages have been tampered with at some time.

A rather feeble attempt at fitting a simple BFO facility by providing some fixed positive IF feedback has already been removed. It was simply a twisted wire low value condenser and had been tagged onto the pins of the valve sockets.

* * *

Spares

Despite what you may read somewhere on the Internet I am not able to supply new Eddystone Spares. Several 'phone calls recently have made reference to my being in a position to do so and when I queried the source of this erroneous information I get told "it says so on the internet". Just goes to show that you must not always believe what you read. Manuals Yes, but any spares I have, or obtain go pretty fast. In many cases it is a case of my already having somebody on my list for just such parts. I do have my own list of NEEDS so am always on the lookout for scrap sets.

* * *

So it's back to the boatyard now to get ready for /MM tests, (*N.B. This article was written before the successful /MM tests were carried out - Graeme.*)

VY 73 de TED.

You can contact me at:-

21 Prince Street,
Wisbech, Cambs.

PE13 2EY,

Landline 01945 467 356



HISTORY IS MADE

Gordon Bussey's outstanding achievement of securing the future of the important Marconi Collection (*reported in the last issue of 'Lighthouse'*) at Oxford University and for the Nation has been recognised by a special award from the BVWS.

Gordon and Rod Burman of the Wireless Preservation Society also facilitated the funding necessary for its conservation and cataloguing over three years. The BVWS administers the Duncan Neale Award annually, but on this occasion it decided a special award should be made to Gordon and presented him with an inscribed silver salver. Gordon was also invited to Oxford university for its Bodleian Library Founder's Luncheon on 12th March. There he had the opportunity to discuss with Lord (Chris) Patten, chancellor of the University, the forthcoming exhibition next year of the Marconi collection. Lord Patten proved to be interested and supportive. The donation of the Collection was mentioned in some detail in the Bodleian

Library Annual report, and there were also reports in Oxford Today and in the University library staff newsletter 'Outline'.

All this goes to show an increasing awareness of the importance of radio history and development. It brings to mind once again that our member Alan Ainslie bought the Eddystone Collection from Marconi three years ago on the understanding that EUG researchers and members would have access to it. Alan confirmed last May at the NEC Vintage Communications fair that he would invite members to an Open Day last summer, but unfortunately this did not materialise. Alan also has a working miniature railway on his premises, so can we look forward to an interesting visit this summer? Over to you , Alan! ♠

Power Supply problems in Eddystone AC/DC receivers

By Tor Martinsen

If you ever have done repairs on any of these receivers the chance that you have experienced trouble in the power supply system is great. The components here are highly stressed and prone to failure. The chance of finding replacements is not great; I'll point out some ideas if your problem is with ballast resistors, thermistors, dial lamps or rectifiers.

But first I would like to repeat the warning in the last issue of the 'Lighthouse'; these receivers are dangerous, as the chance of an electric chock is large. In Norway the mains is two live wires, no neutral here! So the chassis is always live unless you put a proper transformer in between. This could be a 1:1 transformer or a 230/110 Volts type. With the latter you are not wasting any power in the ballast resistor, however the switch-on surge will be larger. I strongly recommend that you use a transformer if your power source is AC, both for service work and for serious listening.

These receivers were intended to be powered from various types of supplies, 230, 200 or 110 Volts AC or DC. The worked examples I'm about to give are centred around 230 Volts or 110 Volts input, seeing that the valve heaters get what they are constructed for, the rectified HT-voltage being not of great importance.

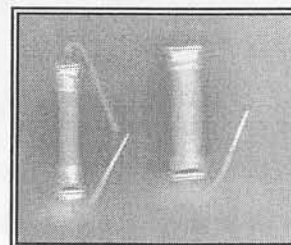
Since I do not like the smell of burnt selenium rectifiers I relieve them of duty in all receivers, replacing them with a rectifier of the 1N4005 class (one ampere, 600 Volts PIV). Do not forget to put a capacitor in parallel, size 0.01 μ F.

The main problem with ballast resistors is that you will never find a correct replacement. You can still buy

similar resistors, complete with moveable taps, but they are expensive. A 470 Ω /50W resistor with three taps as used in an old 670 or 840 costs nearly twenty quid!

The value is not always given, nor the wattage. But you can use separate resistors and you may not need all the taps.

I hear that replacement thermistors are non-existent, I have used a type meant for all-valve TV sets. It has the same data as the CZ1. As the thermistor is there to protect a dial lamp or an indicator (DM70) there is a solution, if you can do without lamps/indicator, you can do without the thermistor. There may even be a solution for alternative heating of the DM70.



670 receiver

This was the first of the AC/DC receivers, the ballast resistor value is



given as 500Ω/0.3A. It has three taps, the full resistor not being used. The values of the sections are: 230 Volt connection – 200 Volts tap is about 45Ω, 200 Volts tap – rectifier tap is about 325Ω and rectifier tap – 110 Volts tap is 135Ω. The maximum dropped voltage is 120 Volts, at 0.3A this is 36 Watts. You have to add a safety factor to that.

The lamp is a 6.3 Volts/0.3A type, thermistor type CZ1. If you do not have a thermistor you can insert a resistor instead. The total heater voltage is 84.2 Volts/0.2A. If you follow my recommendation and use a transformer giving 110 Volts AC then the calculation is as follows:

$$\text{New resistor} = (110 - 84.2) / 0.2 = 129\Omega, \text{ standard value } 120\Omega$$

It will have to dissipate a little less than 6 Watts, so use a 10 Watt type. Connect it between the 110 Volts tap and the top of the valves heater chain. This resistor will also have the correct value if you use the 230 Volts connection.

670A and C receiver

The ballast resistor value is given as 1080Ω/0.2A. It has three sections: 230 Volt connection – 200 Volts tap is 140Ω, 200 Volts tap – rectifier tap is 40Ω and rectifier tap – 110 Volts tap is 900Ω.

There is no dial light but an indicator valve type DM70. The thermistor is the type CZ3, which in this receiver only drops 12 Volts. The TV type thermistor or CZ1 will drop more than 20 Volts in this circuit but the receiver will work with this reduced voltage both on 230 and 110 Volts.

If you do not have the thermistor but you have an 870 or 870A you can remove the CZ3 across the dial lamps and use here, it is not doing anything in the 870 anyway.

If you do not have the thermistor you must take out the DM70 to prevent damage to the heater. The heater is shunted by a 16Ω resistor and you can leave this in situ, then when you get hold of a thermistor it is easy to change back to the original circuitry. The heater chain adds up to 98.4 Volts (remember the DM70 is withdrawn), so at 110 Volts and 0.1A the resistor value is 116Ω, standard value again 120Ω. The power dissipated is about 1.2 Watts so a 3 Watts resistor is recommended.

This resistor value works well at 230 volts input as well. I believe that it is possible to make that DM70 work without the thermistor, it should be possible to use the current spent in the cathode resistor of the UL41, feed it through a couple of small signal diodes to semi-stabilize the heater voltage for the DM70.

840 series of receivers

We have here three slightly different receivers, also in their power supplies. The ballast resistors are as follows: (230V-200V-rect.-110V)

840: 75Ω+305Ω+135Ω, total 515Ω. Dial lamp 12 Volts 0.3A

840A: 100Ω+270Ω+200Ω, total 570Ω. Dial lamp 6.3 Volts 0.3A

840C: 100Ω+250Ω+200Ω, total 550Ω. No dial lamp but a DM70

The heater chain voltage of an 840 is 70.2V, adding the Volts over the thermistor (15V) and the dial lamp (12.6V) you get 97.3V. So when you connect this receiver to 110V (AC or DC) there is an over voltage of 12 Volts, more than 10%. I believe that the Eddystone people were more concerned with low voltages than with high, however today I add a resistor to the top of the chain to get rid of this, 12 Volts at 0.2A is about 50Ω.

With the 840A the dial lamp is a different type, and a different voltage, 6.3 Volts/0.3A. To compensate for this they add a resistor to the chain, 50Ω. The voltage at the top of the chain is now 101.5V so there is still 8-9 Volts to waste, I add a 50Ω resistor here as well.

With the 840C the dial lamp is gone, a DM70 is added to the heater chain. The resistor added to compensate is 100Ω so the voltage at the top of the chain is now 106.6V, this is OK with me!

The thermistor is the type CZ1 and the TV type is correct here. If you cannot find a thermistor you should remove the dial lamp/DM70 and do the following:

840: Valves heater voltage 70.2V at 0.2A. Remove the lamp and add a resistor between the 110V connection and top of the valve chain, size 200Ω/10W.

840A: Remove the lamp. Here you have already 50Ω so you add 150Ω/10W in series with the 50Ω resistor already present.

840C: Remove the DM70, leave the 8Ω resistor in circuit to complete the chain. Add a 100Ω resistor in series with the 100Ω present, 2-3W



870 or 870A receivers

The ballast resistor is 640Ω with a tap at 180Ω from the 240 Volts end. If you do not need the tap a single resistor of 640Ω/40 Watts will do.

The lamps are of a different type, 5 Volts/0.15A.

The heaters add up to 91.8 Volts, add 18 Volts across the thermistor and you have nothing for the dial lamps! They take perhaps 7-8 Volts so the valves are slightly under-run. The thermistor is the type CZ2, substituting a CZ1 will mean another 3-5 Volts less for the valves. My 870 was not quite happy with this thermistor at 110 Volts input, it could be that my receiver is not quite up to spec. It worked alright on 230 Volts though.

So if you do not have the thermistor, use the same trick, remove the lamps and substitute a resistor. (110-91.8) Volts at 0.15A is 120Ω here as well. Works fine both at 110 and 240 Volts.

909A (and possibly 909) receiver

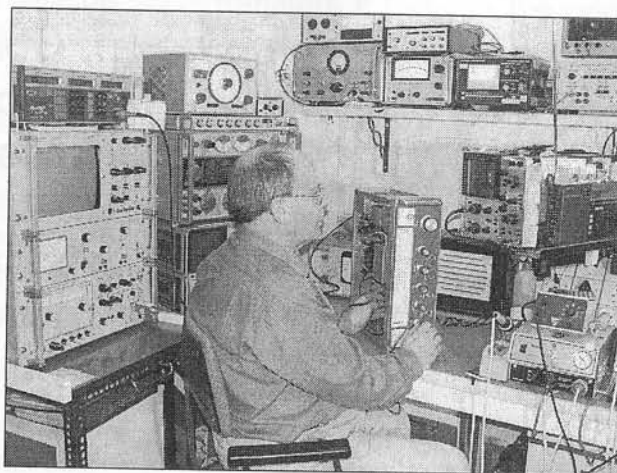
The ballast resistor is 500Ω with taps at 125Ω and 350Ω from the 230 Volt end.

The pilot light is a 6.3 Volts/0.2A lamp.

The main thermistor is the CZ1 and there is a CZ3 over the pilot light. This CZ3 is not doing anything so if you need one for a 670A or C then take it!

If you do not have the thermistor, remove the lamp and substitute a resistor. The valve heaters add up to 88.3 Volts, a single 10Ω resistor, the lamp and the thermistor add 25.3 Volts totalling 113.6 Volts. So with 110 Volts input the valves are slightly under-run. Not to worry! The resistor must drop (110-88.3) Volts at 0.15A so the resistance ought to be 135Ω. The 120Ω resistor will work fine here as well, 3-4 Watts will do.

Tor Marthinsen ♠



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E.U.G. Masters' Crossword News

Conductor to stand down; Colin to take over.

I've given up! At last the strain of juggling with all these latter day noughts and crosses has finally done for me.

I can't remember when I last got it right so our PuzzleMaster, Colin Crabb, G4HNN is going to take over the whole game. This is my last month of embarrassment.

Yes, you've guessed it, I lost four more winners last month, in addition to the nameless ones. So let's have a late addition to the Roll of Honour for Crossword 23:-

Brian Blake G3JOS, of Rugby.

Roger Bracey G4BZI, of Crewe.

John St Leger, G3VDL of Devon.

Gary McSweeney G4CFQ of Belfast.

Back to puzzle No. 24. There were three failed entries, two of who should know better! For 19 Across, "Indian Drum", they put TABIA instead of TABLA, when a dictionary would have told them there is no such word!

Our other member used his imagination on 19 Down, which should be TANK and put TUNE!

Let's get down to the answers:

ACROSS

- 1) KNICKEBEIN. 8) EUG.
9) PRICE TAG. 10) SCALE.
11) OPEN END. 12) ADAMS.
15) EMPTY. 18) LATCHED.
19) TABLA. 21) SIDEBAND.
23) NIL. 24) EPICYCLOID.

DOWN

- 2) NDR (Nord Deutsche Rundfunk)

- 3) COCONUT. 4) EXTEND.
5) ERGS. 6) NEVADA. 7) OGRE.
9) PHONE. 13) DECIBEL.
14) SIDE D. 16) PEBBLE.
17) MAYDAY. 19) TANK. 20) ASTI.
22) NLI.

And now for this month's Roll of Honour:-

Oliver Barnes, M1DYW, of Essex.

Brian Blake, G3JOS, of Rugby.

Roger Bracey, G4BZI, of Crewe.

Les Cates, G4AVE, of Surrey.

T. Emeny, G3RIM, of Surrey

**(Elizabeth Gaskell GØRJX and
Richard Gaskell, GØREL, of Oxford.**

Phil Harris, G4SPZ, of Worcs.

Gary McSweeney, G4CFQ of Belfast

Mike Maxey, G8CTJ, of Leics.

Ben Nock, G4BXD of Worcs

Ted Moore, G7AIR of Cambs.

G. Oaks, G3WRK, of Cheshire

Roger Roycroft, G1NXV, of Cheshire

John St Leger G3VDL, of Devon

David Skeate, GØSKE, of Suffolk

So many thanks, puzzlers, keep it up and let Colin have more entries!

Don't forget to give your full name and address for Colin, who hasn't got all the archival material that I have.

Let him have your entries by the 15th of May to give him time to mark them properly. If sending by e-mail don't use the attachment; his PC sometimes muddles them. Just give words.

Vy 73, Graeme G3GGL

EUG MASTERS CROSSWORD 25

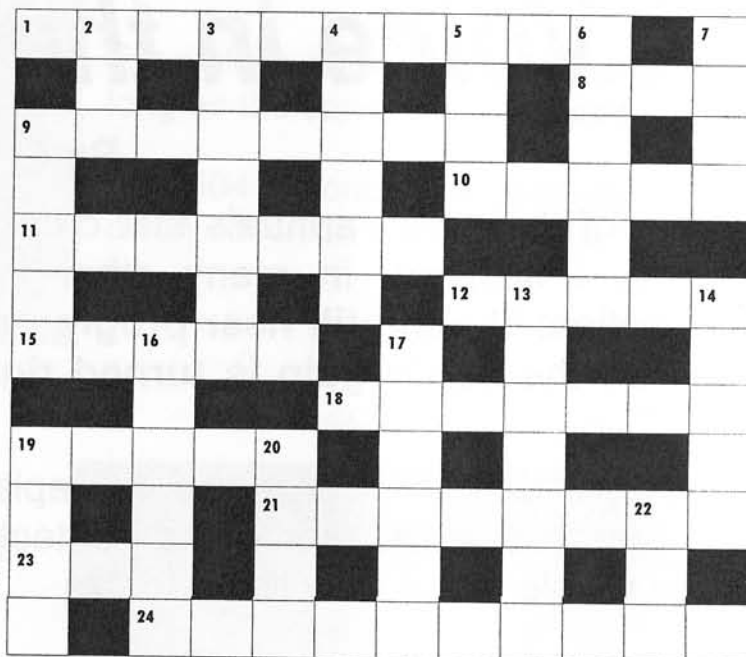
Compiled by Colin Crabb
G4HNNH

ACROSS

- 1) There is perhaps, more thirst for this negative co-efficient device than can be catered for by component suppliers (10)
 8) Scottish town inherently identifies transmission medium, we hear (3)
 9) Precise total (5,3)
 10) Polymer encapsulate sometimes used for protection of high voltage components (5) (short form)
 11) Main on-board location of G3EUG/MM
 12) Hopefully, most EUG members are (5)
 15) Grammatical verb form used to indicate time of action (5)
 18) Binary compound of metal and carbon (7)
 19) This Irish author's first initials were a real gas (5) (surname only)
 21) Apparently, Len's dice confirmed legal status on his transmissions, just the ticket(8)
 23) This wavemeter was a bit of a dodge in retrospect (3, abb.)
 24) The old possibly let rest, new Lighthouse improved it (10)

DOWN

- 2) In maths, $165 = A5$ using this scale (3, abb.)
 3) In engineering, pivoted levers operated by push rods, which carry the tappets of an overhead valve system (7)
 4) 11 across is underway we hear, after purchase at knock down price (2,4)
 5) In astronomy. Sidereal ---- refers to a method of reckoning intervals based on the rotation of the Earth on its axis as the fundamental period (4)



- 6) Housing for radar equipment, transparent to rf. Used in aircraft, balloons etc
 7) Electromagnetic wave between 10^{-3} to 1nm in length (1-3)
 9) Type of high capacity polarized condenser (5,abb.)
 13) Lesser multiple of a standard quantity (3-4)
 14) The light gathering power of a lens (5)
 16) In maths, the discoverer of the binomial theorem and the creator of Calculus (6)
 17) SI unit equal to one newton/sq. metre (6)
 19) Due to capacitive reactance, the voltage, in a series ac circuit containing a capacitor and a theoretical resistance of zero ----- the current by 90° (4)
 20) The maximum rate of change of o/p voltage for an amplifier when a voltage step is applied at the i/p is known as the ---- rate (4)
 22) Moonbounce propagation (3, abb.)

**Send your entry, to arrive not later than
15th May, direct to:-**

**Colin Crabb, G4HNNH,
41, West Drive, Edgbaston,
Birmingham B5 7RR
e-mail (no attachments, please) :-
g4hnh@smartemail.co.uk**

Your name

Address

A Voice in the Night . . .

By Graeme Wormald G3GGL

One of the hardy annuals that crops up in the world of E.U.G. (and, I suspect, in many other Boatanchor groups) is the question: **"I can still hear programme sound on my receiver when the audio gain is turned right down. How do I cure it?"**

The standard answer to this is "Replace the cathode decoupling electrolytic on the diode/triode detector stage." It usually cures the problem, but now listen to this . . .

Regular readers of 'Lighthouse' will recall that yours truly was the lucky recipient of an Eddystone hambander, Model 888A, at Christmastime.

It was as near perfect as one could wish any forty-odd year-old set to be, both inside and out. Naturally I had to check it out technically. (The 888A is just about the limit of my technical comprehension!)

Two of the valves were down to about 50% emission. They were changed which gave it a clean bill of health in that department.

The coil-box cover was removed for inspection. It was quite obvious that I was the first to remove it since it left the factory. Every beehive trimmer still had pristine sealing wax on it! I was beginning to warm to this set. The more I have to do with Eddystone valve sets the more I appreciate good original condition.

As a matter of principle the cathode decoupling electrolytics (30 mfd) of the audio stages were renewed. You can't test them and brand new ones cost about sixpence apiece.

All the DC voltage test points were within the 10% acceptable value. Quite amazing that no high value resistors had gone up.

I began to feel a bit like the proverbial phantom, but it really was essential to check out the trimming. Even the Angel Gabriel would admit that after 44 years the alignment of a high-grade Eddystone should be checked out.

Satisfyingly, the second IF stage at 85 kc/s re-gained a couple of S-points and sharpened to a real Q-fiver peak on 'narrow'. Everything was starting to behave exactly as it would have done at the time of its birth, August 1960.

THE CLASSIC SOAK-TEST

The only thing left was the soak test. I turned the audio gain down and shut down the PC, which had been humming away in the corner collecting my daily e-mail tally. I made the last roundup and retired to the arms of Morpheus.

We live in a bungalow and my bedroom door is 4 feet from the radio-shack door. In the early hours of morning I dreamed that I was back on

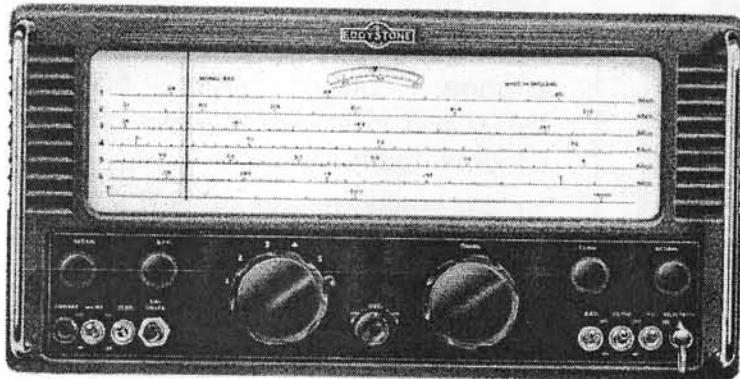
night shift at the BBC Overseas transmitters, Skelton Pastures.

A distant voice was being very boring in Russian. It droned on and on.

It slowly dawned on me (as it can at 4 o'clock in the morning) that I wasn't actually dreaming. I *could* hear that voice! Somehow or other it's quite easy to get into a sort of trance when sleep is interrupted. Well anyway, it is for me. I lay there wondering which of the possible candidates in the house was the culprit.

It wasn't the natty little 'DX 394' at my bedside: that's left permanently tuned to Shannon Volmet on 5505 kc/s. I use it as a quick check on conditions when I awake at a more suitable hour.

It wasn't the cute Sony 'Dream Machine' used to help Morpheus draw me down. That had switched itself off hours ago. It wasn't the Sony SW7600 search radio; that was locked off.



As there were no other radios in the bedroom nature decreed that I should rise and conduct a pseudo foxhunt. Standing in the hallway the stillness of night amplified the voice drifting through the open shack door.

No, it couldn't possibly be! But it was. The 888A was nattering forth at a perfectly readable voice level. Inspection revealed that the A.F. Gain was still against the backstop.

Irritation flared as I cursed the set for

failing its soak test. Then a fatherly instinct took over; I switched off the erring child and retired to catch up on my broken night's sleep.

THE NEXT DAY . . .

I awoke the next morning with scarcely a memory of the wayward 888A. Short-term memory loss affects old hams more than most people (*did you know that it's a sign of an overactive brain? True!*).

Boil the kettle, tip the cornflakes, open the mail, take cuppa to the xyl, eat the cornflakes, read the paper, greet the gardener, walk the dogs then go shopping.

It must have been late afternoon when I entered the shack, accompanied by the acoustic ambience of daylight. I switched on the PC for the never-ending E.U.G. e-mail collection. Flipped the stereo DAB rx to Classic FM to provide a relaxing background and collected my wits . . .

Russian, that was it. Russian at 4 a.m.. We used to do the Russian news barrage from Skelton at 4 a.m. "Gavareet London; villidashnia kosha..." I've no idea how you spell it, but it sounded like that. I think it means "This is London calling on the following wavelengths . . ."

That was fifty years ago, for heaven's sake. This was last night! The 888A. Of course; the Voice in the Night . . .

I switched it on and waited. It warmed up slowly and made the odd scratching noise, nothing more. It was actually tuned to the 41 metre broadcast band; the only BC band the 888A covers.

I re-tuned to an afternoon station and turned down the A.F. Gain. Yes, you could still hear it, but not very loud with the A.F. Gain turned down. Switch off

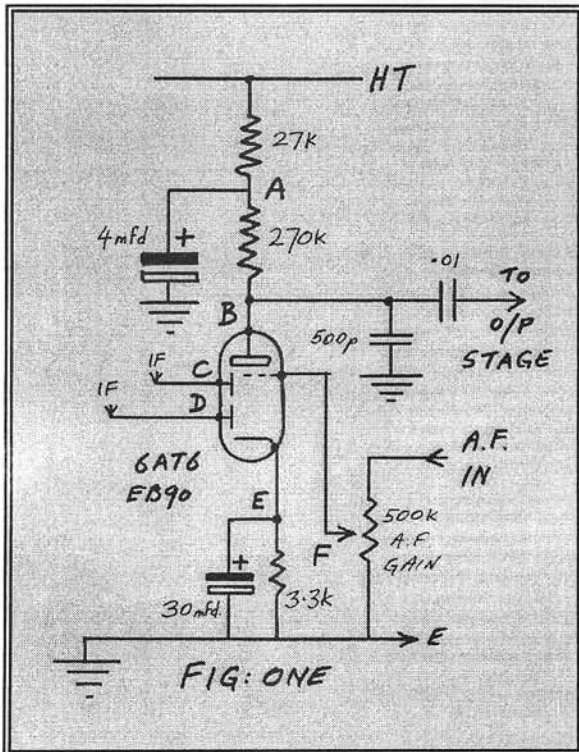
Classic FM to hear better.

That's when you realize what a din the PC is generating, full of fans and things that hum loudly. It certainly depresses the sensitivity of the ear.

So off it goes and shut the door. I can quite clearly hear the voice from the 888A. German this time. A.F. Gain still hard against the backstop. Blast!

So we clear the workbench, remove the cabinet and invert the set. This is where I must start to refer to Fig: ONE and get serious. This represents a simplified copy of the circuit of the double diode triode 6AT6 (which is the same as the EBC90).

It is a conventional diode demodulator; A.V.C. detector (*Automatic Volume Control – yes, that's what it's called in the 888A handbook and it's what I was brought up to call it, rather than the politically correct A.G.C.*) Oh, and I nearly forgot; the first audio amplifier in the form of a very simple Class "A" triode, all in the same tiny B7G glass envelope.



I've annotated the circuit with letters of

the alphabet to save rambling component descriptions, so look at the picture. Remember that the 30 mfd cathode decoupler had just been renewed . . .

First: short E to earth. Result: a slight click and no change in the breakthrough level.

Second: short F to earth. No change.

Third; short F to E. No change.

At this point the brain starts to complain. Rule-of-thumb logic is being thwarted. You CANNOT get sound out of a triode with the grid connected to the cathode. But I was.

It must be by-passing the valve . . . pull it out . . . breakthrough disappears! Hooray. Logic returns to the situation.

Fifth operation: put it back again and short point B to earth. Breakthrough disappears again! I knew it would! Logic wins the day.

Sixth: short point A to earth. No change; breakthrough continues, WITH NO HT!! Logic goes out of the window again.

At this point an attack of the vapours was imminent so I sat down quietly and consumed a mug of cocoa. I always have a mug of cocoa when the going gets tough.

(I've just realised that on my circuit the cathode is labelled point "E", as I intended. But I then went on to label the bottom line also "E", but meaning "earth". I do apologise; bear this in mind and you won't be baffled.)

I rang up Ted G7AIR and he poo-poo'd my confusion. "You've got a dry joint on the valve-base," he said. "Go and re-melt all the connections."

Perfectly logical advice, but the soldering looked so pristine that I couldn't believe it was faulty.

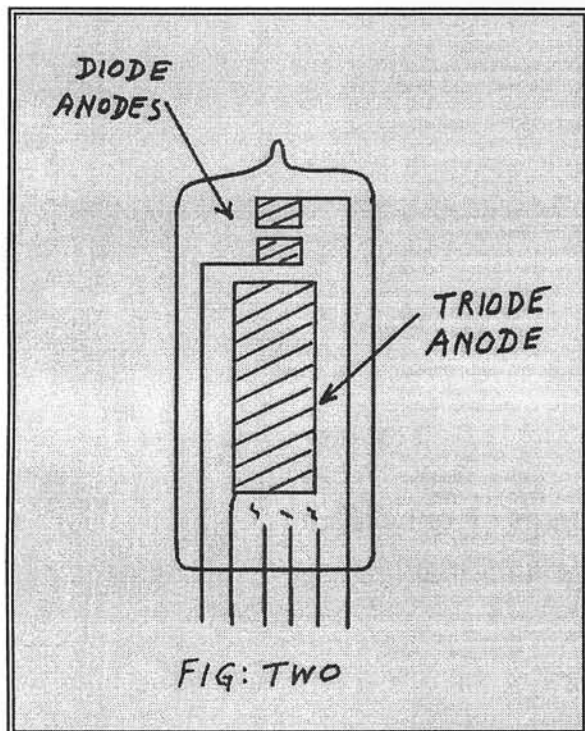
Nevertheless, I warmed up the Weller® and went round everything. It made no difference.

Now the 888A is a derivative of the renowned Model 750, and in this area of the circuit is identical. I decided to consult our vintage servicing expert, Peter Lankshear in ZL-land, who I know has an Eddystone 750 in his collection of famous receivers.

We exchanged e-mail and Peter concurred that things didn't seem to add up. So he got out his 750 and tried it. It had exactly the same "problem" as my 888A. Oh dear!

To cut a long story short our discussion led to the application of the oscilloscope to the valve-holder pins.

Diode anode C (actually the AVC diode) was showing 18 volts peak-to-peak of IF on a decent S9+ carrier. The triode anode (point B) showed 200 millivolts on the same IF signal. Quite enough to cause mischief.



I went through all the previous tests and it reacted accordingly. I then

checked the triode grid, point F, and there was no hint of R.F. (I.F.) floating around it.

I just couldn't believe that it was capacity leakage until Peter wired "Pull the valve out and have a good look inside it." And there it is in Fig: TWO.

The diode anodes are ABOVE the triode and the leads run right up inside the glass alongside the triode anode.

Leakage of audio in the 888A (and the 750) is caused by pickup and rectification of the 85 kc/s second I.F. on the TRIODE ANODE.

Of course, in the end I had to ring up the Oracle, otherwise known as Bill Cooke GWØION, who was Chief Engineer at Eddystone when these sets were designed and built.

I started off by telling him that my "new" 888A had a "fault" and told him that it still "spoke" when the A.F. Gain was hard back. His response was typical of Bill's wily ways. "Does it worry you?" he said. "Well no," I replied, "Not really, but should it be like that?"

Bill went on to explain that when they designed the 750 in 1948-9 the 6AT6/EBC90 was the only double diode triode produced in this format and with such a high-gain set the level of detection was rather higher than the valve could handle without audio breakthrough. "It's quite easy if it worries you," said Bill, "Just turn the RF or IF gain down a bit. It'll go away then."

So there you are. If your Eddystone 750 or 888A annoys you with breakthrough in the middle of the night whilst on soak-test, just turn down the IF Gain a bit.

But you can see why Eddystone went over to double diodes and separate triodes for the later sets though, can't you!

ANOTHER ALL-BAND H.F. RECEIVING AERIAL

A simple all wave aerial, which can be coupled to the receiver without any form of matching transformer, is shown in figure 4. The dimensions given are for general short wave use.

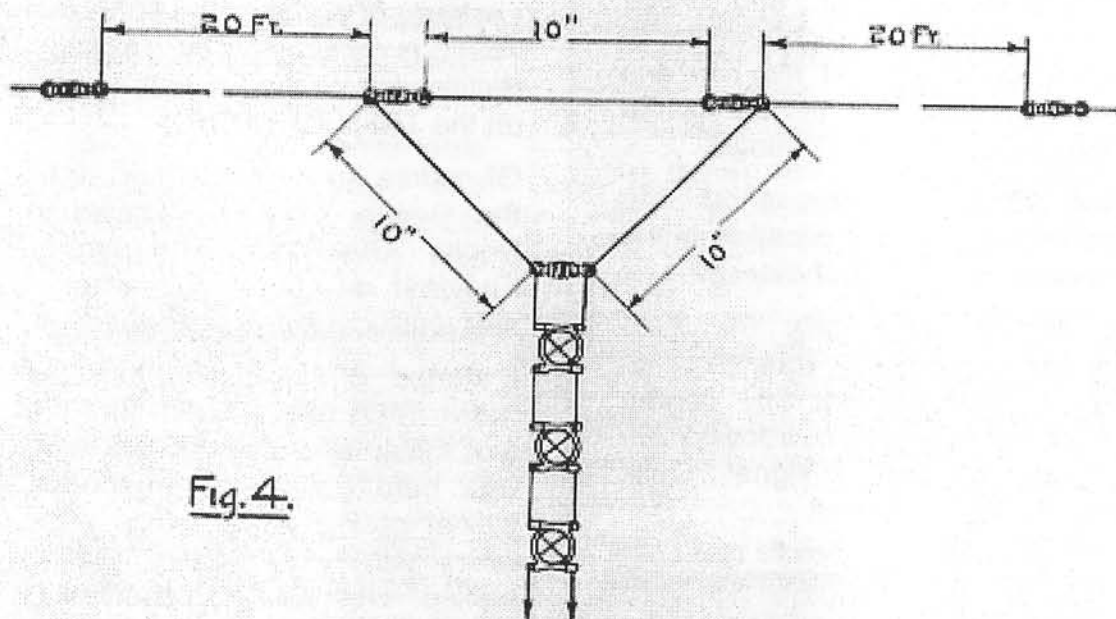


Fig. 4.

During our first 40-metre A.M. gathering several non-members joined in. One of them had a handbook for the very rare (only 70 manuf.) R101C which was a military (1939) version of the equally rare LPC Communications receiver produced by Eddystone.

The gentleman concerned was kind enough to supply us with a copy of the handbook and one page contained this interesting variation of a low-noise, general purpose H.F. balanced aerial.

The open-wire feeder uses Eddystone transposition block insulators, now as rare as hens' teeth, but it would be quite in order to use 400-ohm ladder feeder of any length.

It would be quite suitable for any 400-ohm Eddystone set with A1 and A2 aerial terminals. The earth-link to A1 should be removed.

If it is desired to use this aerial with any co-ax fed receiver of any vintage, then a balun should be used at the set to step-down from the feeder and create an unbalanced condition.

Do note that the legs are measured in feet and the "delta" section is in inches. The top of the "delta" does not form part of the aerial and is isolated from it with insulators (*i.e. it is not a "delta" matching device.*)

Graeme - G3GGL ♣

RADIO RAMBLINGS

Gettings from my Notebook



By
Graeme
Wormald
G3GGL

Bewdley, Easter 2005.

Summertime is with us, even if only on the clocks! Greetings to all our readers and may the season cheer.

When I sit down to write this column I'm often smitten by writers' block, a condition more common among writers of fiction than writers of history. But my problem is that all the best stuff has already gone into other features!

STOP PRESS!

As I was starting to write this column and bemoaning my lack of inspiration a news flash presented itself in the G3GGL shack. Or about as near to a news flash as we're going to get. Here it is: -

G3EUG/MM HITS THE AIR

Ted, our founder, phoned to say he was going to sea in his new yacht on Easter Sunday and would call me /MM with his Eddystone Orion transceiver at 9 am local time.

I alerted some of our regular "net" members and stood by on time. He came in at 5 & 9 but with rather strange speech quality. He was using a 102 ft end-fed held aloft by a kite!

Then after several QSOs the kite crashed into the sea and Ted hastily rigged an aerial feed to his mast and rigging.

It improved his modulation no end!!

Full report from Ted in our next issue.

NEW CROSSWORD RULES

At the risk of being repetitive I shall mention the question of our EUG Masters' Crossword Puzzle. This has been running for 4 years now, ever since our compiler, Colin Crabb, G4HNH, offered to compose it.

In a fit of over-enthusiasm I offered to conduct the Crossword News column and have been muddling it up ever since. I realised early on that presenting such an erudite brain-teaser wasn't my forte. I've spent most of my time apologising for oversights and errors in preceding competitions!

It finally came to a head just after the last issue of Lighthouse had gone to the printers and I found yet another clutch of unmarked entries, this time in the back of my "pending" folder.

At this stage I decided to call it quits and sent an urgent e-mail to Colin asking him to consider taking over the management of the whole Crossword scene. This he has very kindly consented to do (phew . . .) and from now on all entries are to be returned to Colin, full details on the puzzle page.

I will, however, emphasize two changes to routine. The first of these is in the matter of deadline dates for entries. We must remember that Colin is one of our working members, being a professional player as well as a musical pedagogue. This means that his timetable can get very busy and in order to cope with bottlenecks we have decided that the entries should arrive with him by the 15th of the following month (not the 25th as previously).

The second notice of variation (as our Ofcom would call it) is that he cannot accept scanned grids as entries; his PC is not up to resolving them properly. Mine's had a few wobbly sessions with them in the past as well. Some have arrived so large they've had to be printed in pieces and glued together. Honest!

So please, preferably, send your entries via snail mail. Overseas and PC buffs may use the 'wire', but please send it to him as a straight e-mail; typed out in plain words. One other little extra: do put your full name & address on your entries. Many thanks.

MYSTERY Q-CODE

I was fascinated by the Q-code query posed by Ted in our last Issue. As he says, the QU sequence is concerned with search and rescue. What he forgot to mention is that QUT means "The position of the incident is marked by - - -"

I hope Ted's Maritime Mobile operation (G3EUG/MM) never has to resort to this signal!

HUMAN INTEREST

I get very little true feedback from members concerning the contents of "Lighthouse". From our 365 members (one for each day of the year!) I suppose I get about forty comments throughout the year, usually to say they think it's the bee's knees!

Thank you all very kindly; it's much appreciated. But last month something happened which set me thinking.

The vast majority of new members are acquired by strangers making an enquiry of me. They may have seen my details on the www or possibly a mention in a periodical (Radio Bygones usually carries a mention – SWM ignored my request!). The enquiries come fairly equally by snailmail, e-mail and telephone.

Occasionally over the air.

The outcome is always the same: I send the enquirer a sample copy of a recent "Lighthouse" together with a joiners' application form.

I then forget about them. I either get a completed form and a cheque pretty quickly or silence. That's fine; I would hate to recruit somebody who didn't care for our magazine.

I try to make it as eclectic as possible; a good wide mix of material. Those who have specific handbook requirements send a message to Ted G7AIR and get what they need. We don't publish circuits in Lighthouse of the 200-odd sets produced by Eddystone. It would be rather boring (in my humble opinion).

Well, last December I had e-mail from a PAØ requesting details of our Group. I asked him for his mailing QTH and duly despatched my packet. End of message.

But not quite . . . last month I was looking through some old incoming e-mails, seeking an odd reference, when I noticed the request from the PAØ and I had a sudden crisis of confidence. Had I actually sent him a copy of "Lighthouse"?

There was only one way to find out. Send him an e-mail and ask. The next day the answer came zooming back:

"Magazine received, thank you very much. It contains too much Human Interest and not enough Technical material."

What do you think?

QSL Cards G3EUG/P

Ted asks me to mention that any contacts lacking a QSL card from G3EUG/P for the March 'First Sunday' EUG net (6th March) should let him know (senior memory syndrome). He will then take steps to despatch one –

listener reports welcome.

MORE REVERSE TVI

Readers will be well acquainted with the ongoing debate about QRN (static) on our LF band nets.

Ted, who usually operates /P – or now /MM – from the wide open spaces, says he is little troubled by QRN and tells all us urbanites that we should look to our immediate vicinities for the source of such objectionable hash.

Now I keep a very open mind in this matter because it's my view that the white noise which plagues us much of the time is arriving from the ionosphere. How do I know this? Because I've never heard a switch-mode power supply suffer from QSB! Which my white noise can.

It may be that we have an 'amalgam' of noise radiating from the whole of suburbia and being reflected from the ionosphere. Unfortunately that wouldn't explain Ted's freedom from noise . . .

So I'll stop that hare running and tell you about the 'woodpecker' that invaded my spectrum a few weeks ago.

I first noticed it one Sunday morning when the band was in a fairly quiet condition. It said "tick-a tick-a tick-a tick-a tick-a" at about five to the second. Quite reminiscent of the old Soviet Woodpecker from way back. I think that one was 'over the horizon' radar and as such it swept up and down the spectrum. But mine was very stable and sounded very man-made.

So I got the trusty Sony SW7600, tuned it in to our net freq. of 3695 kc/s and listened carefully. Yes I could hear it ticking away. A slow 'search' of the bungalow produced a helluva loud ticking from a hot-water radiator in the lounge! Mmmm.

I shall now go back in time and relate that just before Christmas our old faithful Ferguson 28 ins television had blown its line output transformer. A message was sent to the Continent but the sad reply was "No spares for a 13-year-old set." OK.

I sent my spies out and word came back that Sainsbury's, the well-known grocery store, were selling 28 ins TVs new for £159.99. Not bad.

A personal inspection revealed that they were of the "Wide Screen" variety, and that in fact the traditional 4:3 aspect ratio is a dying breed. So much so that they cost considerably more than the 16:9 models.

Now my own relatively sparse viewing consists of 99% 4:3 material. I think this 16:9 idea is the daftest thing to hit the gullible public since snake oil. Nobody, but nobody, transmits material in this aspect ratio. The result is a hotch-potch of maladjusted sets usually showing obese dwarves waddling about the screen.

I have yet to read an explanation of the aberration. In order to keep the correct aspect ratio of programme material we have to watch a 400-line picture (same vertical definition as in 1935) with 2 inches cropped off the top and bottom.

The alternative is a 16 ins 625-line picture with 6 ins of black screen either side. Crazy.

However, enough of my hobby-horse. This particular set is used by the xyl for watching soaps, so a few clipped captions are of little account. I still have a 4:3 set in the sitting room where I do my watching.

You've probably guessed what I'm getting round to saying. As I gazed at the 'noisy' central heating radiator in amazement it clicked in my head that there was an electrical stranger present; the new Sainsbury "LODOS",

for that is Sainsbury's "own brand" of television. I'm told that it originates in Turkey, no less, and uses the same chassis as Bush and several other well-known brands.

The tell-tale red light showed that it had been left in "standby". A dozen paces revealed that it was, indeed, the source of the "woodpecker", at many dBs over the nine when poking the telescopic rod at it. A quick press of the rather stiff stand-by button removed the 'pecker pronto.

Now this may seem a long way round to come to the point, but I have to say that is by far the worst domestic source of QRN that I've ever had. Other, that is, than when the flap-valve on the gas-boiler went haywire. But that was a fault condition.

Although I don't operate with the PC switched on, it's perfectly possible to do so. The amount of hash that escapes is virtually nil. The device is covered in ferrite rings, so I reckon these more recent machines have had more attention paid to EMC.

A NEAT LITTLE GIMMICK

I think I forgot to report on a cute little device that came heading my way from Gary, G4CFQ in Belfast, just before Christmas.

This is an "EC10 DIAL LAMP CONTROL MODULE" and is a little shrinkwrapped package about 1" x 2" x 1/2". It has three flexible wires emanating, each about 6" long terminating in a miniature insulated crocodile clip. I now quote Gary: -

"Any user of the EC10 Mk 2 receiver (or any of its relations, I would say – Graeme) will no doubt have wished for the dial lamp to remain lit when requested. Instead, in order to conserve battery energy, the push button has a momentary action causing the scale illumination to cease

immediately after its release.

Since internal modifications are to be frowned upon I began to think of ways to overcome the problem. A quick look at the circuit diagram revealed that it should be possible to drive the pilot lamp without modification to the set. I decided to allow the lamps to remain on for a period of ten seconds after the Dial Button has been momentarily pressed.

"To keep it as simple as possible and to utilise components that are readily available the ubiquitous 555 timer IC has been chosen. I use the CMOS variant of this device as it only draws 1.5mA from the supply and this will be barely noticed."

Well, Gary, I can tell you it's a first-class addition to the transistor Eddystone armoury. It's fitted in seconds and removed in seconds **without any alteration to the set.**

Gary goes on to say that If any member is interested and requires additional information, circuit diagram, technical description, help, etc., then just let him know.

As Gary is QTHR in the callbook I know he won't mind my giving his QTH so that any interested member may contact him direct: -

Gary McSweeney, G4CFQ,
109 Twaddell Ave., Belfast, BT13 3LG

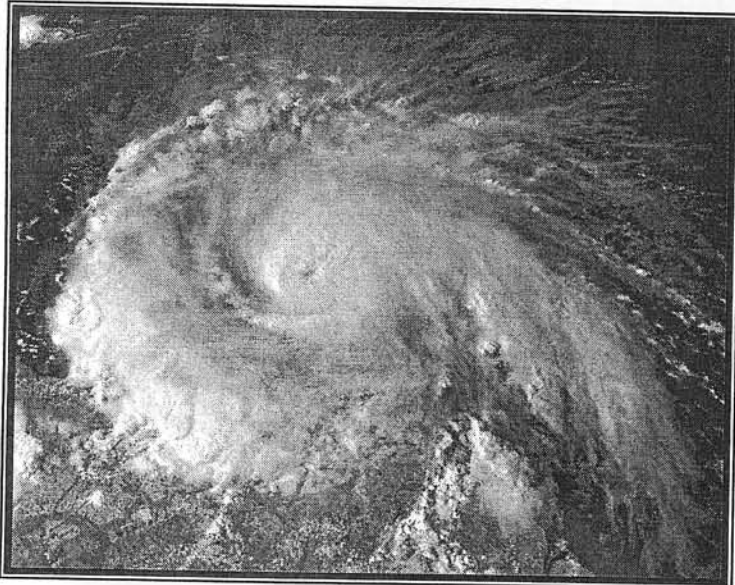
MORE SOURCES OF SURPLUS

Anthony writes from North London to tell us that a good source of discrete parts is **Cricklewood Electronics, 40 Cricklewood Broadway, London NW2 3ET, Tel: 0208 452 0161 and 0208 450 0995** and also reminds us of **Radio Spares on 0208 360 8600, website rswww.com**

Well, folks, that's all for now, have a good read and listen on the nets.

Vy 73, Graeme, G3GGL ♠

SBS/Eddystone and the BBC to the rescue.



Shown here at mid-day on the 7th September 2004, Hurricane Ivan is directly over the British Commonwealth island of Grenada in the south Caribbean Sea. The northern coast of the South American continent is just visible on this satellite picture.

The Island of Grenada was originally a French colony, which was ceded to Britain in 1783. It remained a British possession until 1958 when it became an independent member of the Commonwealth

Hurricane Ivan was the Fourth major hurricane of 2004. It struck the island at a speed of 120 mph and caused tremendous damage to the infrastructure including complete destruction of the main FM transmitter of Radio Grenada on 105.5 MHz.

The BBC World Service offered the hurricane-struck broadcaster assistance from the technology team at London's Bush House.

Within a couple of days of contacting the BBC World

Service the new transmitter was shipped out. A spokesman for the World Service said: -

"We were able to get a 1,000 watt transmitter together very quickly from one of our key suppliers, **SBS/Eddystone**, and have sent it out to Grenada. Transmission has now been restored."

The general Manager of Radio Grenada, Richard Purcell, says: -

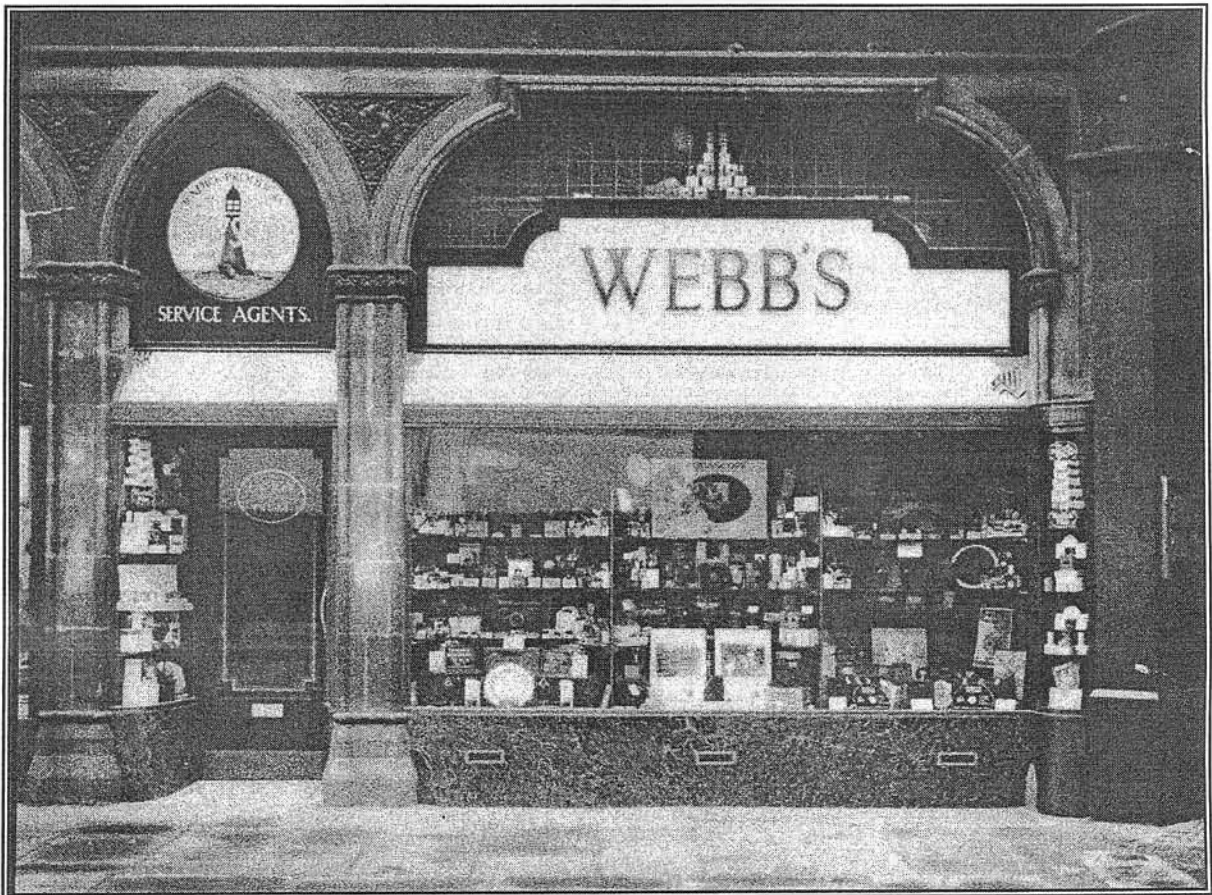
"It is with profound appreciation and gratitude that we accept the support of BBC World Service radio and its generous gift of a new transmitter, which will help on this long and demanding journey towards restoration and redevelopment on Grenada."



A BRUSH WITH THE CUSTOMER

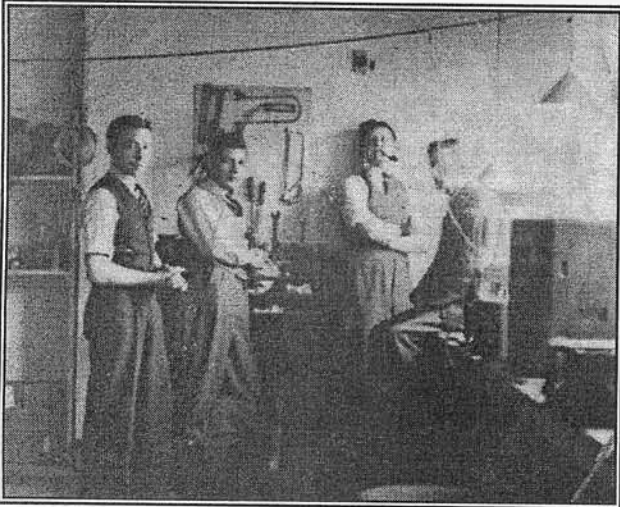
More memories from Bill Cooke GWØION

Most readers will be aware that Webb's Radio was a subsidiary of Stratton's, the founders of Eddystone Radio and was a major retail outlet for the brand. What they may not be so aware of is that Webb's were also distributors and service agents for EKCO, Hallicrafters and many other well-known brands. Bill Cooke, GWØION, who retired as Managing Director of Eddystone in 1984, had commenced work as a technical apprentice with the firm in 1935. Here he pauses for a moment to recall those long lost days . . .



The first Webb's radio shop was set up in Birmingham in 1924, shortly after the Stratton Company had entered the radio market manufacturing components. It was purely a retail outlet and in 1937 George Stratton Laughton (eldest son of the chairman of the old-established family business) decided that it should have a service department.

This was known as 'Porters Works' and was set up in Lower Essex Street, just round the corner from the Eddystone Radio factory in Bromsgrove Street.



Young engineers such as myself augmented the regular service staff from time to time. You can see me here in the Webb's workshop, second from the left.



Now you see me early in 1939,

propped up against the firm's Ford Eight van, getting ready to visit a client. One of the less salubrious uses of this van was re-possession from hire-purchase defaulters.

I recall going to collect one of those famous round 'EKCOs', the sort people pay lots of good money for these days. The AD65, I seem to recall.

Do you remember the auction a few years back when a green one sold for £17,000? No, it's not a mis-print. 'EKCOs' were specialists in Bakelite mouldings and they would supply a model to special order in any colour. An extra fiver on the price – that was a lot of money in those days . . .

Anyhow, I was sent to collect this EKCO (an ordinary brown model) from a chap the other side of Birmingham. When I told him I'd come to take it away he went off, re-appeared carrying it and hurled it to the ground at my feet. As if that wasn't enough he jumped on it!

"There," he said, "Take that away; it was a rotten set anyhow."

I took the long way back to work whilst I thought out how to explain it all . . .

One day we had a call from a house in Kingstanding, one of the better suburbs of Birmingham. I'd been out there to service a very superior Marconiphone radiogram a few days previously and so I went out with Alfred Cox,, the service manager.

A woman with a Brummy accent thick enough to spread on crumpets opened the door!

"Cum een an' luk at theess," she said. "That yung feller wi' th' light 'air 'it it wi' is feest!"

I was the young fellow with fair hair and she obviously knew nothing about the finer points of receiver testing!

In Consideration of Amplitude Modulation

Graeme Wormald G3GGL

We start this month's report on a rather sad note. It would seem that some members of the amateur radio fraternity (?) have a downer on the use of AM on the LF bands. Exactly why is hard to determine but we can only put them in the same category as the "squeakies" who used to infect two-metre repeaters in the early days. (Probably still do!)

First of all, can it be a coincidence that, after the frequency of 7143 kc/s has been nominated for AM in the new 40-metre band extension, practically every morning finds a very powerful SSB net taking place at this spot on the dial?

Move up; move down; nothing going on. But right on the frequency that the Vintage and Military Amateur Radio Society (VMARS) has proposed, seconded by EUG, this band of spoilsports gathers.

It's not that we *can't* QSY. We all have AM gear with VFOs. But 7143 was nominated for those of us trying to breath life into the old amateur radio concept of homebrew. And simple homebrew means crystal control.

What a sad bunch of nobodies they really are.

But even worse was to come. On the March "Third Sunday" EUG 80-metre AM net condx were poor at 09.00 and I gave a good call on 3625 kc/s. This is also a nominated AM channel, along with 3615, which already had a thriving AM group operating on it.

I was pleased to hear an answering call from Gi3OQR, Dick, 40 miles west of Belfast. The first time I've worked Gi on AM for over 50 years! He gave me 5 and 9 too.

Then, on the third over, a heterodyning carrier netted on to him. Bad practice, but I hoped it would lead to another

contact. How wrong could I be!

The carrier opened up with the AM re-broadcast of a local pop-music station, and just stayed there. We managed to sign-off (with great difficulty) through the cacophony and I moved down to 3608, a nice empty spot just below the other AM net.

I was then called by EUGer Chris, G4BYZ, from Reigate, Surrey, who had "witnessed" the abominable affair on 3625. He was running a KW Victor harnessed to an Eddystone 888A.

Then John, a non-EUGer, called in from Shrewsbury and we had an enjoyable triangle until ten o'clock when we closed the shutters.

But why don't these pathetic samples of life's failures go away and play on the 45-metre pirate band where they belong . . . ?

DISASTER STRIKES

No, not another bad behaviour story, but a cautionary tale for those dabbling about with AM rigs on the kitchen table.

Many members have commented about my Junk-Box Baby, described at some length in our last issue. More than one enthusiast is making a "Chinese Copy" of it.

But there was still one thing that irked me slightly about its design. That was the question of putting a tuned circuit in the anode of the crystal oscillator to

improve the drive to the PA.

As well as complicating the construction it can also lead to that classic bug of RF power stages; instability! The 6V6 used in the final can turn in a good performance on the LF bands but it was designed for AF, not RF.

The thoughts of neutralising enter the debate at this stage but are discounted as being quite impracticable in such a set-up.

In fact, when the rig is set up with properly tuned drive it is quite stable and only starts "hooting" when the drive is removed or it's grossly mistuned, but I thought that readers should be aware of the possibility.

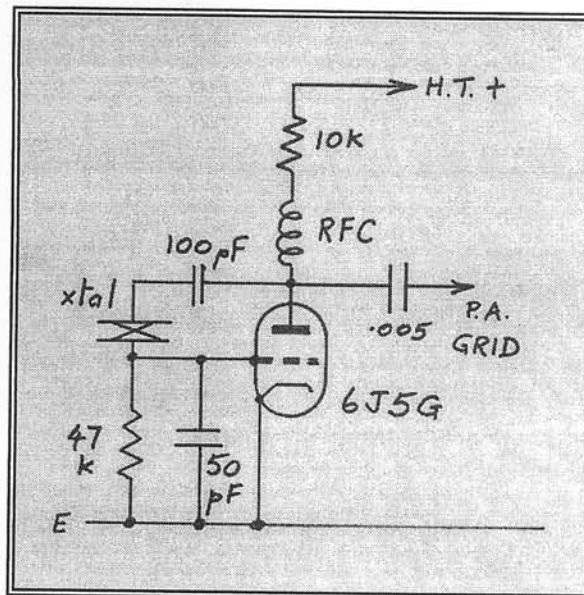
So, with all these things in mind I was looking through "Radio Bygones" back numbers seeking the circuit of the "Codar AT5" QRP AM 80/160-metre rig for an EUG member. I suddenly spotted the details of that little QRP crystal controlled Tx which fitted under the lid of the Marconi CR100 (Admiralty B28). It was intended for Naval Reservists to use from home and dated from the 1950s.

It used a 6J5G xtal oscillator and a 6V6GT in the PA. A close relative to my J-B Baby, really, but for CW only. A quick scan showed that it was incredibly simple, confused only by the Band One TVI filters all over the place. As Band One TV hasn't been used in the UK for 30 years they were something that could be dispensed with. As I was scratching my head I opened my mail and there was a letter from EUGer Gerald, G3MCK, pointing me in exactly the same direction!

So out came the chassis-cutter and a copy was made up on another Eddystone diecast box.

It didn't take long to build. I did learn one lesson, however. Whenever you

build a rig that is of an "experimental nature", you should put the separate units on separate chassis. Fortunately my PSU was already on another chassis, but the modulator was on the same box as the rest of the Tx. I had to do a very fidgety bit of cabling to extract power and modulation via the original 6V6 valve socket. It would have been much easier if they'd been separate units. But never mind; the worst is yet to come!



Here's the circuit of the crystal oscillator as used in the little Admiralty RNVR home transmitter. It's a very straight-forward circuit known as a "Pearce". I had avoided it in the "J-B Baby Mark One" because the RSGB Handbook says that it can be quite heavy on current flow through the crystal. And, of course, I'm using new small HC6/U crystals.

The oddest things about the circuit are the lack of decoupling condenser at the top of the RFC and the rather large size of the coupling condenser to the PA grid. I suppose the former could possibly affect the amplitude of the RF voltage available for drive. I must take another look and spot a 0.01 mfd at the junction with the 10k resistor.

Quite frankly this question of current

flowing through crystals is a bit of a mystery to me so I thought there's only one way to find out; try it!

I got the work-bench set up as a test set with 'scope, RF output meter, dummy load and calibrated monitor receiver (I use a Lowe HF-150; first class.).

Heaters were activated. After a suitable interval HT was fed to the 6J5G using my new 3615 kc/s xtal. The note came up on the monitor receiver spot on. I fiddled about putting the scope on the PA grid to see the amount of drive, when suddenly whizz; the note on the monitor Rx shot away! I soon found it at 3625, ten kilocycles higher than it should be.

I flipped the HT off and felt the crystal case. VERY hot. We live and learn. In my original J-Box Baby it had remained stone cold after an hour's soak. I should have listened to the RSGB!!

I now have two crystals on 3625 and none on 3615. Mmmm

Seeing that I'd b*****d it up once and couldn't really cause much more damage I decided to put the "heated" xtal back and check the whole thing for output. Five watts. The same as the original 'Baby'. Ah, well, you can't beat a bit of real experimenting to find the facts!

A.M. EUG DX RECORD?

On the 13th March "Second Sunday" EUG AM Tests I went on the air at 9.00 a.m. with slight misgivings. Not since last October had 40 metres A.M. made a good showing on a Sunday morning.

The nominated A.M. frequency of 7143 was (for that moment!) free from the splatter of the kill-joy SSBers. I put out my call and listened. I knew that Ted, G7AIR/G3EUG, was away for the weekend on non-radio business, so I

was feeling very tentative.

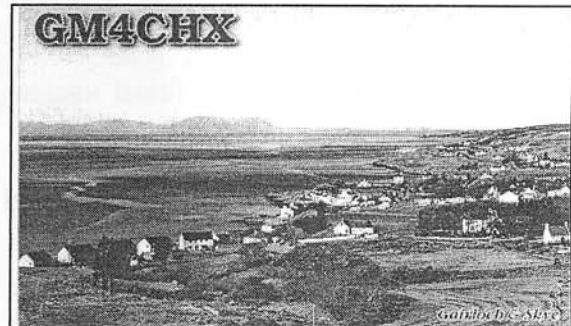
The QRN was heavy but I heard a little voice in the wilderness. QRZ??

It was Jim, GM4CHX, located in Gairloch, which is in Ross-shire in the very far North West of the Tartan Kingdom. Even as we started to exchange initial reports the signals grew until we were both 5 and 9+.

"I hereby claim this as a record AM 40-metre contact between EUGers!"

A little shuffling with my maps produced a direct line of just 400 miles between us.

Jim had previously sent me a listener report for 80 metres when he ear wiggled me on the First Sunday, but his 80 metre Tx aerial had blown down in those winds which blew the Eddystone Broadcaster over, and he still had 2 feet of snow.



Hopefully he'll have the 80 metre aerial back in place this spring and provide opportunity for plenty more EUG-to-EUG AM records for our members further south than Bewdley. Listen carefully for Jim, he has a nice QSL card. The hill across the water is the Island of Skye.

LAST THOUGHT

I've just remembered that the New Zealand WW2 mobile/field rig, the ZC1, uses a 6V6 in the P.A. without neutralizing. I'm busy rationalizing the circuit, without bandswitching. (Plagiarism is a very fine art!)

Vy 73, Graeme, G3GGL

How Many Members and Where?

by Graeme Wormald G3GGL

Members (and sometimes non-members) often ask me how many members are there in EUG? Are there many licensed hams? Do you have overseas members?

So I thought I'd do a bit of adding up after I'd sent out the Christmas Issue of Lighthouse.

Altogether we sent out 363 copies, which was a record. Membership is always creeping up very slowly. It creeps down as well but the newcomers exceed the dropouts. I should say for every five we gain we lose four.

Most defaulters give no reason; they just don't renew. A small number of next of kin report sad departures and a small number write to say their interests have changed. But the majority just vanish.

They can't say they forgot, because they get rubber stamps on the envelopes and gaudy renewal forms within. If they fail to respond within a month they get a Yellow Peril in the post announcing their impending release from membership. And if that won't provoke a renewal, nothing will!

Anyway; let's start to analyse the nature of our membership.

Out of our total of 363 members at Christmas we had 230 licensed amateurs and 133 SWLs.

Out of our 363 members 318 were located in the UK and 45 overseas.

I'll now start on a detailed analysis of all our sub-groups and see if we can determine any trend. We'll start with the "home" countries, as they say in the football world. The first number is

the total **members**; in brackets is the number **licensed**. The third number is the number of **EUG members** per **million** of population and the fourth is the **percentage** licensed . . .

ENGLAND	265	(141)	5.4	53.2
N. IRELAND	11	(2)	7.0	18.2
SCOTLAND	20	(13)	3.9	65.0
WALES	21	(15)	7.3	71.4

Interesting, isn't it? The Welsh and Irish are almost neck & neck on a percentage of population basis. But just look at the percentage of licences held in Wales. No wonder the AM revival is based in the Principality!

Here comes the rest of the world, with total members, followed by those who also hold a ham licence: -

Argentina	1	(1)
Australia	5	(3)
Belgium	2	(2)
Canada	8	(5)
Denmark	1	(-)
Germany	3	(3)
Isle of Man	1	(-)
Italy	2	(2)
Netherlands	3	(1)
N. Zealand	8	(2)
Norway	1	(-)
Rep. of S.A.	1	(1)
Spain	1	(1)
U.S.A.	8	(7)





“EUG on the Air”

PHOTOCOPY THIS PAGE AND STICK IT UP IN THE LOO!!

**The next “First Sunday” nets will take place on
1st May, followed by 5th June and 3rd July.**

Freq. 3695+/- QRM

Times: 09.00 for AM and 10.00 for LSB (local times)

Controller G3XFE helped by G3GGL

“SECOND SUNDAY 40m. A.M. Tests”

Scheduled on 10th April, 8th May and 12th June.

Frequency 7143 +/- if spot in use by other net

Listen for G3GGL or G3XFE on A.M. time 09.00 – 10.00 local

“THIRD SUNDAY 80m. A.M. TESTS”

Scheduled on 17th April, 15th May and 19th June.

Frequency 3615/25 kc/s. A.M. only! Time 09.00 -- 10.00 local

Listen for G3GGL or G3XFE

**Please send listener reports and comments to G3GGL
QTH details below.**

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