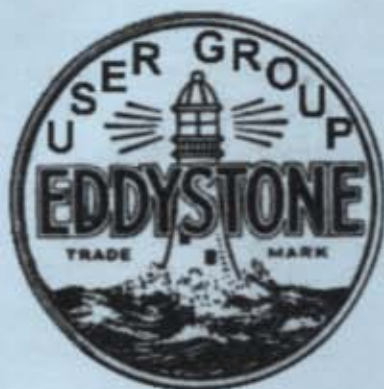


Lighthouse

Founded 1990

The Magazine of the
Eddystone User Group

Issue 81, October 2003



Model EA12
Stratton's Ultimate
Hambander of 1964

Full specification inside

EDDYSTONE USER GROUP

A non-profit-making Group
for Eddystone Radio
Enthusiasts
Founded in 1990 by
Ted Moore G7AIR
Issue 81, October 2003

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Manual & Circuit wanted for Marconi TF2424 Counter also for TF2114G Sig Gen. Will defray costs with UK cheque. Peter le Quesne ZL4TCC, 23 Oriel Place, Napier, 4001 New Zealand. pleq_tbc@clear.net.nz (Note the _ in: pleq_tbc) it is not obvious.

"SAILOR" marine band yacht Rx also PYE marine band Rx (150kc/s-6Mc/s) with DF Aerial built-in. Call Peter G4IXY 01727 839908

EDDYSTONE 990R VHF Rx Eddystone Edometer ED902 Mk II; Eddystone 31A VHF monitoring receiver. David Dillingham, 80 Chichester Road, Bognor, Sussex, PO21 2AD. Phone 01243 821819, mobile 07729-317114

Chris's Column

With each new issue of the Lighthouse cheques for the fighting fund continue to roll in and as the table shows we have a really respectable amount of money to invest in some new PC equipment. Graeme is still deciding which way to go with the investment in Desk Top Publishing software. He has exploited "Word" as far as it will go and is torn between "Quark" and "Pagemaker". Both are excellent but I think "Pagemaker" will be the better choice as Quark is quite difficult to learn to use. Any members who have experience of either and wish to pass on their experiences please contact Graeme. Anyway, a further thanks to those of you who have contributed to our fighting fund. It is very much appreciated. We will make this the final issue for the appeal. (See note by Graeme at the end of his "Radio Ramblings".)

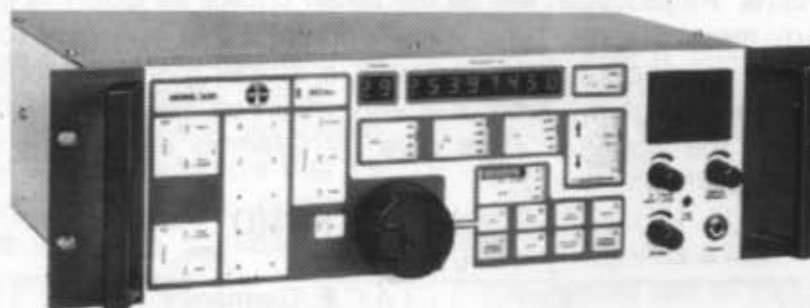
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Ken Gummer	£25	Clemens Ostergaard	£10
		Total (29/9/03)	£1490

("Chris's Column" continues over . . .)

Stan Carney's bash for ex employees of Eddystone gave us another excellent buffet lunch and drinks on a very nice day. Again it was nice to see old colleagues and reminisce on the old times. Stan and Shirley are thinking of moving house so this year may be the last time Stan organises the bash.

I went to the Leicester Rally (at Castle Donnington) for the first time for many years. I saw a collection of 1650 receivers on a dealers table and immediately recognised them as a quantity we sold to STC Crystal Division in the late 1980's. They used them to tune up the crystals during their manufacture.



EDDYSTONE 1650 SERIES, 1984-2000 (c.£3,500)

Because of the grinding used in the manufacture of crystals they were identifiable by the traces of white paste on their membrane front panels. The dealer was looking for around £500-600 each for them. I wonder if any of our members bought any?. STC have always used Eddystone receivers for testing their crystals. I don't suppose they make them anymore.

As a regular E bay watcher I notice the Eddystone items often get high prices when sold. I think I might start keeping a log of Eddystone sales and report back on prices through this column. (See also Graeme's item "The Price of Everything" later on in this issue and Ted's comments in "MailBox".)

I notice that Geoff Steedman, MØBGS, has an article this month on a "null steerer" antenna. This reminds me of the early 1980's when BBC Research and Development had developed a ring of active antennas that they could steer to null out the interference when used for monitoring medium and short-wave signals at Caversham. We considered taking out a licence for commercial use but never did, but it did give me first time contact with BBC Research who were to play a great part in Eddystone's move into MW and FM broadcast transmitters.

SBS-Eddystone Broadcasting (who acquired the transmitter division of Eddystone Radio last year) would appear to be going from strength to strength with a number of transmitters being supplied to BBC World Service for use in relaying the World Service in friendly countries on FM. A number will be deployed in Iraq shortly.

73 de Chris GØEYO
Patron - Eddystone User Group

Eddystone Presentation at Napier Amateur Radio Society

by Peter le Quesne, ZL4TCC

Members will recall that Peter kindly offered to entertain any EUGers who found themselves in this fascinating corner of New Zealand. He was asked by the Napier Amateur Radio Club to present an evening of Eddystone last month.



Napier is a seaport on Hawke Bay in New Zealand's North Island. It was destroyed by an earthquake in 1931 and rebuilt in Art Deco style, creating a major tourist attraction.



(Above) Peter lines up Eddystones 640, 680X, 940 and 770R MkII for members' delectation.

(Right) The troops soon get the cases off and are impressed by the solid build quality of the sets. The younger members couldn't believe their eyes!



(Above) Peter ZL4TCC and xyl Anne with feline friend. He lectures in power line technology and deals in technical literature.



The Price of Everything

By Graeme Wormald G3GGL

It was Oscar Wilde who said that the definition of a cynic was "somebody who knew the price of everything and the value of nothing." I'm not sure that I agree with that remark, but I do know that the pricing of old Eddystones can be a very vexed question!

Members often ask me questions such as "How much would I have to pay for an Eddystone 830/7?" or "What do you think a 640 is worth?"

There is, of course, no answer to such questions. Let's put it another way and ask "How much is a 1955 Morris Minor worth?" That question only leads to another: "What sort of condition is it in?" And then you realise that the answer will be anything from £5 to £500

The same applies to an Eddystone, but isn't quite so obvious to some people. You see, you can pick up an Eddystone in any state and carry it off, overwhelmed by the fact that you've been seeking that model for such a long time that you think you've found the holy grail. Acquisition can be addictive and I'll defy anybody to say they've never been sold a pup.

Which brings us back to the first question. You have to say something, and my answer is: "Any decent Eddystone is worth £100, and then you adjust up or down mainly by condition, but partly by scarcity and/or popularity. £10 for a rough one which is only good for spares (assuming that you need the spares) and £200 for a real beauty in tip-top order which will grace any shelf. If you find a new one still in the makers packing, then that's where you can let yourself go!

My attention has recently been drawn to some Eddystone models advertised on a website called, somewhat curiously, "E-bay". This is a

place where second-hand goods by the thousand are auctioned off world-wide. I always avoid wasting my time with it. I would never buy an Eddystone (or anything else, for that matter) without a close look. People auction sets when there's a problem.

But that's as may be. When members tell me that on successive weeks they have seen perfectly normal ex-army models 730/4 selling for well over £300 and the very common EC10 going for £150 I think the world has gone mad!

And then when I hear that a member has paid over £300 for an 880/2 which, on arrival, turned out to be a non-working wreck I feel very sad. I don't know what redress, if any, exists with E-bay, but I suspect that in practice there is none at all.

Let's look at it this way. Would you buy a used car, sight unseen, from a web-site? Of course not, not if you were in your right mind.

It has also been brought to my notice that some members have mistakenly considered "QRG" to be a price catalogue. Not so. Our prices are those which **the sets cost new** (where known) and are given as part of history; not meant as any guide to current values.

Please, think twice before you pay a silly price for any old Eddystone. And remember that price and condition on web auction sites can be distorted by mischief-makers and fibbers.

In the last Issue of Lighthouse, Graeme Wormald described his experiences with a commercial D.S.P. (Digital Signal Processor) to reduce QRN (interference from TV sets, computers, etc.), inserted between the receiver and the loudspeaker. Geoff Steedman, MØBGS now presents a description of the G4WMX noise reducer, working on an entirely different principle, together with options to acquire the circuit board, the kit, or the complete unit:-

The "Null Steerer"

By Geoff Steedman, MØBGS

I suppose it all started with my lovely "new" Marconi CR-100, although I didn't realise it at the time. It was obviously a bit special, as it had an extra red knob on its front panel, mysteriously labelled "R.I.S.". Surely 1943 was a bit before their time, if we are thinking of the investigating wing of the RA? By now, at least a dozen of you are yelling "Radar Interference Suppression" at the page. It used an extra aerial and an active balancing circuit to get rid of the awful buzz in your headphones from that new-fangled RDF.

Antiphase Mixing Technique

The principle of antiphase noise-cancelling has been used for some time in military and industrial environments to reduce audio background interference. Engine noise shifted 180 degrees and adaptively mixed into the pilot's headset and mic. system makes communication possible in the Harrier jump-jet.

Counterespionage boffins at MI5 were able to produce a crystal-clear recording of a spymaster's conversation in spite of loud music playing in a bugged limousine. They just recorded the car radio output and the bug mic. on separate tracks, and subtracted one from the other! If it had been totally quiet he probably wouldn't have said a word for fear of being overheard

His actual words are of course still subject to the 30-year rule but I can reveal exclusively to "Lighthouse" that he was talking about a gadget called

"The Null Steerer" which apparently can do the impossible and get rid of the horrors of local QRM before it gets anywhere near the front end of a receiver; and if you believe that you'll find it easy to accept that I was engaged by a secret research group (on 40m !) to design a PCB for the unit as my contribution to the war on noise.

What the technique will and won't do at RF

The "Null Steerer" for RF local noise reduction has appeared in a number of guises, many using balanced coils and capacitors, but this simple, practical design by Cliff (G4 WMX) is easy to use and highly effective in suppressing local QRM from TV and PC timebase, switch-mode PSUs, local MW Broadcast, general residential "mush", and "spark" from motors & thermostats. The latter are more difficult because they rarely seem to last long enough to find a null in one go, despite being really irritating, but will succumb to patient tweaking. Note that a lot of

signals (particularly on Top Band) which sound like TV timebase are really narrowband data signals and as such will not null out. There are a lot of odd noises out there these days, and this system only fixes the local nasties.

The circuit works well across the whole HF spectrum and into low VHF bands. It seems to be effective on MW/LW BC, but so far only to the extent that it will totally null out ALL the signals at the tuned frequency! No doubt experiments with type, length and orientation of aerials would yield some useful results on these bands; the vertical/horizontal system described below is less effective at these frequencies but has some interesting effects on the higher HF bands where angle of signal arrival is more likely to be a factor.

If you are plagued by multiple noise sources, you will find that their phase relationships and amplitudes are all different and it will be more difficult to remove them all. It may be possible to broaden the null by increasing the balance control and finding a compromise setting on the phasing controls but in this case you will have to accept a reduction of noise rather than removal. Tests on multiple phasing networks/ cascaded steerers are so far at an early stage!

I also have a hare-brained scheme in mind to run two of my converted 1650/6 receivers in "parallel" on adjacent channels, taking the two signals out after the 1.4 MHz filters into the Null Steerer circuit and then back in to be detected in the SSB product detector and audio stage. Why on earth would I want to do that, you may well ask? Well, if we suppose that the wanted signal is on one frequency but not 3kHz up/down, and the awful crashing static is just about equal in phase and amplitude on both channels watch this (quiet) space? There's probably a major flaw in this theory,

and I haven't tried it yet, so comments would be welcome. I suppose the essential thing is that both receivers should be more or less identical, which they are.

The Null-Steerer Circuit

The Null Steerer works in a similar way to the audio examples, but with received RF signals. Mixing is achieved using a pair of J-FETs with commoned outputs connected to the station receiver or TCVR. The "noise" input has an "un-bal" step-up ferrite transformer feeding a phasing network and the other has an amplitude controlled aerial input. When the Null Steerer is switched on, with no PTT applied, a relay operates to connect the main aerial through the noise cancelling circuit to the Rx. The relay drops back to a straight-through path when the units PTT input is grounded on transmit, or when powered down. The FETs are protected from any slight timing mismatch in TX c/o changeover by clamp diodes and filament lamps used as loads/fuses.

CHECK CORRECT OPERATION OF THE PTT RELAY SWITCHING CIRCUIT BEFORE CONNECTING THE AERIAL AND TRANSCEIVER THROUGH THE UNIT!

Installation

The normal mode of operation is to connect a "noise aerial" to the phase-controlled input, hopefully sited to receive more local noise than wanted signal; the main aerial is routed to the other input, where it will present wanted signal and the unwanted local noise, such as TV timebase, data, S/M power supplies etc. The middle connector is then connected to your transceiver antenna socket (Not to your linear amplifier!). A number of operators have had good results using the braid of an unused VHF coax. feeder as the noise aerial. This will

usually be more or less vertical and is ideal for the purpose, as local noise is supposed to be mainly vertically polarised. If the source of the interference is known, position the noise aerial as near as possible to it without annoying the neighbours as much as they may be annoying your Rx. The unit requires a power supply of 12 volts at about 150 mA.

Operation

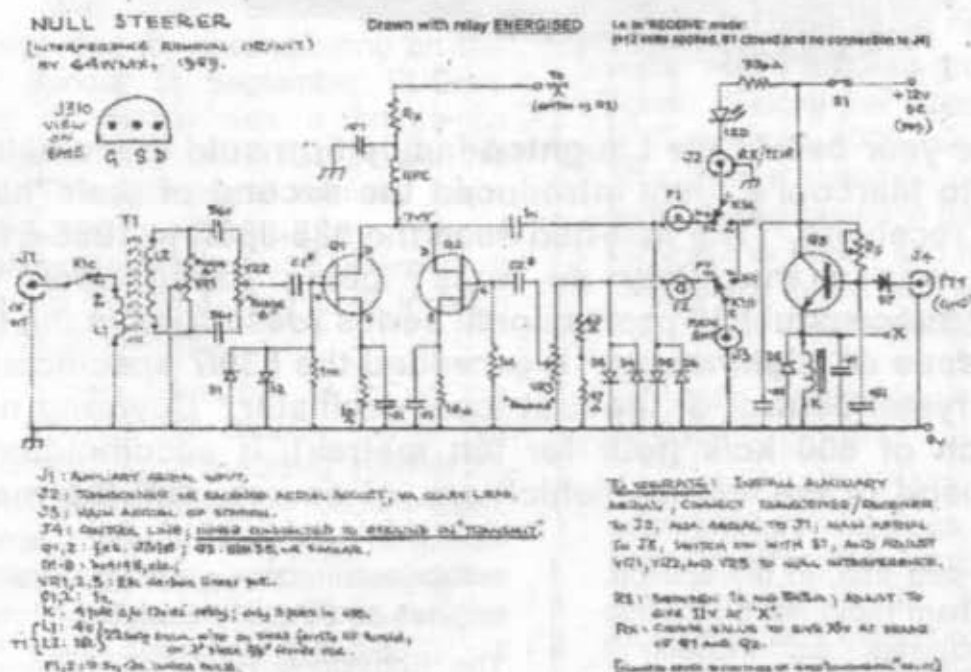
Start with all the controls at "12 o'clock". (i.e. with the flat on the potentiometer at "6 o'clock").

The A & B "phasing" controls VR1 and VR2 are used to invert the noise signal, and the balance control VR3 allows the noise level to be matched, subtracting one signal from the other, plunging the noise into a very deep null and leaving an attenuated but clean wanted signal. The better the noise aerial is at picking up only noise, the more wanted signal will be left after

mixing. The receiver AGC will usually take over and compensate once the awful interference has been removed, or manual gain can be wound up if you prefer. AGC will have been flattened by the overriding noise level, and you should hear the wanted signal emerge and take over control as the noise is reduced.

$$(SIGNAL + noise) - (noise + signal) = SIGNAL - signal$$

It seems like magic until you have tried it a few times, after which you feel like a magician! The best bit is that the noise is removed BEFORE it gets into your nice sensitive receiver and messes up the AGC and metering circuits, and there's still nothing stopping you hanging a DSP filter on the speaker output and getting the best of both worlds, although you can probably guess what I think of noise reduction at that point, after the stable door has bolted! ♣



This project is offered to members in the following three forms:-

P.C.B. & diagrams. £7.50.

Or P.C.B. & Kit of parts: £25

Or built, boxed unit, (SO239 /BNC) £58

All plus P&P. Details from Geoff Steedman, MØBGS,
Tel: 0113-2696527
e-mail 100664.3417@compuserve.com

Eddystone Amateur Band Communications Receiver Model EA12

The Original Specification
by Graeme, G3GGL



In 1964, the year before the Laughton family firm sold the 'wireless business' to Marconi's, they introduced the second of their 'ham-band only' receivers. (The first had been the 888-888A in 1956-61) The EA12 was a true *'tour de force'*, being based upon the immensely successful 830 professional series (*described in the last February Issue of 'Lighthouse'*). It exceeded the 830/7 specification by using crystal control of the first local oscillator. Covering nine bands, each of 600 kc/s (four for ten metres), it accommodates every HF band of the 'sixties (which are, of course, still the major bands).

I have often said that, in my opinion, the future of ham radio will divide into different disciplines as, indeed, it always has done. Now that Morse code is phased out as a licensing requirement it will find a niche for itself.

Vintage wireless buffs will embrace Morse transmission in much the same way as fly fisherman hone their skills, and in the same way that other

enthusiasts drive steam traction engines and Bentley roadsters.

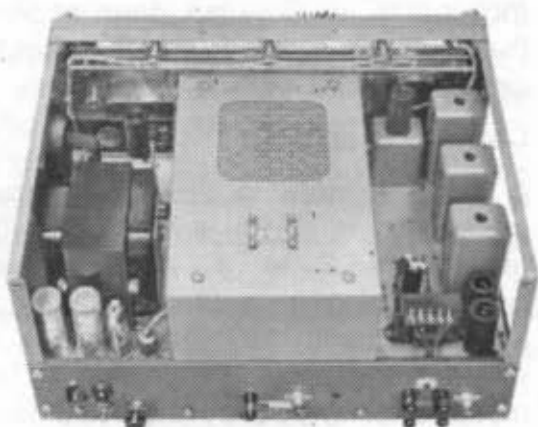
The Eddystone EA12 will become a cult receiver with this elite fraternity. A variable-width second IF of 100 kc/s, crystal filter, notch filter and tuned audio filter as well as velvet tuning, it has all the makings of such a set.

Here follows the original spec sheet.

Eddystone EA12

Receiver

The EDDYSTONE "EA12" is a model specially designed for use by amateur radio operators and covering the six major amateur bands from 1.8 Mc/s to 28 Mc/s. It possesses an exceedingly good electrical performance and will produce first class results with all modes of signal. To this end, many



modern refinements are included and these are discussed in the following paragraphs. Mechanically the "EA12" is built to the highest engineering standards common to all Eddystone products and will give years of trouble-free service, irrespective of climate.

SPECIAL FEATURES OF THE "EA12" RECEIVER

Among features essential in a modern receiver for use on the amateur bands are adequate bandspread, correct degrees of selectivity for the various modes of signal, ease of tuning sideband signals, and frequency stability of a high order. The "EA12" possesses all these advantages and a number of others, leading to outstanding performance and ease of control.

Principle of Operation

To achieve the necessary degree of frequency stability, the first oscillator in the double superheterodyne circuit is

crystal controlled. The tunable second oscillator operates over a range -- actually 1.0 Mc/s to 1.6 Mc/s -- where very high stability is readily achieved. Hence the total frequency drift is extremely small. The second intermediate frequency is 100 kc/s and, at this frequency, using modern components and techniques, it is possible to obtain high gain and, more important, the correct degree of selectivity for optimum performance.

Bandspread

The tuning range is restricted to 600 k/s, which, taking into account the wide scales, gives more than adequate degree of bandspread. Further, the calibration of the scales is linear and, after standardisation against the built-in frequency calibrator, a frequency can be read to within a kilocycle or so. Also, of course, an equal degree of bandspread is obtained on each band, four ranges being provided for complete coverage of the 28/30 Mc/s band.

R.F. Circuits

The tuned RF amplifying stage utilises a frame-grid double triode valve, designed essentially for cascode operation. Since also the circuit is of the band-pass type, very good protection against cross-modulation and blocking by strong signals is obtained.

The signal frequency circuits are kept in proper alignment by a separate control which permits the circuits to be accurately peaked, ensuring optimum performance on all the frequencies covered. A two-to-one reduction drive makes for ease of adjustment.

Selectivity

Continuously variable selectivity is available in the 100 kc/s second intermediate frequency stages. The control is clearly marked to enable

ready selection to be made of the bandwidth appropriate to amplitude modulated (A3) signals, c.w. (A1) signals and s.s.b. (A3a) signals. A crystal filter can be switched in to give an extremely narrow band for the reception of c.w. when interference is present. A low-pass audio filter is permanently in circuit when receiving c.w. and s.s.b., but can be switched to become a sharply tuned filter to aid clear reception of c.w. signals.

The narrow "T" notch filter can be tuned across the i.f. pass-band, the deep slot effectively removing an interfering heterodyne.

Reception of S.S.B.

The "EA12" receiver performs extremely well in this mode of signal. The correct bandwidth can be positively selected on the selectivity switch and the mode switch set to upper or lower sideband, automatically selecting the appropriate carrier selection frequency. To achieve maximum intelligibility with an s.s.b. signal it helps considerably to have available a very fine tuning control. The BFO pitch control in the "EA12" is arranged to give this facility when the mode switch is in either the "USB" or the "LSB" position.

A product detector is also brought into use, and a separate double-diode noise clipper is available when required, effective on s.s.b. and c.w. A long or short AGC time constant can be selected as desired.

Muting

The receiver can be muted during transmission either by a panel switch or by an external switch or relay connected to terminals at the rear. As necessary particularly with s.s.b., the muting can be made very deep. A pre-set control at the rear allows the muting level to be adjusted to suit local circumstances.

Other Controls

Separate controls are provided for independent control of RF, IF and LF gain. The BFO pitch control is fitted with a 5 to 1 reduction drive and this assists considerably in selecting a given signal with others present. The crystal calibrator is brought into action with a press switch and a small knurled knob permits adjustment of the cursor, over a small but adequate range of movement, to allow standardisation of the scale against the crystal calibrator signal.

Carrier Level Meter

A large "S" meter is fitted on the front panel, and is clearly calibrated in "S" units from 1 to 9, each division corresponding to a 6 dB change of level. Above "S9", the meter is calibrated directly in decibels. The meter is controlled by the AGC level and is out of action when AGC is switched off.

Tuning Mechanism and Scales

The gear-driven, flywheel loaded tuning mechanism is precision made and extremely smooth in operation. It has a reduction ratio of 140 to 1. The scales are 10½" long, clearly marked in frequency, and the combination of long scale and fine driving movement allows exceedingly close control of tuning.

Noise Limiter

Two noise limiters are incorporated, one of the series diode type for use on a.m., the other a double diode which is operative with c.w. and s.s.b. The switch forms part of the AGC switch assembly.

Other points

A loudspeaker is fitted internally but it is a simple matter to connect an external speaker where this is preferred. A jack on the front panel

accepts telephones of medium to high impedance and an outlet is provided at the second i.f. of 100 kc/s for operation of auxiliary equipment such as FSK adaptor, panoramic display unit, or other special device.

Operation is from standard AC mains and the receiver is supplied complete with all necessary crystals, leads and a comprehensive instruction manual.

TECHNICAL INFORMATION

Frequency coverage

The "EA12" receiver covers the six major amateur bands in nine ranges as follows:-

Range 1	29.4 – 30.0 Mc/s (10 metres)
Range 2	28.9 – 29.5 Mc/s (10 metres)
Range 3	28.4 – 29.0 Mc/s (10 metres)
Range 4	27.9 – 28.5 Mc/s (10 metres)
Range 5	20.9 – 21.5 Mc/s (15 metres)
Range 6	13.9 – 14.5 Mc/s (20 metres)
Range 7	6.9 – 7.5 Mc/s (40 metres)
Range 8	3.4 – 4.0 Mc/s (80 metres)
Range 9	1.8 – 2.4 Mc/s (160 metres)

Intermediate Frequencies

1st IF. Tunable over the range 1.1 – 1.7 Mc/s. The local oscillator tracks on the "low" side covering the band 1.0 – 1.6 Mc/s.

2nd IF. 100 kc/s with crystal filter, slot filter and continuously variable selectivity. The BFO provides a swing of ± 3.5 kc/s in the c.w. positions and ± 100 c/s on s.s.b.

Valve Complement

The double conversion circuit uses a total of thirteen valves and five silicon diodes, two of the latter being power rectifiers.

Ref. Type Circuit Function

V1	ECC189 (CV5331)	RF amplifier
V2	ECH81 (CV2128)	1 st mixer and 1 st osc. amp/doubler
V3	EC90 (CV133)	1 st oscillator (crystal controlled)

V4	ECH81 (CV2128)	2 nd mixer and 2 nd osc. isolation amplifier
V5	EC90 (CV133)	2 nd oscillator (VFO)
V6	EF93 (CV454)	1 st 100 kc/s IF amplifier
V7	EF93 (CV454)	2 nd 100 kc/s IF amplifier
V8	EB91 (CV140)	AM detector and AGC rectifier.
V9	ECC83 (CV492)	Cathode follower and audio amplifier
V10	EK90 (CV453)	CW/SSB detector
V11	EL90 (CV1862)	Audio output
V12	150C2 (CV1832)	HT stabiliser
V13	EF94 (CV2524)	Crystal cal.
D1	DD006	AM noise limiter
D2/3	DD006	CW/SSB noise clipper
D4/5	DD058	HT rectifier.

(For USA equivalents see 'Lighthouse' Issue 65, Feb 2001, page 18)

Input Impedance

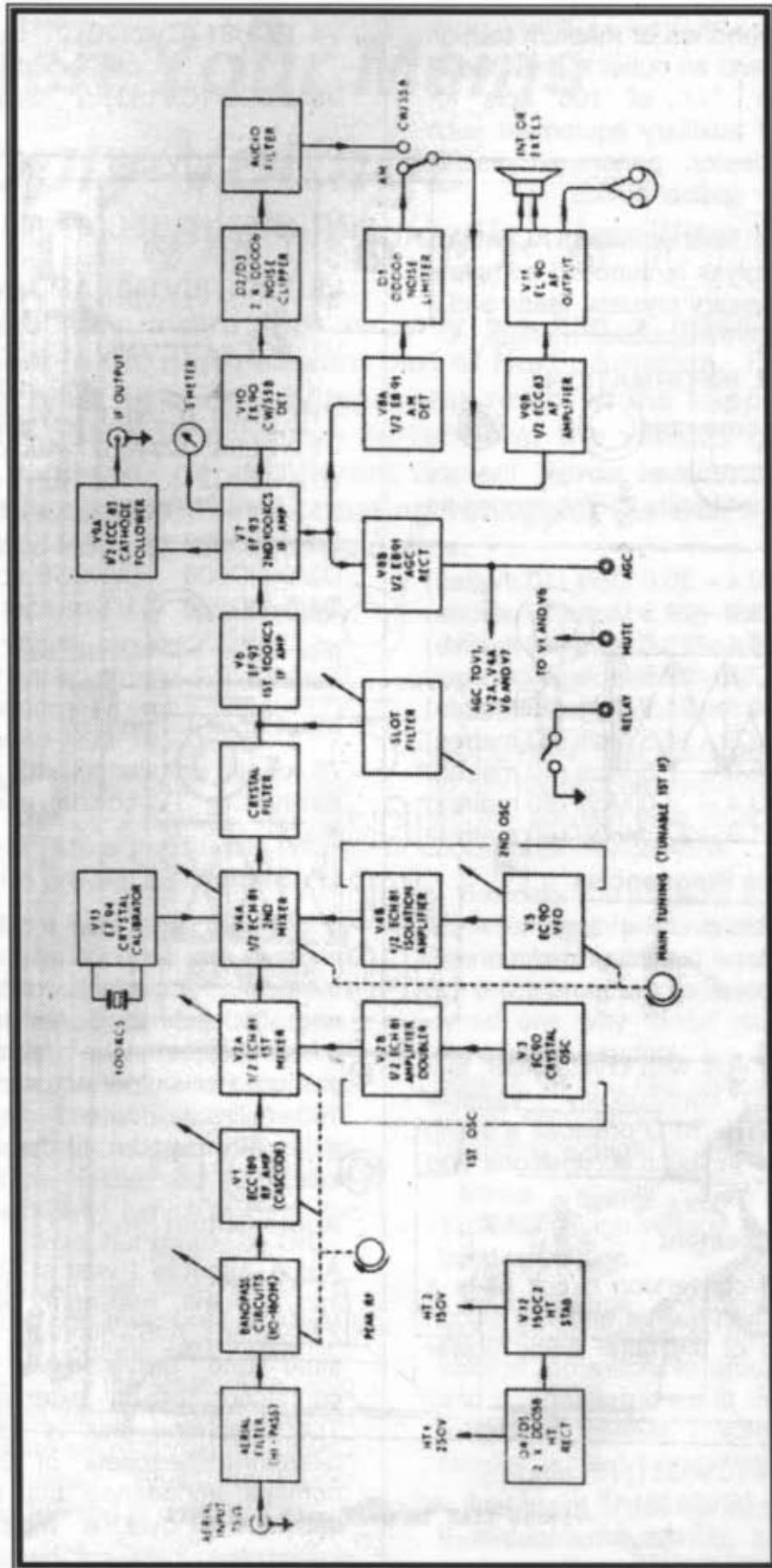
75 ohms unbalanced to a standard Belling-Lee TV coaxial socket at the rear.

I.F. Output

IF output is taken from a coaxial socket at the rear and is suitable for a terminating impedance of between 75 and 300 ohms. An input of 2 microvolts at the aerial socket produces an output across 75 ohms of 100 millivolts (taken with AGC off, gains at maximum, i.f. bandwidth of 3 kc/s).

Audio Output

Audio output is 1 watt at 5% distortion into 3 ohms, maximum output being 2.5 watts. A 5" diameter speaker is fitted and provision is made for connection of an external speaker. The telephone jack is for use with telephone headsets of 2000 ohms nominal impedance but results are satisfactory over a wide range of impedance.



Eddystone "EA12" Block Diagram

Audio Response

The response of the audio frequency circuits is controlled to give maximum intelligibility in the various modes of signal. With the *MODE* switch in the "AM" position, the response is within plus or minus 3 dB (relative to 1000 cycles) over the range 400 to 7000 cycles. In the "SSB" and "CW" positions, a low-pass filter is brought into circuit, modifying the response to one less than 10 dB down at 500 cycles and greater than 30 dB down at 5000 cycles.

With the *MODE* switch in the "CW FILTER" position, the filter is tuned to approximately 800 c/s and the bandwidth becomes 300 c/s at the 6 dB points.

Selectivity

The overall bandwidth at 6 dB down is continuously variable within the limits 1.3 kc/s to 6 kc/s and is narrowed to 50 c/s when using the 100 kc/s crystal filter.

The "T" notch filter provides a steep-sided rejection notch, tunable across the IF passband. Notch depth is of the order 40 dB and the filter in addition to its use in rejecting heterodyne interference can be used to steepen the carrier side of the passband when taking s.s.b. signals.

Markings on the selectivity control indicate the appropriate settings for the different signal modes. Typical overall bandwidths are as follows:-

Position	-6 dB	-50 dB
Crystal (N)	50 c/s	2 kc/s
CW	1.3 kc/s	5 kc/s
SSB	3 kc/s	8 kc/s
AM	6 kc/s	12 kc/s

Sensitivity

Sensitivity on a.m. signals, with an i.f. bandwidth of 6 kc/s, is 2 microvolts for a 10 dB signal-to-noise ratio. On c.w. the sensitivity is 0.5 microvolts for a 20 dB signal-to-noise ratio and i.f. bandwidth of 1.3 kc/s.

Frequency Stability

Drift does not exceed 100 c/s in any one hour period, after adequate warm-up. Short term drift is unlikely to exceed 20 c/s. A variation of plus or minus 5% in mains voltage does not affect the tune frequency by more than 100 c/s.

AGC Characteristics

The audio output level does not change by more than 9 dB when the carrier level is increased 90 dB above 5 microvolts. (Taken at 7 Mc/s with an i.f. bandwidth of 3 kc/s).

Two AGC time constants (0.15 and 4.5 seconds) are provided and the AGC delay is automatically reduced when receiving s.s.b. The AGC voltage is available at a separate terminal for recording or control purposes.

Image Rejection

Better than 50 dB at the highest frequency and proportionately less at lower frequencies.

I.F. Breakthrough

Breakthrough at the first intermediate frequency is greater than 100 dB, except at 2 Mc/s on range 9 where it is between 90 and 100 dB. At the second i.f. it is greater than 100 dB.

Power Supply

Standard AC mains of voltages 100/125 and 200/250, 40/60 cycles. Consumption is 85 watts.

Dimensions and Weight

Width 16³/₄ "; Height 8³/₄ "; Depth 13⁵/₈ "
Weight 47 lb. (21.3 kg) ♣

E.U.G. CROSSWORD NEWS

Common Error Sinks 8 Entries Eleven Entries; Three Correct

Incredibly, every entry this month has all the technical questions correct, but eight have fallen down on the same non-technical English slang question.

19 Down was "**Girls, with posh accent**". The correct answer was "GELS", entered by just three winners; the rest had "GALS". Just to show there's no hard feelings I'll quote you the following entries from the "Bloomsbury Dictionary of Contemporary Slang" (1990):-

GAL *n* American. A light-hearted spelling and pronunciation of girl.

GEL *n* British. A girl, particularly a public school-girl. The word mimics the upper-class pronunciation (of hearty schoolmistresses or crusty colonels for instance) prevalent until the 1960s and still heard.

The three Winners are:-

Mike Maxey, G8CTJ, of Leics.

Jack Read, of Cheshire,

David Skeate, GØSKE, of Suffolk.

These names were then placed in a hat and the lucky recipient of a crisp EUG cheque for five notes was **Jack Read**. Congratulations, Jack.

Members will recall that last month we had run out of 'universal prizes'. That is to say Eddystone leaflets of some historic interest which could be sent to every entrant. The question of 'resting' the competition was considered but it was then agreed to continue with a single prize of a fiver with the option of taking an EUG CD-ROM.

Several of you made comments about the crossword:-

"Please keep the crosswords going, I

enjoy doing them, they are more fun than newspaper ones."

"Dear Colin; please continue with the crossword – I enjoy it because it is so unusual to have one involving engineering terms, let alone radio!"

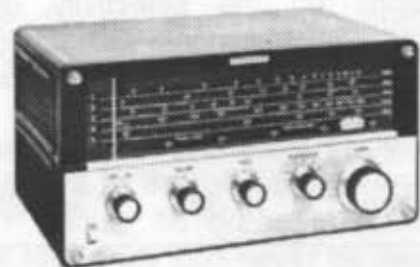
"I'm not bothered about a prize, nice as it might be, the fun is in trying to get the crossword right."

ANSWERS TO PUZZLE NUMBER 15:

ACROSS: 3) COLLINS 7) LETHAL 8) AVC or AGC or AFC 9) AVO 10) CB MODS 11) SOLVENT 13) NAUTIC 14) PATINA 15) EMITTER 18) EMERGE 20) TTL 21) ATS 22) EQUALS 23) RED HEAT

DOWN: 1) BEEB 2) RHEOSTAT 3) CLASS C 4) LOCAL 5) IMAGE 6) & 10) SHORT-WAVE CONVERTER 12) VITREOUS 14) PRE-SET 16) IR LED 17) TRACE 19) GELS

I'm delighted to say that we have found a small cache of some original handbooks of famous Eddystone receivers. Or to be precise, Ted has. He was going through some old EUG paperwork and he found them lurking at the bottom of a box from the Bath Tub. The one which will be used for



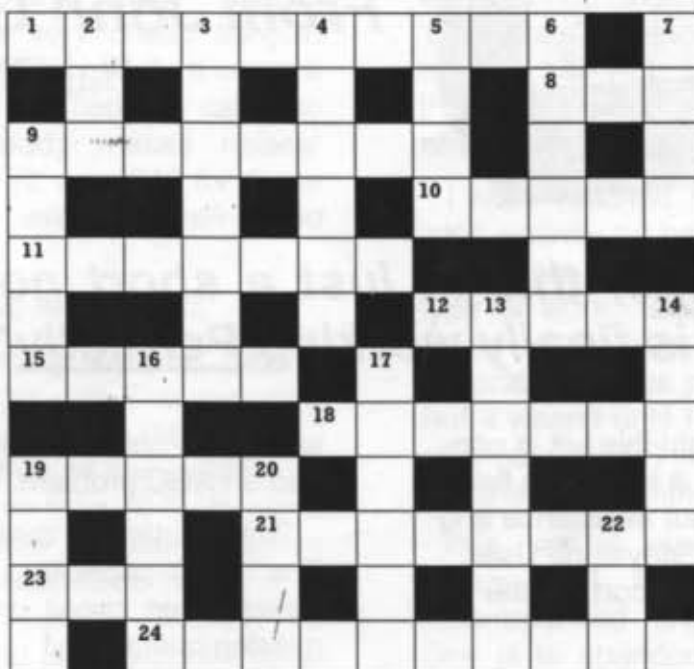
prizes in this month's crossword is the Service Manual for the very rare EB37. It was introduced in 1971 as a marine cabin set or HIFI short-wave tuner.

GO FOR IT! Graeme – G3GGL ♣

E.U.G. PRIZE CROSSWORD No 16

COMPILED by COLIN CRABB, G4HNH

Photocopy or write out the answers so as not to spoil your copy. Send to Graeme Wormald at 15, Sabrina Drive, Bewdley, Worcestershire DY12 2RJ, England, to arrive not later than 20th November. See previous page for further details. Don't forget to include your name. (We're not psychic!)



ACROSS

- 1) 4 valve Eddystone with push-pull o/p but no RF stage, circa 1935 (10)
- 8) Famous radio corporation (3, abb.)
- 9) Adjustments to small value presets (8)
- 10) --- interference sometimes occurs in superhets when two transmitters differ in frequency by 2 x the IF (5)
- 11) Af mute control on vhf rx (7)
- 12) Cutting tools in pristine condition (5)
- 15) Single most easily replaced component (1,4)
- 18) It's worth a nickel and 2 dimes (7)

- 19) Radio amateurs in a net (5)

- 21) Eric, a man, possibly, with a W call-sign prefix (8)
- 23) You may have to "fit" a new one if an o/c winding causes a general flattening of rx performance (3, abb.)
- 24) Circuit diagrams (10)

DOWN

- 2) German clock (3)
- 3) Lighting rheostats (7)
- 4) Think lateral in comms. mode to reveal popular amateur radio manufacturer (6)
- 5) What is this antenna? Why, a gift, hidden, from a Japanese inventor (4)
- 6) Middle region of a bipolar transistor, into which minority

- carriers are injected from an external circuit (4)

- 9) Bygone coil merchant (5)
- 13) Heavenly musician (7)
- 14) Famous Argentinean political name (5)
- 16) Double ended fasteners (threaded) useful for construction of vhf arrays etc. (1,5)
- 17) Final resting place for retired radios (6)
- 19) Ratio of output power to input power (4)
- 20) --- attenuation is the fall off in amplitude of a radio wave with increased distance from the transmitter (4)
- 22) mathematical prefix denoting an inverse trigonometric or hyperbolic function (3)

'Working Perfectly!'



From John Gillespie
Hamilton, Ontario

Hello Graeme, this is just a short note to say "Our 830/4 is finally working Perfectly".

We originally bought this set in non-working condition at a local ham flea market. Through your assistance and with the help of the Eddystone User Group we were able to sort out the main problems.

First, the mute jumper was missing from PL4. Then we restored many horrifying problems in the power supply, along with several out-of-spec resistors and a new finger-plate from Dave Simmons.

But one problem remained. I had never seen a radio with separate RF and IF gain controls. When the AGC was on the radio broke into oscillation if either control was advanced on strong signals but OK on weak signals.

I wrote to you asking if this was a design problem with the model but you said "No, not at all, it's most abnormal!" (*Note from Graeme – remember the old adage: a poor Eddystone is a sick Eddystone!*)

Well, recently we decided to take a break from restoring other people's radios and do a bit of our own. The 830/4 was at the top of our list. Well, do I ever feel silly! As I read my own

writing it's obvious in hindsight that we had an AGC problem.

The solution, I think, is interesting. The AGC capacitor, C117, 0.1 mfd wasn't open circuit or shorted, it was missing completely!

From all appearances it had been gone for some time; no cut wires or solder re-work. No hint that it was ever in the set. Someone must have removed it long ago.

There's a moral in here somewhere. Don't give up, keep looking. And that means looking with the schematic in your hand. Don't overlook anything. Parts may not just be out of spec. They may be out of the set entirely!

Once the capacitor was replaced, what a difference it made. You could put the RF and IF controls at maximum with the AGC on, whilst receiving a really strong signal. Wow!!

Now the set looks fantastic and works even better, thanks to your assistance and the Eddystone User Group. Keep up the great work, it's much valued out here in the trenches.

Sincerely, **John Gillespie.** ♦

Not Another Stratton Patent!

Why on earth did the Laughton Family register so many patents? Well I can tell you why ! Many years ago, Eda, my XYL, used to work for a patent agent in Kidderminster. Half his work was for clients who made a living out of discovering an unpatented gadget on the market. They copied it precisely and applied for a patent. Then they threatened the inventor with infringement unless a royalty was paid . . . Unfair! I hear your cry. Absolutely, but that's the law of the industrial jungle. If you wish to market a gadget, however simple, apply for a patent before it's in the shops.

Collectors of Eddystone Radio Components will readily recognise this adjustable insulated condenser bracket, catalogue 1007, used in many late 'thirties and early post-war designs. Graeme – G3GGL.

PATENT SPECIFICATION



Application Date : June 4, 1935. No. 16110/35

Complete Specification Left : April 2, 1936.

Complete Specification Accepted : Nov. 30, 1936.

COMPLETE SPECIFICATION

An Attachment Bracket for Wireless and like Electrical Components

We, STRATTON AND COMPANY LIMITED, a British Company, of Balmoral Works, Bromsgrove Street, Birmingham, and GEORGE STRATTON LAUGHTON, British Subject, of the Company's address, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement :-

The invention refers to attachment brackets for wireless and like electrical components in which the attachment part has mounted upon it a slideable carrier part for supporting electrical components.

The present improvement is more particularly intended for application to wireless or television sets to enable the distance of the component which is to be

mounted, such as a condenser, from the base board or panel to be readily adjusted.

According to the invention the attachment part is a pressed metal channel or tubular part with a part or parts bent out to form the attachment means, and the carrier part is of insulating material having a slotted portion for sliding within the channel or tube and a portion forming a support or bearing for a component, the carrier part being clamped to the channel or tube by a screw or screws.

In the preferred construction the attachment part is pressed from a metal blank which is slit inwardly from opposite edges and has one end portion bent at right angles to the plane of the blank and parallel to each other to form flanges or channel walls. The base of this channel has two tapped holes to take the clamping

screws which pass through the slotted portion of the carrier part.

In the appended drawings :-

Figure 1 is an elevation of the attachment bracket.

Figure 2 is a perspective view showing the bracket dismembered.

Figure 3 is a section on line 3—3 of Figure 1.

Figure 4 illustrates a modification of construction of the metal part of the bracket.

As shown in figures 1, 2 and 3 the attachment part *a* of the bracket is a metal part formed as a single pressing from a blank which is sheared to shape and is slit at the part *b b*. It is formed with its two longitudinal edges flanged at right angles to the main plane of the blank as at *c* to form a channel. The flanged part does not occupy the whole blank and the part which is left at one end, which is preferably wider than the channel is bent up at right angles to the base of the channel to lie against the ends of the side flanges *c*. This part is then perforated, say near each end, to form an attachment foot *a*¹. The wall forming the base of the channel section is provided with two holes *d* in line and these are screw-threaded.

Into the metal part so made, we insert a moulded, insulating part *e* having a slotted stem *f* and a ring or jaw *g* at one end. The stem *f* fits the channel and is guided thereby as it slides in or out to an extent limited by a pair of screws *h* passing through the slot in the stem and screwing into the holes in the wall of the channel. The screws have heads which clamp the parts together in any position within the limits of adjustment provided by the slot. It is preferred to employ washers or a pressure plate under the screw heads and bearing on the stem *f* across the slot therein.

Figure 4 illustrates the metal part of the bracket made from a tube of rectangular cross section. One end of the tube is slitted to leave tongues *i* and *j*. All of these, or tongues *i* only, may be bent out to

form attachment lugs. The parts *j* may be bent inwardly if desired or may be removed. The two opposite walls of the tube will be provided with screw holes *d* and the holes in one wall will be internally screw threaded to receive the screws *h* as in the earlier example. The insulated part *e* will be as previously described.

This bracket permits easy fitting of the components to base board or walls of wireless sets or television sets and enables the best working relation of the component to a remote operating or control member on a panel to be more readily attained.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare what we claim is :-

(1) Attachment bracket for wireless and like electrical components comprising in combination a pressed metal attachment part of channel or tubular form with a part or parts bent out to form attachment means and a carrier part of insulating material having a slotted portion for sliding within the channel or tube and a portion forming a support or bearing for a component, the carrier part being clamped to the channel or tube by a screw or screws.

(2) Attachment brackets for wireless and like electrical components comprising in combination a pressed metal channel part with an attachment foot bent across one end of the channel, and a moulded insulating member consisting of a ring or jaw for supporting a component and a slotted stem capable of sliding into and being clamped in adjusted relation to the channel part by screws passing through the said slotted member and engaging screw-threaded holes in the channel part.

(3) The improved attachment bracket for wireless and like electrical components substantially as described with reference to Figure 1 to 3, or with reference to Figure 4 of the accompanying drawings.

Dated this 27th day of March, 1936.

BARKER, BRETTELL & DUNCAN,
Chartered Patent Agents,
75 & 77, Colmore Row, Birmingham, 3.

[This Drawing is a reproduction of the Original on a reduced scale.]

Fig. 1

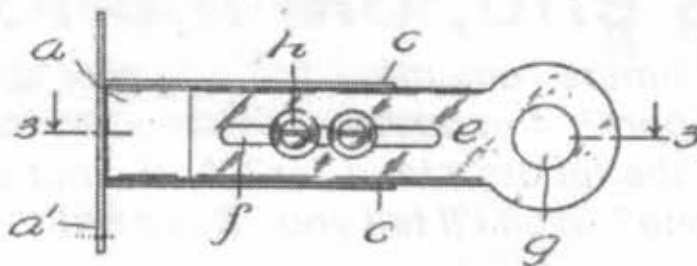


Fig. 2

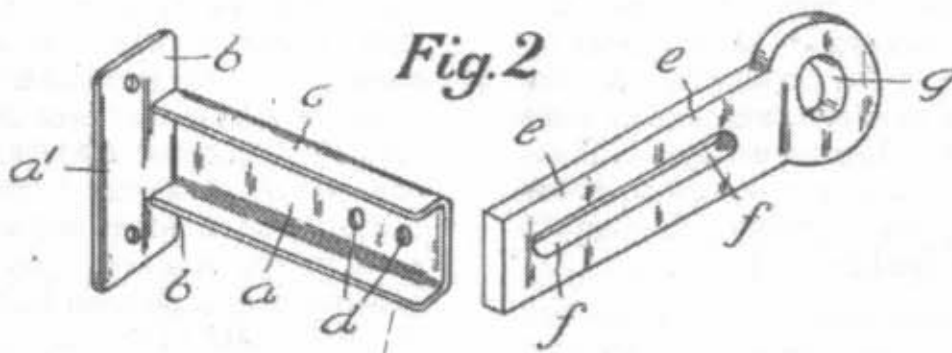


Fig. 3

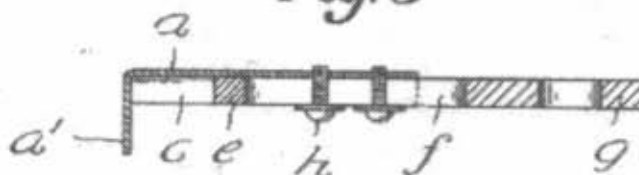
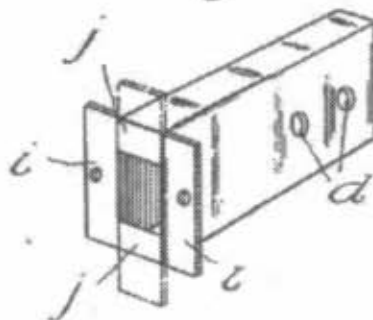


Fig. 4



“You’re coming in Q5, R9 at this end, old man . . .”

Can any old timers remember the origin of the above pre-war ‘fone’ report? I expect it originated in the U.S. of A., but what do the letters stand for? And what’s it got to do with Eddystone? Well I’ll tell you. Read on!

The origins of signal reporting are confusing, to say the least. We are all used to the RST code for reporting CW or Morse signals. The ‘R’ stands for readability and is on a scale 1-5. The ‘S’ stands for signal strength on a scale 1-9 and the ‘T’ is for the tone or purity of the note, also on a scale 1-9. In this day and age anything less than T9 would be most unusual.

The system was devised in the late 1920’s by American amateur W2BSR and is in current universal use by CW operators. It is also used by telephony operators by just omitting the ‘T’ or tone report. The letters ‘RS’ or the words ‘Readability’ or ‘Strength’ aren’t often mentioned, but are tacitly understood.

In 1938 the Cairo Conference adopted two ‘Q’ codes for strength and readability, namely QRK 1-5 for readability and QSA 1-5 for strength.

According to the 1939 RSGB Handbook this system was in common use by amateurs. Note that both of them are on a 1-5 scale, much more sensible for guesswork than a 1-9 scale! The same system was in use by the British Army but abbreviated to ‘R5’ and ‘S5’.

And now we come to the enigmatic ‘Q’ 1-5 meaning ‘readability’, and ‘R’ 1-9 meaning ‘strength’ instead of R and S. What sort of evidence have we got for this strange nomenclature?

Well, the naming of the American BC453 wartime aircraft LF midget receiver as the “Q-fiver” in the famous QST article, c.1950. It was fully intended that the term “Q-5” indicated excellent readability. (For the record, the BC 453 tuned 200-500kc/s and had an IF of 85kc/s. This would convert any standard 450-470kc/s IF set into a cracking good double superhet with a genuine really narrow 4kc/s IF for AM, thus reducing QRM.)

Many pre-war commercial communications receivers had the letter ‘R’ marked on the S-meter without any clue as to its actual meaning.

The British Army Signal Training manual Vol. III, Pamphlet No 24, “AERIALS”, dated 20th Dec 1939, states on P.20:- “The anticipated effect of raising the aerial height to 20 feet is a gain of half an “R” strength and a further gain of the same amount may be anticipated if the height is increased to 40 feet.”

And now look at this. The very post-war (1956) Eddystone Type 730/4 has a meter calibrated 1-9 and the legend “One R = 6dBs”. I’ll repeat that; the tuning meter scale on the 730/4 is calibrated in “R” units, which are undoubtedly the same as “S” units.

Somebody must know! Please tell us.

Graeme – G3GGL ♣

RADIO RAMBLINGS

Gettings from my Notebook



By
Graeme
Wormald
G3GGL

Bewdley, September 2003

As I pen these notes we are coming to the end of the hottest recorded summer in England. Some will say that global warming has struck with a vengeance but others (including yours truly) will say that it is merely the recovery from the "little ice age" which started around 1400 A.D. and only started to clear around the late 19th C.

The Romans in 200 A.D. and the Normans in 1066 were easily able to cultivate grapes in the Midlands. But I have seen Victorian picture postcards showing the River Severn at Bewdley fully iced over with half the population attending a pig-roast in mid stream. Fear not; it is a natural progression. Enjoy it!

G3EUG BACK ON THE AIR

Readers may recall that in 1999 I made enquiries to discover the whereabouts of the original holder of the above callsign, first issued in 1948. The trail dried up round about 1965 and contact was lost. Members will be delighted to learn that Ted Moore, G7AIR, took up the chase as soon as the new licensing arrangements were promulgated and has acquired it on behalf of our Group. Read all about it elsewhere in this issue.

Well done, Ted!

1066 AND ALL THAT

Pardonez-moi? Readers may recall that in our last issue (August) I threw out a teaser about the origin of my

adopted town's name (page 4). I say 'adopted town' because the blood which courses my veins is pure West Yorkshire Anglo-Saxon . . .

I asked if any member had noticed that 'Bewdley' is derived from Norman French, and why? Well, there seem to be few classical scholars or linguists among you!

EUGer Greg Powell of Leek, Staffs, called to tell me that he hadn't a clue, but that his Belgian-born XYL, Marie, (no doubt a cousin to the great Hercule Poirot, that most famous of all Belgians) spotted it right away whilst browsing through 'Lighthouse'.

Full marks, Marie, not only for spotting the derivation but for reading 'Lighthouse' to start with. Actually, when the Normans arrived and started work on Domesday (1086), the town now known as 'Bewdley', on the west bank of the River Severn wasn't built. In fact, it was probably part of Wales at the time!

But that part on the east bank, shown in Domesday, was listed as 'Gurbhall' and is now incorporated into modern Bewdley as the suburb of 'Wribbenhall'. Marie will understand that as well!

And then we had a call from Anthony, GW4RYK, in Montgomery, also with the correct origin. So honour is saved!

But back to the main point. When William's henchmen arrived along the old pack trail from Droitwich they took

one look across the river and said "Isn't that a beautiful place?" Or, in their language, "Beau lieu".

When King Edward IV bestowed a Charter of Incorporation on the town in 1472 (for assisting him gain the Crown for York) it was granted to the inhabitants of "Beaudeley" and it's only one jump to the present-day spelling. Lessons over for this month.

BROKEN DIAL CORD AND CRACKED COGS

Whilst telling me about 'Beau lieu', Anthony reminded me that he still has the 'new cog sections for repairing broken 'slide-rule' Eddystone drive cogs. Members may recall that he made an arrangement with a precision machinist to manufacture replacement cogs for the plastic (nylon or bakelite?) take-up spools on these models.

Anybody getting ready for winter restoration projects should get their orders in quickly, because stock is dwindling. Price £5 a pair, complete with instruction sheet. Send a self-addressed stamped envelope with your remittance (or equivalent in your currency, plus a bit for postage) to Anthony Richards at Castell Forwyn, Abermule, Montgomery, Powis, SY15 6JH.

EUG 'FIRST SUNDAY' NET

It was nice hearing Ron, M3URU, reporting in to the August net from Cumbria using his old G8URU callsign on HF for the first time! Now that all former Class Bs are upgraded I hope we shall have some more calling in.

In fact, I hope some more 'former' Class As call in as well! There is no need to join in a round table or anything like that. Just locate the Net and give a shout when a member passes the microphone. We always give a little pause for breakers. We just like to hear where you are and how you're getting us.

The September Net was delighted to hear from G3EUG/P for the first time, operated by Ted, G7AIR from the top of 'Wireless Hill', east of Leicester. Full details in Ted's MailBox elsewhere in this issue. Conditions on the net were splendid, with five (only!) of us having the channel to ourselves with a little QSB but QRK5 all round.

TRANSMITTING AERIALS

With lots of 'new' stations on HF many folk have little experience of successful aerials. Remember, all transmitting aerials will receive, but not all receiving aerials will transmit very well! It took me several years of operating before I found out some of the problems. Here's a few basic ones:-

▶ An end-fed half wave is difficult to load; the impedance is so high you won't match it with a normal ATU. Avoid it.

▶ It's little use trying to get an aerial nice and vertical; the radiation will be mainly ground wave which will die out in less than 50 miles, and nothing will be reflected from the ionosphere until it's 1000 miles away.

▶ There's no point in trying to get your horizontal aerial very high. To cover the British Isles high angle radiation is what you need (NVIR). 20ft is quite high enough on 40--80--160 and you won't work our islands on 20--15--10. (Unless it's just down the road.)

▶ The best end fed length to use is a 97 footer with a good ground-spike or counterpoise earth on the ground beneath it. 97ft is a 'magic' length and provides no excessive SWR on any of the 'old' bands. But when 'needs must', try anything. See Ted's report of his outing with G3EUG/P (as mentioned above).

▶ A simple 1/2-wave dipole, centre-fed with twisted pair or flat twin, will be fine if you have space (128 ft on 80). The

radiation takes place from the middle part so you may bend or even zig-zag the end 40 ft of each leg (but not more than 90 deg).

► The ubiquitous full-size '5RV will be fine but don't expect it to work without an ATU on a solid-state final.

► Those of you with valve finals (the Trio 520 / 820 / 530 / 830 series) will find that the pi-coupler in the set will cope with all these simple aerials straight off. But don't start using an SWR meter in such a case! It will baffle you.

I would commend all four of the above rigs to any new or old HF-er. They can be found second-hand in the range £100-£250 and are cracking sets if well-kept; obvious at the first look. The first two are 'old band' analogue dials (correct to 1 kc/s). The second two are digital readout with WARC bands. All with built-in psu and easy-to-use. Don't pay through the nose for a new rig to start you off.

My first factory-built HF rig was a second-hand TS-520 in 1978. I worked the world with it and traded it in for a new TS-530 in 1982. I still have this and have no intention of ever changing it.

► And don't forget the large horizontal loop aerial either, it's a true all band wire. Any length you can manage, any height, fed with a shortish piece of co-ax, will work on all bands with a modest ATU (or without one on a valve PA.) It's what I use in my small suburban garden and just listen to my signals on the net! (sides are 69 ft square).

Just one other thing; you may cause breakthrough TVI on a nearby set (such as your own). There are two main causes of this problem. Signals entering the TV via the power cable or via the outer of the co-ax aerial feeder. The easiest way to reduce either of

these is by winding the cable or co-ax onto a ferrite ring (as sold at the rallies). This produces an RF choke which considerably attenuates your HF signal (without affecting the UHF signal inside the co-ax). If you have a video recorder, DVD or satellite give them the same treatment.

If this doesn't effect a cure consider using a 'braid-breaker' in the TV aerial co-ax lead. These are available as 'plug 'n' play' modules from most Amateur Radio dealers and also from the RSGB. Their effect can be amazing.

FIRST SUNDAY NET

But back to where we started. The 'First Sunday Net'. This takes place, as you would expect, on the first Sunday of every month, at 10 am local UK time on a frequency of 3,695 kc/s, LSB. If this spot is in use, which it often is, then Chris, G3XFE, the net controller, goes UP to the next empty space, and makes his call. He rarely, if ever, has to go more than 5 kc/s HF, so don't go wandering all over the band looking! (We once ended up with two EUG nets about 10 kc/s apart, but we don't speak about that . . .)

The net often continues for up to two hours, depending on how many report in; how many want to ask questions and how band condition are faring. If you're not around at ten or ten thirty, just take a later listen round the spot and we may still be there. Remember, a signal report is all you need give, then vamoose if you're short of time.

Conditions on 80 metres are often a bit mediocre, 40 metres would be better. There's just one problem; it only has a bandspan of 100 kc/s compared with 300 kc/s on 80. The result is wall-to-wall European Community, called by some (rather unkindly) "Frenchman's Creek". The result is that Chris, G3XFE, our

controller, situated in Watford, Herts, (just north of London), cannot hear the rest of us!

But as the longer nights set in 80 metres will take longer to fade out in the morning, so give it a try. We also welcome reports from listeners. I had a report after the August net from Duncan in Shapinsay, and just in case your not quite sure where that is, it's one of the Orkney islands. Duncan reported reading all four (!) of our net on his AOR 7030 and that's a good 400 miles from Bewdley, (with my 20 ft high horizontal loop). We usually have a few more than four reporting in, but then, August is holiday time.

SMEATON'S STUMP (again)

I think I owe a small apology to some of our newer members concerning the above reference on the front cover of our last Issue. This appeared to show a lighthouse and a half, which could be quite puzzling if you didn't know the story.

Terry (VK3DWZ) wrote from Victoria (Oz) to say he was very puzzled by our front cover until he saw the July "PW" on a bookstand out there. What did it show? The Eddystone Light and Smeaton's Stump!

For those of you who don't read "PW" and cannot recall our "Christmas Special" some years ago, which gave the full history, here it is briefly.

The Eddystone rocks (near Plymouth) are named because of the continual eddies which swirl round them even in the calmest weather, giving waves 30 or 40 ft high and seriously endangering shipping. They were the site of the first offshore lighthouse in the world, built by Henry Winstanley in 1696-8. This was a very singular piece of architecture and was featured on the front page of our Christmas issue of 2001.

In 1703 it was swept away in a storm with the builder and crew inside it. A new structure was erected and lit in 1708. This lighthouse resisted the fury of the waves until it was accidentally destroyed by fire in 1755.



A third lighthouse was built under the supervision of the famous Yorkshire engineer John Smeaton and lit in 1759. It burned steadily for 123 years until 1882. By then it was found that the reef on which it was built had been undermined by the waves. A new tower (the present one) was constructed on an adjacent rock from 1878-82, when it took over from Smeaton's light.

The old lighthouse was dismantled and re-erected on Plymouth Hoe, where it still stands. The lower part remained on site however, and is fondly remembered as "Smeaton's Stump". Here endeth the second lesson...

AUTUMN VINTAGE FAIR - NEC

Ted, G7AIR, very kindly called in at Bewdley yesterday, making a rather large detour in his journey, to collect yours truly for visitation to the above event. Not having an EUG stand (as we do in the Spring event) we were able to wander about aimlessly and cast aspersions left and right as we savoured the offerings of yesteryear.

We also met several of our members, some from very distant parts, and this quite made our day. Many thanks to all members who greeted us.

The offering of Eddystone sets, quite frankly, was as marginal as in any year and poorer than most. Ted succumbed to a very cheap bargain ex-Royal Navy S.770U MkII. It needed quite some TLC but Ted has called to say that it already makes noises! Good luck, Ted. *(It was £40 for those whose curiosity exceeds their good manners!)*

NEAR VERTICAL INCIDENCE

On Friday morning last (26th Sept) I had a special sked with Ted operating G3EUG/P *(as reported in "MailBox")*. I asked him to put up as low a dipole as he dared, not more than 10 ft., to prove my point that Near Vertical Incidence communication requires no height at all on a horizontal aerial. Actually he chickened out and put the centre up at 15 ft., with the ends trailing to 6 ft.

This produced a splendid S9+ signal in Bewdley, just 120 miles away. Our EUG net controller, Chris G3XFE, in Watford (the third point of a triangle) also joined in and confirmed Ted's splendid transmission. I look forward to the next test when I hope Ted keeps his dipole at head height!

DESK TOP PUBLISHING

Our Patron's Fighting Fund Appeal has exceeded all my expectations and members' generosity is overwhelming. The whole thing was triggered when I mentioned that the present PC was going to enter its fifth year in 2003 (it's actually just done so as I write). I was asked by my junior op, David, G7BMZ, (now about to inherit his grandfather's call, G3JQE) what would happen if the PC's innards were to become terminally ill. The answer was 'Panic!' and I discussed it with our Patron,

Chris, GØEYO, last spring. Thus was started his Fund.

During all this time I have been doing an incredible amount of 'research' concerning DTP (Desk Top Publishing). The first thing I have learned is that there is no such thing as an 'all-round' expert. There are many 'specialists' in their own fields, but nobody has ALL the answers. I say this at the risk of offending many who have given me advice, but it's true!

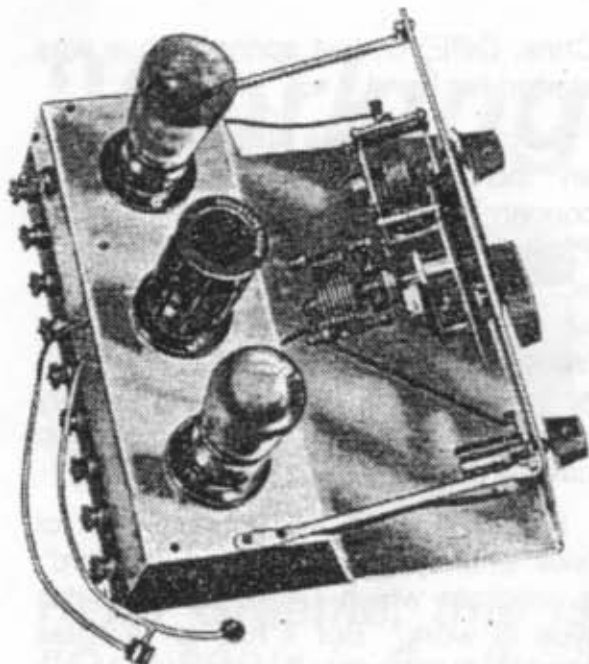
I have reached my present level of 'skill' entirely by persevering in 'Word', a program which I find ideal for this type of work. But it has an Achilles Heel: it was never intended to have separate features joined up. Honestly! But it wasn't until I called the help-line of a national PC magazine that I was told this with complete assurance.

This leaves me with many other options, all of which have been recommended to me as 'the best'. One is to abandon the PC altogether and embrace Apple-Macintosh. This I can appreciate, but as I use other PC programs for EUG work I am hesitant to get into deep water. I have no aptitude whatever for understanding instruction books. I am entirely self-taught and I think the 'devil' I know may be a better bet than the 'wonder' I don't . . .

As far as DTP programs go, I've been told that 'PageMaker' is easier than 'QuarkXPress'. Courtesy of David I've been able to have a play with them both and, curiously, I find that 'PageMaker' gets me in a muddle but that 'QuarkXPress' is very much like 'Word' in its routine operation!

Just in case you're wondering how I manage to produce this copy in the impossible "Word", it's because nobody told me I couldn't.. (But it's a long job sticking it together.)

◆



THE EMPIRE TWO

**A SHORT WAVE RECEIVER WITH
A RANGE OF 13/78 METRES**

Note the neat layout and special chassis construction.

In the first issue of the Eddystone Short Wave Manual (1932) a raft of constructional projects was presented. This very basic two valve receiver is virtually the same as the 1931 Scientific Two kit set (see 'Lighthouse' Issue 80, August 2003, p.12). The main difference is that the large transmitter-type open coils are replaced by the 1.25" plug-in coils which were to remain in production for the next 30 years. The midget variable condenser in the aerial circuit is brought out to the front panel. Cost of a complete kit of parts was £4 0s. 6d.

"The object in designing the Empire Two receiver was to provide an effective short wave set which could be assembled simply and at a comparatively low cost. Considerable thought and care has been extended on it to achieve these two aims and the result is one which is wholly satisfactory.

The assembly of the set is simple and inexpensive, yet it conforms to true short wave practice and gives excellent results. The finished receiver makes a compact and smart looking instrument and the sloping front, while adding to the appearance, also makes tuning easier and more pleasant.

The well-known Reinartz circuit is used with a 4-pin interchangeable coil as the inductance portion. This coil carries a grid and reaction winding.

The aerial is fed to the grid end of the aerial coil through a small variable condenser (7uuf) which is brought on to the front panel so as to be instantly adjustable to remove any blind tuning spots.

The main tuning control utilises the special Eddystone disc drive with hair-line scale and wide vision escutcheon which is ideal for the accurate setting which is necessary for short wave work. Reaction is perfectly smooth without overlap and the reaction condenser used is of the slow motion type so that the full benefit of a maximum adjustment can be obtained.

CONSTRUCTION

The wiring plan and point to point connecting instructions can be easily followed and give all the information necessary. For the sake of clearness,

the terminal strip on the underside chassis view has been turned at right angles to its actual position. The grid condenser and grid leaks (*sic*) are self-supporting, being wired directly into the receiver while the high frequency choke is also not fastened down in any way and is supported entirely by the two leads which run from the anode of the first valveholder and the anode connection on the transformer. These two leads should be of stout wire so that the component is held well in place.

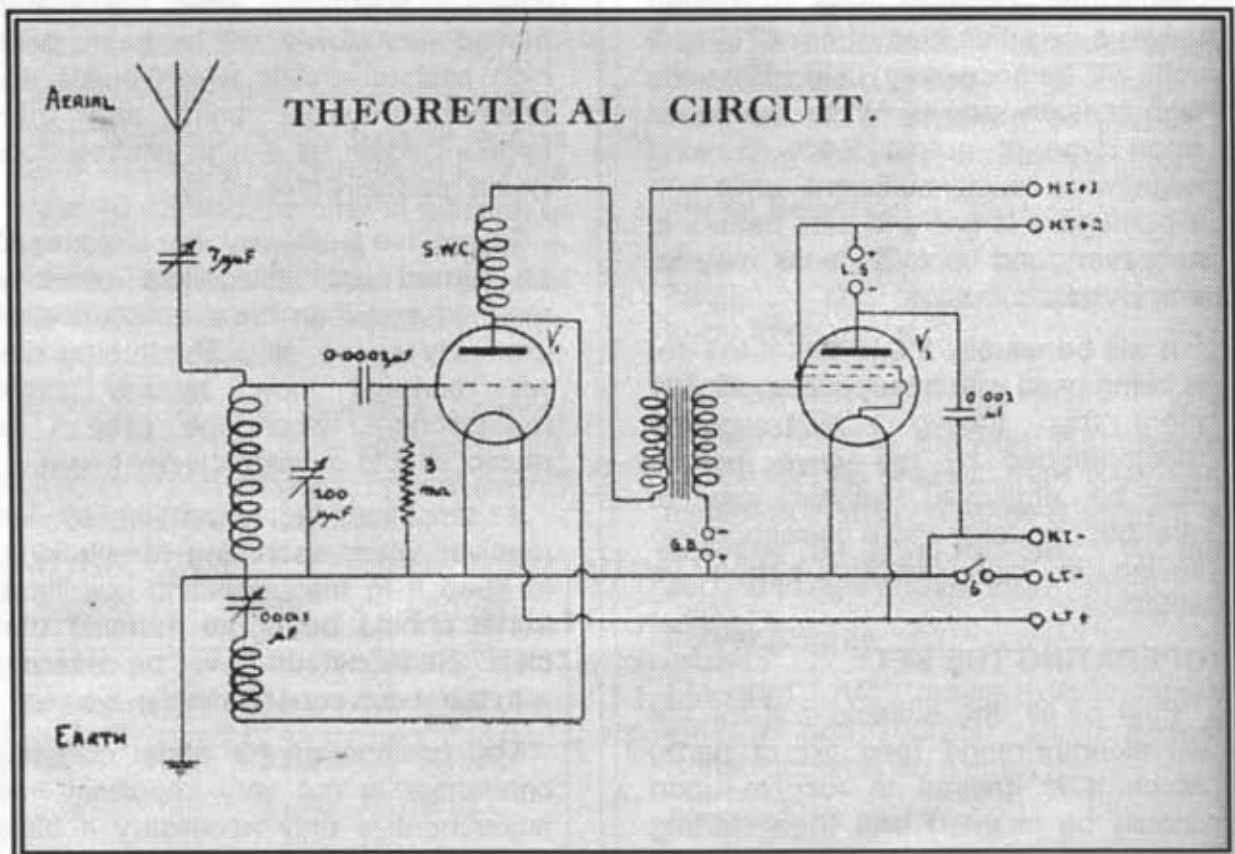
The R.I. transformer is mounted is mounted on two small insulating pillars instead of being clamped directly onto the chassis, this is to avoid the fixing screws of the valveholder and also to make the wiring a little more convenient.

An important point to watch in the assembly of the receiver is that all

connections which are made to the chassis and where the circuit is completed through the metal chassis to earth, should be well made and the paint of the chassis scraped well away so that an actual metal to metal contact is obtained.

VALVES

A fairly wide choice of valves for use in the receiver are (*sic*) available. The chief consideration, however, should be that the detector valve must be silent in operation and non-microphonic. In this latter respect we have always found that 2 volt valves are very much superior to the corresponding types in 4 or 6 volts. (*In the early years of dull-emitter battery valves, they were available in 2, 4 or 6 volt filament versions. The four and six-volt versions were soon ousted and are now barely remembered – Ed.*)



EMPIRE TWO

For the detector position, we recommend a Mullard PM1HL, a Mazda H.L.210, an Osram H.L.210 or a Cossor 210H.L. while for the output position, the ordinary power valve or pentode valve is quite suitable. The actual valve used in the test receiver was an Osram type L.P.2. This is a steep slope output valve which gives results almost equal to a pentode and is very suitable for use with headphones. A 5-pin valveholder has been fitted in the output stage of the set so that a pentode valve can be used when additional power is required.

HIGH TENSION SUPPLY

A voltage from 100 to 120 volts is necessary and the tapping H.T.+1 should be varied between 50 and 70 volts, the H.T.+2 lead utilises the whole of the available voltage.

GRID BIAS

With the ordinary type of output valve, a negative bias of from $7\frac{1}{2}$ to 9 volts will be necessary, using 120 volts high tension supply. With the steep slope type of output valve, 3 volts negative is usually sufficient, while with a pentode a larger grid bias battery is necessary and up to 15 volts may be employed.

It will be usually found that if the set is being used with headphones, slightly more than the grid bias voltage recommended by the valve makers can be employed without loss of strength or quality and a corresponding saving in high tension current is obtained.

OPERATING THE SET

First of all, the suitable coil for the wavelength range (see list of parts) which it is desired to receive upon should be inserted and then starting with both tuning condenser dial and

reaction condenser at a minimum, switch the receiver on.

Increase the reaction control gently until the set begins to oscillate; this will be noticeable immediately since a low rushing sound will be heard.

Throughout the whole tuning operation, this reaction control should be so adjusted that the set is only just in this oscillating condition. Now commence turning the tuning dial slowly, increasing the reaction control gently if necessary to keep the set in the oscillating condition.

Probably the first signals to be heard will be Morse code. When a telephony transmission is reached, this will also be heard as a shrill whistle similar to Morse code because the set is in an oscillating condition.

The difference, however, between a Morse signal and a telephony signal is that the first named is a constant note, whereas telephony, when the dial is moved very slowly, will be heard as a high pitched whistle which builds up, reaches a silent point and then appears again as a high pitched note which gradually dies away.

To receive telephony, the dial should be turned until the silent point is reached and then the reaction control gradually eased off. The tuning dial will perhaps now require slight readjustment, when the speech or music should be quite clearly heard.

It simplifies the operation of the receiver when searching for stations, to keep it in the oscillating condition, but it should be borne in mind that clear telephony can never be received with the receiver oscillating.

The position of the aerial coupling condenser is not very important and adjustment is only necessary if blind spots, due to the natural wavelength of the aerial in use, are encountered.

Maximum volume will usually be obtained with it fully in, but it should be noted that as the capacity of this aerial coupling condenser is varied, the main tuning condenser setting for any given station will vary also."

LIST OF PARTS

	Price
1 Eddystone Chassis, ripple brown finish, drilled and pierced for mounting all components, assembled with brackets and end plates, engraved terminal strip . . .	18/6
2 Eddystone Valveholders, type 920	2/6
1 Eddystone Valveholder, type 921	1/3
1 Eddystone Disc Drive, type 933W	7/6
1 Eddystone Microdensor, 100 m.mfd	6/6
1 Eddystone S.M. Reaction condenser .00015 mfd., type 940	8/6
1 Eddystone Midget Condenser with scale, type 502S	3/3
1 Eddystone H.F. Choke, type 911	2/-
1 Eddystone 4-pin coil, type LB, 13/25 metres	3/6
1 Eddystone 4-pin coil, type Y, 22/41 metres	3/6
1 Eddystone 4-pin coil, type R, 39/78 metres	3/6
1 R.I. Hypermite Transformer . .	12/6
1 Erie 3 meg. Grid Leak	1/-
1 T.C.C. .0003 mfd. type M condenser	1/-
1 T.C.C. .002 mfd., type M condenser	1/4
1 Igranic Switch	1/6

9 Terminals, nickel plated 1/2
 Flex, Wire, Wander Plugs, Screws
 Nuts, Brushes (*sic*), etc. . . . 1/6
 Cost of parts, £4 0s. 6d.

POST SCRIPT

The plan layout is also to be found in the "Eddystone Short Wave Guide Number One (1932)", along with another 17 articles and constructional projects.

This (and the other four pre-war and two post-war Guides) may be obtained from the E.U.G. Archivist, Dave Simmons, details on page two of this magazine.

This circuit represents the absolute minimum requirements for successful short wave listening, either A.M. or C.W. As such it is an ideal beginner's project and could not fail to work. But it does highlight the exclusive nature of short wave radio as a hobby.

To our inflated eyes the prices may appear modest enough, but in terms of disposable income at the time they were formidable. The salary of a B.B.C. Technical Assistant at this time was £1 10s a week (20s.= £1). Note the use of Imperial currency, where Pounds were so valuable that most things were quoted in shillings and pence. (12 pence = one shilling.)

Accepting that the standard of living has risen considerably since this period, when compared with everyday items, such as the price of a first-class postage stamp, a factor of 50 must be applied, making this simple kit the equivalent of £200 today.

Given a modicum of workshop practice it would not be difficult to replicate this set in either a mains or battery form. **Graeme - G3GGL ♣**

Watch Your Mains Supply Voltage

By John Gillespie, Hamilton, Ontario

You're probably aware that recently we had a massive power outage here in the north-eastern part of North America. Power was lost for at least 16 hours. When it was restored the suppliers were urging the public to conserve current and the various generating stations came on-line at different times. Some took more than a week. This can result in fluctuating voltage at the wall socket and potential damage to our vintage radios.

Normally, I think our Mains supply has been running around 120VAC, but I'm not sure; who checks it that often? After the outage I'm measuring 127V and have seen 132V as well!

QUESTION: How does your tube radio like this? Should you be concerned? More importantly, What can you do to prevent a problem?

PROBLEM: I was servicing a 1946 Stromberg Carlson tube radio and heard the original electrolytic capacitor snap when the power was turned on. The electrolytic was tested "good" before the power was applied. According to the schematic the HT RMS secondary voltage should be 380VAC at the rectifier and 400VDC at the first electrolytic (which is rated for 450VDC.) Close, but should be OK.

When I tested the voltages the HT RMS secondary measured 420VAC and the DC output was 440VDC. Dangerous to say the least. The radio was designed using 115VAC back in 1946 and here we're giving it 128VAC from our mains. Plus, the heater voltage was running at 6.9VAC.

We replaced the electrolytic with a newish one rated at 475VDC but it's

still too close. It's becoming very difficult here to find the older 600VDC high voltage electrolytics. But what about those high heater voltages?

SOLUTION: The customer won't want to run his restored radio from a Variac, so the solution was to add a voltage boost/buck device inline.

Basically you just wire a small heater transformer into the primary circuit of the mains transformer, and tie one side of the secondary to primary. When wired one way round you can boost the mains supply by the filament voltage, or you can change the phase of the secondary to buck (reduce) the offending voltage, as in our case.

Mains supply 128VAC minus 115VAC design voltage equals 13VAC bucking voltage.

In our case a 12 volt filament transformer tended to lower the input voltage too much, to around 105VAC, and the heaters were in the mid 5 volt range. A smaller 7 volt transformer rated at around 1 amp worked well.

The result is that we can now supply the restored radio with the input AC running at 118VAC instead of 128VAC. The heaters are now at 6.3VAC, the

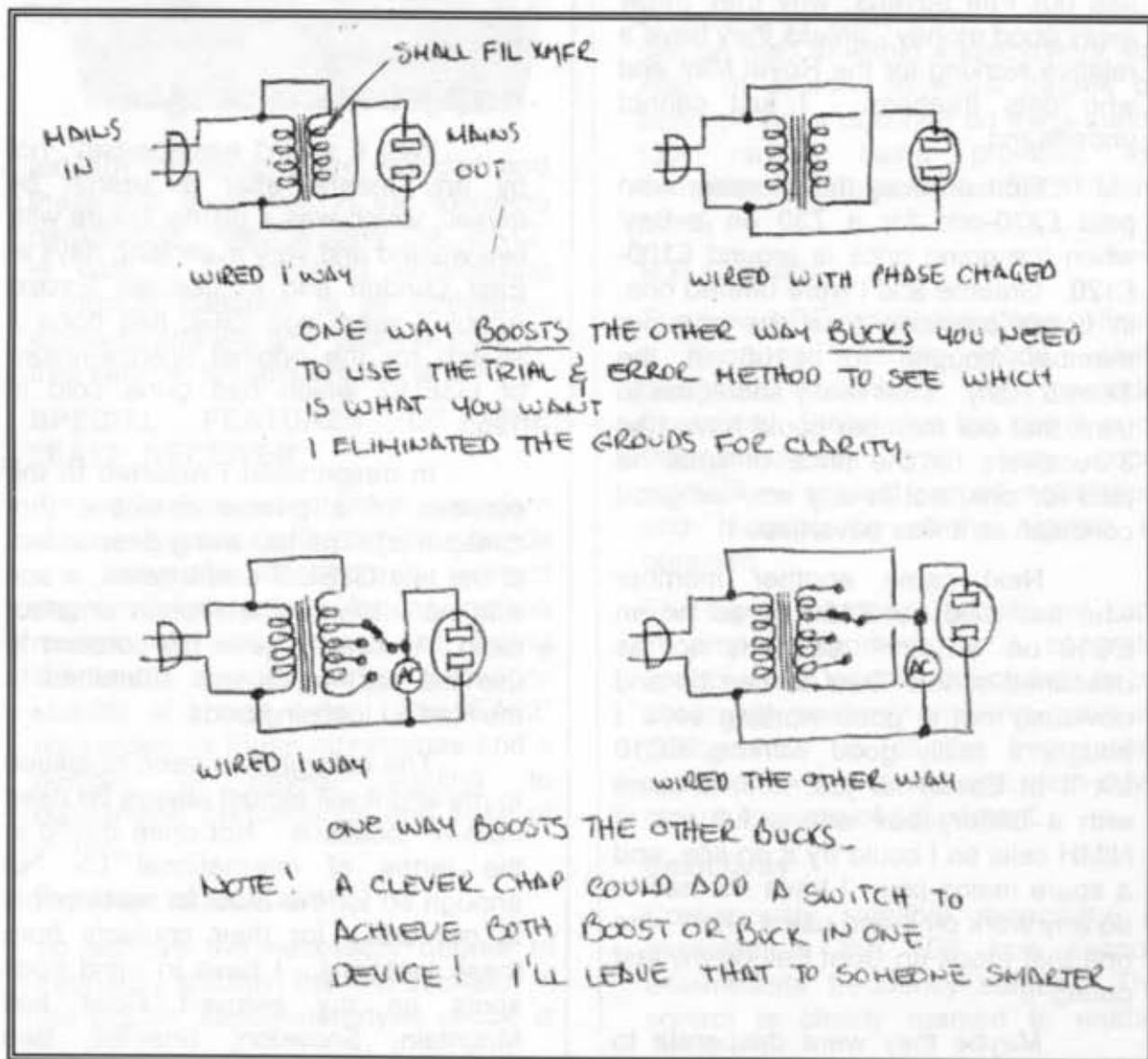
rectified DC voltage is at 380VDC at the first filter electrolytic which is within its rating of 475VDC.

For those who like to tinker: A real nice external transformer can be made using a toy filament transformer with tapped filament voltages every 2 or 3 volts. Add an AC meter to verify the mains supply output voltage to you vintage equipment. Make sure the transformer can handle the current rating of radios you plan to run on it. I suggest 1 Amp at least. In practice, I mount the transformer external to the radio, wire up the primary and secondary and power up something I can afford to lose. If the device is boosting the voltage, just change the

hook-up of the secondary wires, and verify that it's bucking the excess voltage. Then run the radio for at least an hour to guarantee the transformer doesn't get too warm,

I hope you don't have similar problems with your mains supply, although I hear you had a big outage in London the other day . . .

(Note from Graeme: as I copied this text I paused to check my 230VAC outlet; it was giving 253VAC! John's bright idea could be replicated using a 'Maplin' 12+12 volt half-amp transformer which could then be configured to correct 206/218/242/254 volts to 230. ♣



Ted's MailBox

A Review of Mail and Happenings

By Ted Moore, G7AIR, Founder of EUG

INTERNET AUCTIONS

I know that Graeme has written his thoughts on this matter at length (see *"The Price of Everything"* in this issue), however I feel so strongly about these rip-offs that I must relate my two most recent experiences - happily not MY money.

Why the heck people do not do their homework first, why they do not use our free adverts, why they throw away good money - unless they have a relative working for the Royal Mint and who gets freebees - I just cannot understand.

First off was the member who paid £320-odd for a 730 on 'e-Bay' when the going price is around £100-£120. Graeme and I were offered one, in better condition than the one our member bought, for £100 at the Telford Rally. That really shook me to think that our member could have had 3 receivers for the price of what he paid for one, not in any way as good condition as it was advertised!

Next came another member who has paid out £120 or so for an EC10 on 'e-Bay' - and it is not as described either. Deaf as can be and obviously not a 'good working set'. I bought a really good working EC10 Mk II at Easter for just £60, it came with a battery box with a full set of NiMH cells so I could try it on site, and a spare mains psu. I have not had to do any work on it and use it often - the one that I took up Goat Fell on my last outing.

Maybe they were desperate to

get an Eddystone but a call to me or Graeme to have an advert put in the next issue would have saved many pounds. In neither case will they ever get their money back, in the case of the EC10 there will also be the cost of repairs.

Nobody covets Eddystones more than I (debate this?) but I would have turned down both the above without a seconds hesitation. Those Internet auctions are a TOTAL RIP-OFF so beware.

THE G3EUG LICENCE SAGA

Well it wasn't easy-peasey, not by any means after a search by myself, which was a dismal failure with two wasted and very frustrating days in East London and in deepest Essex. About 3 years ago 'GGL had done a search for the original licence-holder of G3EUG which had gone cold in 1965.

In desperation I resorted to the services of a private detective (not cheap this). The last living descendant of the late G3EUG was located, a son with no interest whatever in amateur radio. He readily gave his consent to use the call, which was submitted to the Radio Licensing bods.

The callsign has been re-issued to me and it will almost always be used from /P locations. Not quite exotic in the terms of international Dx but enough so for the EUGnet participants to get QSLs for their contacts from these locations. I have in mind such spots as my beloved Goat Fell Mountain; Snowdon; Snaefell; Ben

More, and others. Hopefully by the time you see this in October some of the EUGnetters will have heard the G3EUG station from a location which I have chosen as being the nearest "hill" within about 50 miles of my home QTH. It has an apt name too being called 'Wireless Hill'.

The mode will of course be LSB and on the EUGnet frequency only with powers of less than 50 watts ! Enough there to get anywhere in the UK with a random wire supported by a friendly tree or a kite supported ditto. I have plans for this aerial since many of those locations from which I intend to operate have a prevailing wind, most days, most of the year.

I shall always have either an EC10 Mk II or some other Eddystone item in use. If anybody wants further info then give me a bell in the evening.

G3EUG & the EUGnet

Well our dedicated 'EUG callsign had it's second airing on this first Sunday in September EUGnet. First of course was a one-to-one inaugural QSO with 'GGL as was his right. This took place from my home QTH but except by special arrangement with other EUGers it will normally be used from a /P location and on 80 metres.

There were five of us on this net; G3GGL of course. The net moderator G3XFE (Chris) in Watford, Herts. G4BXD (Ben) in Kidderminster, Worcs. G8URU (Ron) up in Ultima Thule, sorry, only in Carlisle. I was operating Portable so of course the QSL Cards will show that with /P. If any of our SWL members did listen in (Ian ?) and can send me a report then they too will merit a G3EUG card specially produced for this station.

Future airings will be on the monthly EUGnet and always from a portable location. By now the October

EUGnet will be over but I have hopes of being on from north of the border, so it will be as GM3EUG/P - almost certainly from the summit of Goat Fell mountain on Arran.

THE ALINCO DX77

This is the rig I chose as it is a pretty compact unit and just about right for me to cart around in my rucksack with its power supply of a 12 volts, 12 ampere hour Yuasa Dryfit battery. The battery weighs as much as the darned rig !

I did start off with an MFJ combined aerial matching unit-cum-SWR meter. I have always been sceptical of these latter as I do not believe that they tell the true story. Anyway by using my Eddystone 40A some distance away with the full 80 db RF attenuation in, and with the whip right down to a mere 8" I was able to monitor my radiated signal.

The Alinco gives either 10 or 100 watts CW, SSB, or FM with 40 or 4 watts AM controlled from the front panel. Taking the lid off you find a PCB-mounted 100% or 50% switch. This gives a stated 50 or 10 watts on SSB. Being limited in battery capacity I chose this option and not wanting to keep taking the lid off it will remain that way. Front panel selection now giving me a stated 10 or 50 watts, my estimated radiated power being about 40 watts.

The MFJ ATU gave me unsatisfactory readings when used with a short random wire, which will be my portable aerial in many /P locations. So I made up my own ATU to match the 50 ohms coax from the DX77 to the random wire.

I abandoned the SWR meter as my 40A served the purpose better. It showed me as having maximum radiated power with the meter showing a tad over 2:1 whereas I could match

the tuner down to about 1.5:1. I shall in future go with my own DIY ATU which consists of a domestic receiver type variable condenser, the 'L' being made up from two ferrite toroids superglued together and wound with Teflon insulated wire tapped every two turns, to go with the 12 position switch bought at Telford.

I have never had much luck using Pi-configuration ATU's with random wires so this is just an L configuration, coax in and twin screw terminals out. My tune-up procedure has been that in use for generations by amateurs before SWR meters came in. Namely:- switch to low power on AM, tune for maximum radiated power as shown on the 40A placed some distance away and used as a signal strength meter.

For future /P use I shall have a mini signal meter built in a small box, just a diode-fed meter and a retractable whip. (Wish I had the genuine Eddystone article ! Any offers?). I did have a nice Eddystone Speaker which gives me clearer quality speech than the rig speaker so that will also go on my future portable jaunts.

Prior to my joining the EUG net on Sunday I had a four way QSO with stations as far away as Southampton, with S7-9 reports both ways, and that on the EUG net I also had good reports from Ron up in Carlisle – well, my estimated 40 watts are sufficient.

I have used the rig on my own call of G7AIR and have had QSOs with Spain, Belgium, the Irish Republic and a couple of GMs and GWs but there I was at home and using my 'squashed loop'- more of a diamond shape - aerial. The DIY ATU seems to cope well with tuning up the loop too ! Goodbye MFJ !

If any EUGer would like to arrange a sked for a certain QSL from

either G3EUG or G7AIR then give me a bell. Cannot promise to go all the way to Wireless Hill though. It is a more than 100 miles round trip, but if I got say, FOUR of you and for a Sunday a.m. QSO, then I shall try.

WIRELESS HILL

This location was chosen for the September EUG net as being a very aptly named place, and because as many of you will know my home QTH is about at sea level. Hills are very few and far between in this part of the country. They have a sense of humour though, one hill not far from here is called "Harry's Hill", a check on the OS map will show its stated altitude as being 3.6 metres a.s.l.

Wireless Hill is about fifty three miles from here (Wisbech), it is about 6 miles west of Oakham and just outside the village of Halstead, which is just north of the main A47 trunk road, look for the Tugby sign post and head north. A nice remote location with a trig point on top and some handy trees into which I can throw my tennis ball attached by a cord to the end of my random wire. The other end of the wire was 40 feet away supported by one of the fibreglass poles from my little tent, about 8 feet high with 6 feet of down lead.

Not a fantastic aerial as it sagged considerably but the reports that I got were all good. What kind of propagation we were experiencing was a matter for debate with 'GGL'. Definitely not ground-wave despite the over 700 feet elevation (Southampton and Carlisle). Incidentally, whilst looking through my members list for the addresses for the QSLs I discovered that we have a member living just nearby to Wireless Hill. Hiya Jack, in Tilton, do you want to give me a call ?

WORDSMITHING

I have heard this word used on the Beeb (the Home Service as I still call R4) several times lately and mostly in connection with Whitehall & Westminster reports. I like it! As I do like to latch onto some of the 'distortions' of the English Language this new-fangled term has caught my eye, it has been pointed out to me that both EUGers and EUGnetters are a bit made up words too, so then I plead *mea culpa*.

What really caught my ear recently was the use of the word - wait for it - SYSTEMISATIONISM. Honestly I heard it used by a US Military spokesman on a VOA programme when he was discussing the rebuilding of Democratic processes in Iraq, this last name being pronounced 'EYE-raq'. You will also often hear 'EYE-ran' used by them. I can recall one American friend with whom I worked for many years in Morocco, he would persist in calling the Italians 'EYE-tal-EEans'.

THAT CANIBALISED EB35

All I can say is that EUGers are wonderful guys, honest!



Here I am busy refitting all of those missing Rs & Cs & Ts & Ds & Ls to the almost naked pcbs when I get a call to ask if I still want a VHF tuner for it. Do I? Thanks a bunch pal. Most certainly. Well now I await the FM transfos from Dave Simmons and then the project will really take off. I got all of the necessary trannies from Birkett's

- what would we do without that emporium? Always worth the 60 mile dash up North to get the goodies which I need and rarely do they let me down.

The set had a battery box but I have had to re-make the battery contact springs as corrosion from battery electrolyte had just about annihilated them, the present ones come from a "self-destructed" Russian Selena radio. They do have this tendency apparently for the range change mechanism to fall apart. All in all I am looking forward to having a very nice & almost new-looking EB35 on the air soon.

G7AIR & G3EUG AGAIN

Both of these calls will be active on QRP on 80 metres from /P locations and QSLs have been printed so this might just persuade some of you to come onto the monthly EUGnet. I cannot always promise a different location but shall try to correlate my trips to coincide with the EUGnet schedule.

A recent special EUGnet came about following both a suggestion from G3GGL re- low-down dipoles and my desire to try out my full half-wave wire dipole from a nearby location almost at sea level.

I camped out the night before on the sea-dyke near Holbeach Bombing Range at Gedney Drove End. Up at dawn - well a bit before actually as I was drinking my first cup of coffee and having my first corned dog sandwich in the dark and watching all of the beacons blinking around me.

First off was to set up the dipole, the centre point at about 15 feet up on a fibre-glass pole attached by tie wraps to a Public Footpath signpost (handily located). The extreme ends were supported by two 6 foot poles with guys made from green garden string. Being about a half mile trip

from the car I had to carry all my stuff to the site - afterwards the farmer had opened his locked gate and so I could bring the car up close to pack my gear.

The picnic table and chair formed my operating position with the DX77, the d-i-y ATU, the Eddystone speaker, a clock, my log, and the trusty 40A a few feet away as my radiated power meter. The dipole loaded up lovely, despite being made from just teflon covered hook-up wire, both aerial & feeder!



Bovine QRM at G3EUG/P

I had arranged to call 'GGL on my mobile phone at 08:00 to say all was set up but as I had got everything ready well ahead of time he got his wake-up call at 07:00. Contact was established immediately with very good signals both ways, we were later joined by Chris G3XFE who was also getting good reports both ways from us. Then we had a call from G3THX in Skegness - just across the Wash from me. Strangely his signals were the weakest of all. There was some QRM from those dratted Continentals but never anything serious.

My only real QRM was of the bovine type. Around 08:30 the farmer's herd of cows - and a bull - had reached my part of the dyke and took a great delight in rubbing themselves against my aerial poles and guys, with the inevitable result. One in particular took a perverse delight in licking the

top of my 12 volt Dryfit battery. When the time came to pack up both the equipment and I had liberal coatings of cow saliva and cow muck. I packed up and came home around 11:00 as both my main 12Ah battery and my reserve 7Ah battery were showing signs of distress.

Conclusions drawn are that operating from hilltops is not necessary for my participation in the EUGnet in the future and what can be more important is the fact that when I switched from my 'QRO' of about 40 watts down to my 'QRP' of less than 10 watts it made just ONE 'S' point difference at the Bewdley end of our link. In future I shall know that I can conserve energy by knocking the power down if we have halfway decent conditions. Thanks 'GGL & 'XFE for your help.

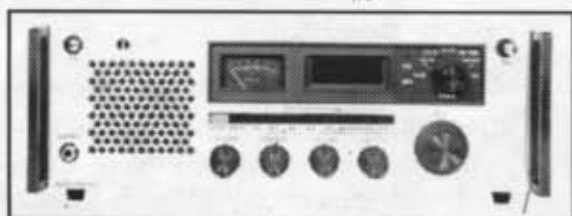
ADVERTISERS

And adverts! Three bad experiences lately. The first was the one in Lighthouse re- those three 1570 receivers. I phoned him up and asked him what kind of an offer? He suggested £200 for them and I countered with £150, then we compromised on £175. Next day with my usual on-board refreshments I pointed my new (to me) Dreamboat south at around 05:00 hoping to miss the M25 commuter traffic on my way to Swindon, Wilts; - did so too.

My appointment had been for 09:00 but I always like to get there early and then to just relax and wait. The lieu was a tatty industrial estate unit.

My first sight of the 1570s was a terrible disappointment and I almost walked out there and then. You must have all seen the ad - "working, but need servicing". The first bit was not true and the second bit was a definite understatement of the true facts.

All three had the perspex red filter over the LED digital display smashed, even though it was sunken in from the front panel - it looked to have been deliberate. Front panel did I say? To one brought up on, and used to Eddystone battleship-like front panels this was a travesty of the word 'panel'. It is made of less than 1mm thick aluminium bent at top and bottom to fix onto the receiver. Eddystone logo and name and model are simply printed on, as with the control functions. At least I expected steel handles but no these are fragile plastic ones and between the three sets there are three broken and three good handles. Luckily two of the broken ones have been almost invisibly repaired with some superglue - by me.



Eddystone Model 1570

Inside are revealed two pcb's and a screened module for the digital display electronics - commonly a cause for spiky interference and so very well screened. The 14 and 16 pin DIL chips are all in sockets so this is a blessing, but only one complete set of chips amongst three rx's. Still I am hoping to find some of the missing types.

The end result was an offer of £150 when I had digested all of the above and proved by powering them up that only one gave out any noise. This was accepted and I also got three factory manuals with them.

I have stripped and cleaned and tidied up the best one but so far it looks like the others might end up as a source for spares. Only one ASTEX (non-working) vhf/fm tuning module

between the three of them is another difficulty.

The good one is now ensconced on my kitchen worksurface burbling away on 11.175, an RAF 'inflight' frequency. The readout is those H/P mini LED digits about a 1/2" square, although this only reads to three decimal points (one Kc/s) the tuning is mechanical so can be set to between frequencies, the Fine Tune control also helps and I am finding that it is a very useful monitoring set, a basic 'no frills' communications receiver that seems to me to have been the kind that would in the '70s have filled a need.

How or why STC/ITT chose this for use in their Crystal Manufacturing facility is beyond me but one set has a metallic stick-on label on the front panel saying STC Quartz Crystal Division and another has a similar label saying ITT ditto. I have left these on but removed all of the many test and service stickers plastered all over them - nail varnish remover works wonders on the adhesive used on such labels.

I find that the more I use it the more I enjoy using it, apart my usual HF airband stuff I have listened to many QSOs on 80, 40, and 20 metres. Sensitivity is not lacking and the stability seems to be okay too. A bit of a microphonic warble on the BFO when I thumped the set proved to be a DIL chip which needed to be properly pushed home into its socket.

Putting it right onto an SSB Volmet broadcast and coming back some hours later I find it has hardly deviated from the natural sounding speech. It is a bit of a 'rara avis' and a new one for me so I think that the price for a good worker and loads of spares was not too bad. Had they been described in the advert correctly I

would never have considered a more than 300 mile round trip for them.

It is always a case of Caveat Emptor when you answer a 'for sale' ad. Buyer Beware ! As a matter of interest I also saw the offered 1650s and they looked to be in pretty poor state too. I wasn't interested in these myself as I find those membrane type controls to be non-user friendly, would not give one house room.

ADVERT No. 2

This was in one of the hobby mags and when I rang the company concerned the chap knew of the item in question but was unable to find it, although he was 'sure as hell it is here somewhere'. I gave my name and phone number and waited a couple of days then rang again.

Same chap, but had still not located it although both he and his henchman knew it was there 'somewhere'. Ten days on and four calls to him and he still has not found an item of his stock worth £350 ! What a way to do business. They cannot be serious businessmen.

ADVERT No. 3

This was another ad in another hobby mag, big company and page full of second-user items, so I phoned up for the one I was interested in. Two men off sick and so he said it would be a 'few' days before he could get the item tested for despatch.

Again I left my name and asked him to phone. After four days I phoned and was told that they had discovered the power lead (a special kind of 3 pin plug) was missing, not in the box as they had assumed. They would order one and call me. TWO weeks on and at least six phone calls and they are still awaiting arrival of the power lead and 'will call back'.

This an item of stock worth

£550. How in heck do these guys ever stay in business if, as I assume, this sort of thing happens often. It cannot just be me as I have heard similar tales of other companies. In the event I went elsewhere for my needs.

PECULIAR PEOPLE

Some really are ! I got home the other day from a bike ride and checked my 1571 for messages. One was simply this - "Ted, can you give me a call sometime, after eight preferably, cheers". Definitely not a voice I recognise and with a Scots accent too. Who are you pal ? Cannot call you if I don't know who you are, can I now ? If you are going to call me and get 1571 then do please leave a full name & phone number, or else call me back in the evening before eight.

FLOWER POWER?

Sorry; my idea of a joke, flowers = geraniums = pnp transistors! Anyway John gave me some of these when I visited recently (plus a load of other stuff) and he then sent on to me his changes to the bias resistors to enable me to use these alien trannies in the AF driver and output stages of the EC10/EB35 models. The set he has modded to use them sounded great so I shall await the necessary poorly receiver to try them out. I have already bought a full set of RF/IF/AF trannies for my cannibalised EB35 from Birkett's emporium. I have not had much luck in the past finding replacements as modern types do seem to have a bit too much gain but then whilst I have been able to get the prescribed bits I have not had a problem. Thanks John, it may take time for me to find the time, but I shall let everybody know.

RAMAC

Well at least we have an answer to this. From Guido, ON6RL, one of our Belgian EUGers we find that it

stands (stood ?) for the RADIO MARINE ASSOCIATED COMPANIES. This was founded in Copenhagen in 1952 by the major marine radio manufacturers such as Marconi, SAIT, Radio Holland, DEBEG, etc; since both DEBEG and Marconi bought from Eddystone it could have been a receiver design for one of them on the quoted design blueprint of BP1175.

PLEASE !

Two instances lately of people sending me receivers to repair without giving me any prior warning. One from an EUGer arrived by Royal Mail whilst I was away on holiday. It was left with my next door neighbour who must hate me, having to cart around an 888A isn't fun.

When I got home there were two notes in with my collected heap of mail. The one from Royal Mail to say they had tried twice and finally left it next door and the other note from my neighbour to say it was there but he had gone to Cyprus for two weeks! And I still did not know until he came home who had sent the parcel or what it contained.

The other came by courier from Scotland and I was out shopping. Got home to find a note saying that if I wanted my parcel I had to collect it within 48 hours from the depôt. What parcel ??? Nobody had warned me to expect one, in fact only when I got it home and opened did I find who it was. Not an EUGer but somebody who had heard of me over the hobby grapevine and sent me his treasured 640 to repair!

So **PLEASE**, never - ever - send me something to repair without making previous arrangements by phone or letter. I have a backlog always, these two mentioned above are now numbers 7 & 8 on my job list.

DONINGTON PARK

I had a good day out there - spent too much as usual but then that's me all over. Nice to meet three EUGers there but why don't you guys wear the EUG badges? I bet there were more of you there but how could I recognise you ? Anyway John, all the way from Nottingham, George, from Liverpool, and Alan, from Leeds - nice meeting you and chatting with you.

'GGL has stocks of badges and if you wear your badge, as I always do at these events, then we can recognise a fellow EUGer and chat.

ENDIT

That's it guys, next one is our bumper XMAS Issue (isn't it Graeme?). There will be a full report of my next EUGnet effort and I shall have some special event QSL's printed for GM3EUG/P.

73. Ted.

Don't forget, address your mail for Ted to:- 20 Prince Street, Wisbech, Cambs. PE13 2AY.

Phone calls are landline to 01945 467 356 and mobile to 07957 951 998.

EUG Lapel Badge with tack-pin can be obtained by taping two £1 coins onto a piece of cornflake packet and sending them to Graeme Wormald, G3GGL at 15 Sabrina Drive, Bewdley, Worcs DY12 2RJ



Medium Wave DXing

By Graeme Wormald G3GGL

When I was catching the radio bug, just after the end of W.W.2, I was regaled by my father with stories of medium wave DXing on winter nights in the late 1920's. He swore that America could be heard, but I remained sceptical. I had never heard an American station further away than A.F.N (American Forces Network) Munich-Stuttgart on the family's six-valve, five-band Marconiphone.

We all know that most long-distance radio communication takes place via that passive satellite in the sky called the ionosphere. We also know that it's an incredibly complicated business involving the sun, the seasons, and several different layers.

Because all common long-distance work is done on wavelengths below 100 metres (3Mc/s) we tend to assume all DX is on the short waves. This is because, during daylight hours, the lowest layer, known as the 'D' region (at a height of about 60 miles) absorbs the lower frequencies which constitute medium waves (0.5-1.5Mc/s or 600 to 200 metres). They never reach the higher 'F' layers at about 200 miles up which are the real DX benders.

That is until the sun has been off the scene for some time. If we are talking about transatlantic skip (and we are!), then the two areas, i.e. the transmitter zone and the receiver, need to be linked by darkness, preferably for as long as possible.

And this is where our present season comes in. By the time we in the UK are back on GMT at the end of October the east coasts of the 'States and Canada will be well into darkness by our midnight.

And now I shall digress and tell the tale of my biggest MW DX thrill . . .

I was first licensed as G3GGL in December, 1949. I worked entirely on 40 metre CW for my first year using 5

watts, and a dipole fed with twisted pair! It got me all round Europe but not across the pond.

By the time my 'fone' ticket arrived I was in the RAF doing National Service. Operating was a little erratic but during the second half of 1951 I was on a six-month course at Dalcross, Inverness. It provided enough spare time to make a ten-watt crystal controlled 20 metre AM fone rig. It was built on a Woolworth's baking tin and used a 6L6 power oscillator and another as the modulator. With a dipole ten feet above the roof of my single-story living quarters I had no trouble working the 'States.

But I still hadn't heard them on the MW broadcast band! Now let's jump a couple of years. I'm back in civvy street working as a technician for the BBC at their huge short-wave transmitter complex at Skelton, Cumberland. 700 acres with feeders a mile long and 51 300ft masts holding about 100 reversible, slewable Koomans arrays. It was built in 1943 to pass the word to Nazi-occupied Europe. About 10 miles south-west of Carlisle for those of you with maps.

By the time I got there in 1953 the cold war was in full swing and we were running eighteen 100 kW transmitters round the clock (*don't times change!*).

I was living in the BBC's hostel for bachelors in the small town of Penrith, now an incredibly attractive tourist

centre but then a very run-down dreary place.

My bedside radio at the time was a Hallicrafters 'Sky Traveller' general coverage portable communications receiver. I had bought it in Bradford market for £5, a sum equal to a week's take-home pay at that time. It dated from the early '40s and used the famous 1T4 range of B7G miniature battery valves. It also had a mains psu and dry battery depolariser. It must have been very advanced for 1940.



Hallicrafters 'Sky Traveller' c.1941

Presumably it had passed through 'Eddystone' hands, as the well-known firm of Webb's Radio were the British agents for the American company as well as being a wholly-owned subsidiary of Stratton & Co., owners of Eddystone radio. Complicated, isn't it!

Anyway, this day in late autumn I'd been on the evening shift (5pm-11pm), sending out the "Green Stripes" programme (General Overseas Far Eastern Service), which, I discovered much later, was being received on an Eddystone S.680/2 by a young NZBC technician called Peter Lankshear, for re-broadcasting in the antipodes.

I had returned with the other 20 shift engineers on the company bus. It was about midnight by then and the domestic BBC services (Home, Light

and Third Programmes) had closed down for the night. Time to listen to some music from AFN.

Imagine my surprise to find the medium waveband swamped with several dozen 'AFNs'. Then I realised they were all carrying advertising (unheard of in UK at that time other than Radio Luxembourg's English transmissions). Then they started to mention place-names. 'Buffalo' ; 'Boston'; 'Philadelphia'; 'New York' !!

Quite incredibly the whole of the eastern States' broadcast system was coming in on my little 'Sky Traveller' in a first floor bedroom using the built-in 2ft long telescopic aerial. I was absolutely entranced; I listened for about three hours. Everything was S9, armchair copy, as we hams say.

I finally succumbed to the charms of Morpheus; when I awoke the BBC Home Service had returned.

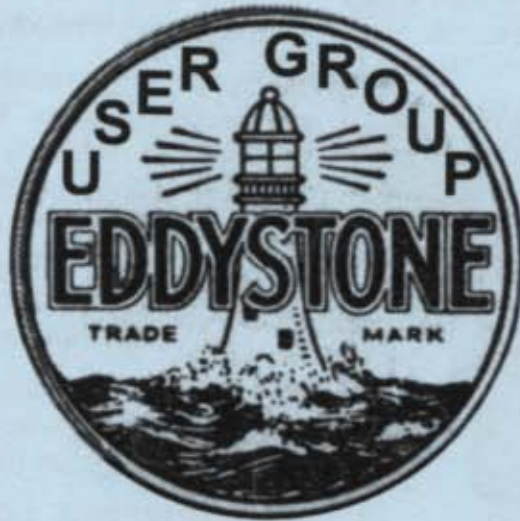
It remains one of the outstanding 'radio memories' of my life. Does it still happen? Did it often happen in those days?

In 1985 I acquired my first Eddystone, a 680X. The first medium wave comms rx I'd had for a long time. Would it pull in the 'States again?

I made a hula-hoop tuned frame aerial (recently re-invented) and started to listen when I arrived home from (ITV) shift work at 1am. A different matter nowadays with most British stations running all night.

But one particular spot, neatly placed between two Euro-channels, is 1010 kc/s, which carries New York's All News Station "WINS". This can be readily identified by the continuous voices

I set the 680X on channel with the BC221 and with a lot of patience finally heard it. Just! Have any members any more MW DX to tell us about? ♠



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