

# Eddystone User Group Newsletter

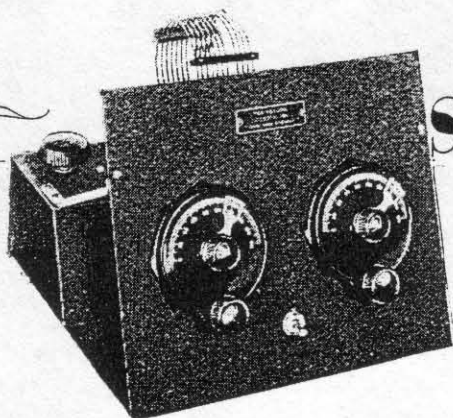
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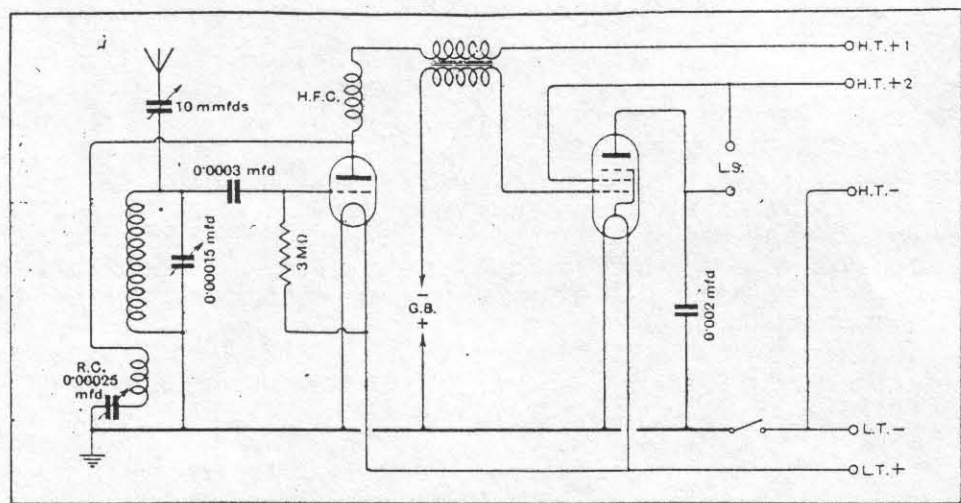


## Featured Model: Eddystone Scientific Two

EDDYSTONE



SCIENTIFIC TWO



\*A non profit newsletter for Eddystone Users

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This is issue 41 of the newsletter and is the fifth of six issues for the year 1996/97. If you join after this issue you will get back issues 37,38,39,40 and 41 plus the next issue No 42.

### Subscriptions

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

### Manuals and Circuits

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

### 1997 is here and we are 75 years old.

Those of you who get the RADCOM will have seen Pat Hawker's little feature on Eddystone Radio and the User Group with a reminder that this is our 75th year. The Short Wave Magazine is also celebrating an anniversary this year, its 60th, and they tell us that Eddystone are the only company who advertised in their first issue that is still in existence. Whilst an achievement for us, it is a very sad testimony to the radio industry in this the country of its birth. Anyway the company has not yet decided how it might celebrate its anniversary and any sensible suggestions would be appreciated. EUG members who are more artistically inclined may wish to send in ideas for a 75th anniversary logo.

The factory is now well established in its new premises and is really buzzing with activity. We are now installing the Digital Audio Broadcasting transmitter systems for the BBC. Coverage is now possible in the Greater London Area and the Midlands and we are installing between two and four systems per month. We are now beginning to bid for DAB opportunities in other European countries, and have recently completed a pilot system in China. Commercial DAB in this country is being delayed by the Radio Authority for reasons that are not yet clear to us. But given the amount of investment Eddystone have made in DAB development (Anyone who has access to our accounts for the last two years will see what I mean) it really galls with me that our own authorities seem to embark on a policy that fails to encourage those who are first in the market and in fact penalises them by delaying authorization until everyone is in the market place. Perhaps this is the reason why there is no British Radio Industry. In addition to the DAB systems we are very busy supplying FM systems to Malaysia for their commercial radio service. Eddystone have an excellent track record in Malaysia with over 133 transmitters already installed a couple of years ago. This current project will add another 42.

This issue sees the first episode of Bob King's specially commissioned autobiographical adventures; it may run to four before he finished, as it will include his recent construction of a replica Eddystone Shortwave Two. Finally we look forward to seeing you at the National Vintage Communications Fair at the NEC, Pavilion Hall on Sunday 4th May.

Chris Pettitt -GOEYO  
Managing Director.

## - Issue 41 -

Another Year, another Newsletter, and another model. The one to be featured in this issue is the Scientific 2 which has had a few mentions in recent issues and many mentions in my recent correspondence with members. One member who queried as to whether this Sci 2 had even existed now has a copy of the Blueprint and a photocopy period picture of the set to put him right.

Several members have already mentioned that the last issue but one had some poor quality copying on one or two pages, a case again of Mea Culpa. Hopefully this problem will now be cured for future issues. The old mechanical age has succumbed to modern technology and I shall be using this word processor for Newsletters.

One good letter came from a happy member whose October issue had just been put through the door, not long after he had settled down to peruse the N/L the phone rang and within a few minutes he had sold the set that was advertised in that very N/L. So they do work - our Members Ads - if the price is right.

My recently acquired model 1002, sent down by Chris Pettitt in answer to my Mayday call, well I have to admit that I was not too enamoured by its 'different' appearance when it first came. Soon enough it was proven that the fault was with me.

Too tied down to the old front panels with all scales displayed, I had neglected to explore the newer - 1970s - generation of Eddystones.

The scale display method whereby just the one scale in use is visible is very reminiscent of the old Marconi CR100/150/300/500 sets. The mechanism too, which rotates the scales on a drum is similar but different.

Anyway after some weeks of use I have come to appreciate this second generation solid-state model and am quite happy with it. Used on about a 25 foot random wire for HF bands and a home built frame aerial for MF the performance is more than adequate, I am a confirmed admirer of this set. See further on in the N/L for further on the 1002. Ted.

## - Grendon Hall -

Those amongst the members who receive the RADCOM magazine will have noticed a mention of the above ex S.O.E. operations and training centre which was active during W.W.II. Well that is where yours truly is at present domiciled - one point to correct RADCOM though, the Hall is located in Buckinghamshire and not in Oxfordshire. It is only about a dozen miles as the proverbial crow flies from my former RAF camp at Bletchley, the old 90 Group Signals Centre at Stanbridge is even closer. I did shift work there for some 20 months in the old days, busing to and fro from Bletchley to Stanbridge at all hours of the day and night. We were G/WMs who ran the main Circuit Control Section for the then world-wide RAF teleprinter communications network. This network used 6 channel SSB, 3 channel DSB, single channel FSK and CW circuits to keep all the many RAF bases in constant touch via HF using the old but reliable Creed 7B teleprinters which fed Marconi SWB 8 or SWB 11 transmitters located at Dagnall or Greatworth. The receiving side was covered by

outstations at Stoke Hammond and Chicksands. The receivers used were a combination of AR88s for the DSB circuits and CR150s for the SSB circuits. The CW circuits had their receivers on site at Stanbridge and mainly covered the far flung outposts with a minimal amount of daily traffic. The model of receiver used was the RAF R.1475.

Delving back into my personal bio-memory banks I seem to recollect that the main SSB 6 channel circuits were from the UK to TCM, at Telecomms Middle East, this was situated at Ismailia on the Suez Canal. The second SSB link was to Colombo in Ceylon. The third - and most troublesome - was to Ottawa in Canada. Troublesome I say because propagation over this link was often precarious, I can recall as many as 4 or 5 QSYs in one night shift, necessitating much hard work for the Wireless Mechanics (Ground) at the transmitting station. I got some oral hassle from them after that night !

The DSB, three channel circuits were more short haul circuits and went to Habbaniya in what is today Iraq (recall hearing that the Iraqis had (!) an air base there ?), another went Malta.

The single channel FSK circuits went to such places as Mauripur in India, Fontainebleu in France and Frankfurt in Germany. A lot of memories there and not a mention of Eddystone or Stratton, but yes, we did have some 358Xs in use and we did have many more HRO-MXs. Those were the days when the RAF had bases throughout the world !

Ted.

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- THANKS TO THE MEMBERS -

Several members who are regular visitors to Rallies have written saying that they will keep their eyes open for the missing EB35 II that I lost last year, thanks a bunch. Ted.

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- Those E.S.W.Ms -

Graeme says that sales of the Eddystone Short Wave Manual copies have been very brisk since mention in the N/Ls. Hardly surprising considering the wealth of information that they contain, whether you are interested in them for the reading or whether you are fully intending to construct a replica of one of the many models described therein. They cost £5 each and this includes the postage and packing, hardly expensive when you consider the size of each issue. Send your cheques made out to E.U.G to Graeme and he will get your copy to you soonest. For the technical content alone they are fantastic, the Company did a lot of basic research into both HF and VHF circuitry and propagation. The Company amateur station G6SL was well known and heard all over the UK in those early days.

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- A Good Idea -

Dave has been suffering for some time now from computer QRM which is coming into his shack through the wall from his neighbours house. Unfortunately the computer appears to be in use most evenings, just the time that Dave has free for his short wave listening.

Dave is nothing if not determined however and he has read up on all the possible ways of combating this very prevalent EMC pollution. These included operation from battery supplies, use of a balanced feed line from aerial to set, positioning the aerial as far from the computer noise source as possible. He even went so far as to offer to pay for the computer to be de-QRMed but this went down like a cold shower with the teen aged owner.

The present set up that Dave uses has evolved over a period of some 6 months and the QRM has gone down from a quasi-continuous S9 problem to a minor nuisance which hardly disturbs the S meter needle on his 888A.

The original random wire aerial, associated with a mains earth has been replaced by a wide band folded dipole situated at the bottom of the garden - this being as far from the computer as is feasible. Feed is by a twin balanced line of approximately 300 ohm impedance. The 888A still has an earth but this is now through a 4 foot long copper pipe hammered into the ground below the shack window. The link that coupled the aerial input circuit to earth has been removed so that balance is now retained from dipole through to aerial input coils. The new earth goes to the receiver case and chassis. This in itself brought the QRM down to just a twitch on the meter but it still had nuisance value. Some thought was given to the paradox that whilst the 888A suffered so much, the much older and less complicated 670 did not ! Strange - and so a good look at the respective circuits brought out the existence of two mains input filter coils and several associated condensers. Similar chokes, only with ferrite cores, were added to the input of the 888A. Parallel condensers were added from live to neutral both before and after the chokes.

All this means that Dave is now almost QRM free, the odd whistle does exist on several specific frequencies but they are well away from what was previously endured. Short Wave listening is now a pleasure instead of a chore.

As a corollary to the above Dave says that a For Sale sign has just gone up on the house next door. Are they fed up with not being able to QRM him, asks Dave ? Or is that paranoia ?

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- The 870A, a desirable Mod ? -

The 870A and its early brother the 870, both use a half wave HT supply and despite the full filtering of the rectified mains, and the strategem employed in the output stage, there is still some residual hum when listening at low volume.

Andy has had his 870A for many years and does not wish to swop, it occupies central spot on his bedside table and permits of late night listening without bothering the other members of the household. Something came to mind when Andy was perusing an old (1956) copy of the ARRL handbook.

The next step was to resurrect the old handbook and schematic of the 870A, to check out possibilities. Any mods undertaken would have to be reversible, i.e. would not affect the resale value or the present looks of the set. Being on a pension the mods would have to be inexpensive too !

Surprisingly, simply reducing the 30 uF electrolytic in the kathode of the output valve to a mere 4.7 uF made an audible difference in hum level, this was done on a 'tag-in' basis to start with but was considered to be a good start and so was made permanent.

The anode circuit of the double diode triode valve that acts as AF amplifier is a very high impedance circuit and any minute hum on the supply that can get into this stage will be fed thru' to the speaker. The e'lytic in the anode circuit was a 4 uF - peculiar value - but it was replaced by a new 4.7 uF and there did seem to be some slight improvement, by now the problem was so reduced that the performance was considered to be adequate for low level bedroom listening. The total cost, apart time, was just 75 pence, courtesy of the local club rally.

As a number of tapes had been previously made of the BBC W/S programmes a comparison could be made on a 'side by side' basis. This proved the efficacy of the mods, for any possible future owner a label has been affixed to the rear panel of the set detailing the mods - this is not to say that a sale is being considered, so don't try calling and offering to buy it !

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- A FISHY TALE.-

Some years back - about 1988ish - there was an article in the PW about the 940 receiver, it had a cartoon showing a fish jumping out of the receiver case.

This all came back to mind recently when a 940 was purchased whilst at the Leicester Rally, time was at a premium just then and so the set was deposited in the garage to await repair.

Things stood that way until the youngest came into the kitchen clutching a tiny wriggling insect of a silvery colour.

After taking hold of the offending insect and depositing it in the Aga stove I made enquiries of young Hattie as to where she had found and caught what was a 'silver fish' - for that is the name we gave them as kids.

Hattie led me out to the garage, her play area when it came on to rain. The item to which she pointed was the 940, wrapped in a large plastic bin bag. Unravelling the string and plastic wrapping produced several more silver fish and so the whole package was taken out to the front drive and sprayed with a can of 'natural' insecticide, Hattie was warned off and the set was covered with a sheet of plastic and left for several hours.

When the set was finally put on the bench and opened up there were many dead silver fish in evidence and a lot of cleaning up with paraffin was necessary to remove all traces of the infestation but when eventually the set was powered up the smell of warm paraffin reminded me not so much of fish but of the paraffin heater on my old fishing boat ! The set worked okay and after the pong had cleared up some checks were made on the 940. Gain on all ranges was fine, on a bit of wire for

aerial. The calibration checks showed that all ranges were within the tolerance stated in the handbook, even the top end of range one, the usual problem area.

It seems the silver fish had come with the 940, and that Hattie's discovery had been in time to stop complete infestation of the QTH or garage. The moral to this tale is that one must check out the contents of any set that is purchased from an unknown source. My memories of WW II when my sister worked in a factory where barrage balloons were made are that silver fish can be brought unintentionally into the home and once there they are very hard to eliminate. John.

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- The much maligned 840C -

Over the years a number of people have commented upon the fact that in their opinion the performance of the 840C is not on a par with that of it's predecessor the 840A.

I must admit that I had never thought this myself, despite having had several 'Cs' of my own and a number on the bench for repair for others.

I suppose that what brought this all to a head was when, back in the late 80s I had delivered a repaired set back to its owner, who also had an 840A on the bench. He operated them side by side, simply unplugging the long wire from one to the other as required.

Tony showed me his 'comparative test' - both sets on and warmed up, the same signal on the same frequency tuned in, the aerial unplugged from one and plugged into the other there was a very definite drop in signal strength on the 840C as opposed to the 840A.

My immediate reaction was one of astonishment, followed seconds later by the comment "Hey, you can't just do that".

My intimate knowledge of the relative circuitry of the two sets told me that the difference in signal strength on a simple long wire were due to aerial circuit impedance, and matching. Or rather of mismatching. The aerial input impedance of the 840C is given as being 75 ohms, i.e. low Z. The aerial impedance of the 840A is given as being 400 ohms.

The 840A will give fair - adequate - performance on the proverbial bit of wire, the 840C however requires a dedicated low impedance feed as from a dipole for the frequency in use or as from an aerial matching unit - commonly called an aerial tuning unit.

It is quite unfair to make comparisons as above, given a matched aerial the "C" version is somewhat better than the "A" and the better scale lengths make HF ranges much easier to tune.

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- Early 2 valve Eddystone Models. -

A recent mention in the Radcom about the use in WW II of a 2 valve Eddystone receiver for listening and monitoring of German, or other clandestine stations on short wave gives the lie to those who say that a 2 valver cannot provide world wide listening pleasure. The O-V-1 type of receiver in conjunction with a good long wire aerial is capable of providing reception of all of the present day broadcasting stations that use even medium power outputs, plus many of the lower power stations.

A number of EUGers have mentioned over the years that they have built such simple, yet effective, sets. The use of reaction enables a worthwhile increase in both gain and selectivity, the old bugbear of its causing QRM to the many neighbours who were also trying to get the maximum out of their own fairly unsophisticated sets is no longer such an anti-social practice.

A recent letter from Alan mentions that whilst still being faithful to EUG and his three sets, 840, 888 and 880/2, he had also built himself a simple 2 'lung' TRF set using a pair of EF54 'bottles' that he had got for pennies at a local club swop meet. There had been no attempt to build a replica of a '30s set, apart the circuit pinched from an ancient PW of Camms Comic era.(1945).

The result was a 2 valve TRF which ran off a six volt supply for the heaters and a home built HT supply of 150 volts. It was built period style on a home built chassis of folded aluminium and apart valves, coil and variable condenser, all the bits were under the chassis. A front panel of sheet aluminium held an ancient Muirhead slo-mo dial from an old RF26 unit.

The set was used with the station longwire which is some 60 feet long including the lead in wire. Results were far in excess of any possible expectations with stations from 5 continents being heard the first afternoon. This led to the manufacture of several other coils for other ranges.

This very simple set can often receive signals that are hard to decipher even on such as a Lowe 125, where the circuit noise is a limiting factor when deciphering really weak signals.

Thought has been given to building a replica of such as the Kilodyne model but the difficulty of sourcing the correct components appears to be insuperable. Unless a source for such '30s bits does appear then the twin EF54 set is likely to remain in use as the "alternative technology" receiver for the foreseeable future. No problem there though !

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- Thoughts on the Above.-

Strange that in period articles when discussing the performance of such sets it was so very common to hear of good reception from such distant, low power, stations as VK2ME in Australia, WCFL in Chicago, or W8XAL in Cincinnati. It would take a really good set and a good aerial in a good QRA to hear stations of similar power in similar locations these days !

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Ted.



- Eddystone / D Day Note. -

A reference to the Eddystone (Strattons) Company in the Wireless World for October of 1945 mentions that the Cross-Channel communications links were maintained by equipment that was constructed by GEC and Strattons.

It goes on to comment that the BBCs first broadcast from France to the UK after D Day was done over GEC apparatus.

More to the point for us EUGers is the following comment. "The first cross-channel radio conversation on D Day was made over Eddystone equipment".

For those of us who are interested in the historical aspects of the Company and its equipment this proof of the use by the Navy and Army of the S 214/215 and the S 440/450 VHF sets on the historic occasion is the paramount item of interest.

It seems a pity that there are no examples of this equipment in the Factory museum collection - correct me if I err on this point Chris - and I am asking here that if any EUGer has knowledge of the existence of any such items that could be donated to the collection, then will they please contact EUG.

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- Eddystone Components and WW II -

Many hundreds of thousands of passive components were made by the Company throughout the war. These were not only radio/radar related but included many items such as fuse parts badge and buttons etc; however of those radio components there is one that stands out in its contribution to the war effort.

A rather prosaic description given in the WW for October 1945 mentions a "split stator variable condenser for radar which was developed and produced in its thousands by Eddystone" The WW goes on to comment that this was a variable condenser with a flash over rating of over 700 volts, with a maximum capacity of 200 uF (pF). The condensers were supplied to companies such as Metro-Vick, Marconi, Dynatron, Cossors, E.K. Cole, and GEC for incorporation in the various radar equipments that these companies manufactured.

A search through EUG files indicates that this was the Catalogue type 833 and further checks on the files show that this item was still on sale in 1954 at a price of £2-12s-6d per unit. One for the history books ?

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- Short Wave Convertor -

In the first (no.1) issue of the ESWMs there is an article on the construction of a single valve short wave convertor.

What is so amazing - to me - is the extreme simplicity of the whole thing. Simple to construct, with detailed explanations and so very few components.

Just 1 valve,

p.t.o -

2 fixed condensers,  
 1 fixed resistor,  
 2 HF chokes,  
 1 tuning coil,  
 2 single pole switches,

That is the sum total of the requirements for building this SW convertor which will enable one to tune in to SW stations using a medium wave only receiver. How about it you EUGers, anybody interested in making one and then telling us all about it ?

Ted.

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 - Noises Off.-

Ian has been troubled with noises on his received signals just recently, since they appeared no matter which of his 4 receivers are in use with the one and only external aerial, but that they are not in evidence when he utilises the indoor, loft mounted aerial he has been forced to admit that the culprit must be the random wire aerial of indeterminate length that has been the mainstay of his listening for many years. At a guess this aerial has been up now for 11 years, plus or minus a couple either way.

Recollections are that when erected the aerial wire used was a coil of 'buckshee' mains earth wire and a count shows it to be of 14 strands insulated with some kind of green plastic.

Before taking the old skywire down Ian obtained (!) a coil of more modern but similar wire in preparation for the renewal that appeared to be necessary.

The old wire was taken down, one end was at the top of a tree way down the garden, the other was connected via an insulator to the Tv aerial lashings on the chimney stack.

A cursory examination of the old, very sooty, and very frayed wire showed that at the point where the horizontal length went through the egg insulator and became the almost vertical downlead the conductors had broken up due to continual to and fro motion, the plastic had long since gone and of the 14 conductors but 6 were still continuous. The noise was being generated at this point and exacerbated by the corroded condition of the tinned copper conductors.

Replacements for the 3 egg insulators were not deemed necessary since a clean up in paraffin showed them to be in perfect condition, as new. The lanyard of some kind of rayon line was pretty badly deteriorated with age and so a new length was liberated from the trailer-boat stocks in the garage.

The distant end - up the tree - was first completed, with a length of 'rope' around the trunk at three quarter tree height - about 25 feet at a guess.

Next was the house/downlead end. The chimney stack lashing point was again chosen and the 'rope' and egg insulator were attached here as previously. The new aerial wire was taken up to the roof and fed through the egg insulator and lashed in place when the aerial had been drawn up to the almost taut level needed. When the down lead had been taken through the tube into the shack and connected up, VOILA ! no more noise.

- A Cheapish 870 -

Dick King mentions that he has recently bought an 870 for £29, at a Vintage Radio Show. This to add to his slowly growing collection of Eddystones.

Recalling info that he had read in previous newsletters Dick had a good visual inspection of the set, internally, before he fed it any ergs. This is always a good idea as nobody knows just what terrible things may await one, especially in an AC/DC type receiver. I once had an 840 where all the insulating washers that isolate the chassis from the case had been removed by a previous owner, not just THAT but the polarised mains plug and socket had been wrongly wired so that had I connected mains as was then I would have had the full 240 volts AC on the outer case !!! Doesn't bear thinking about.

Anyway the inspection done by Dick showed that all was seemingly in place and correct, save for a bit of white deposit from damp storage.

Connecting up the ergs however produced zilch from the speaker and further steps had to be taken. Dick is lucky enough to have friends at his workplace who are experienced radio engineers and the problem was quickly diagnosed as a duff output tranny. These low power, and high impedance primaries were wound with such fine wire that they often are a problem. The current tolerances are very low and any cause for increased anode current will burn out the 'thinner than a hair' wire. Dick should be aware that one of the causes for this possible increased anode current in the AF output valve is a leaky coupling condenser between the AF amplifier valve (in this case it is V3 the 12AT6) anode and the grid of the output bottle (the 19AQ5).

The condenser in question is C38 a tubular paper type which with age has probably become leaky - it ought to be replaced as soon as possible by - preferably - one of the new poly types.

The anode volts of V3 are only low as it is fed through a very high impedance network (R10 & R11), you should find about 43 volts there on a good hi-z meter, give a tolerance of about ±2 volts. This voltage or part of it fed through the leaky condenser will push up the current taken by the 19AQ5 to a point where the transformer primary will overheat, with eventual failure. Look to it Dick !!!

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- Prices for Eddystones.-

Dick mentions that some silly prices were being asked for a number of the Eddystones on sale at the show. Those sets with silly prices all appeared to be left on the stands at the end of the day - wonder why ? Take the quoted 840C.

My opinion without actually seeing the sets is that they were a bit high. Unless in exceptional condition then an asking price of £95 needs to come down by £20. To ask the same, £95, for a 680 is again expecting a bit much, I would pay £80 for one. Again the £75 for a nondescript 770R, taking it with no knowing what had been done to its 'innards' - lets say it would have got an offer of £50 from me. The EB35 however would - if okay - have been dirt cheap at £45, they are going for almost twice that today.

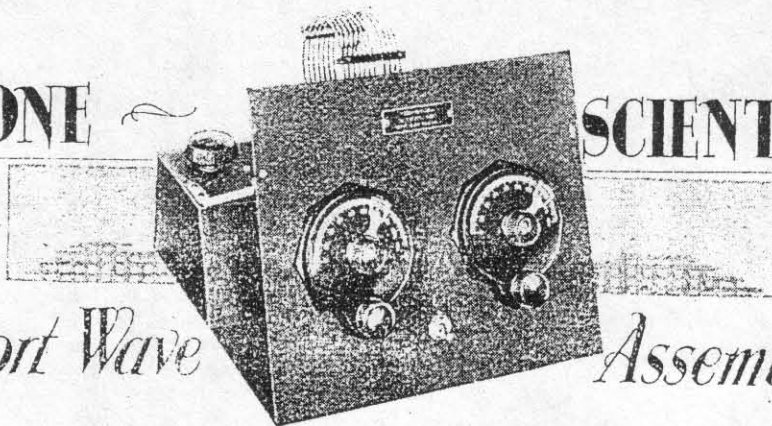
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EDDYSTONE

SCIENTIFIC TWO

Short Wave

Assembly



IT is rather surprising that short-wave work is more neglected than any other branch of wireless reception; without suggesting for a moment that it provides a thoroughly reliable and entirely consistent supply of long-distance signals, it is certain that nothing else offers so much in this respect at so little cost. Though perhaps rather less attractive to the amateur in this country than to the temporary exile abroad, a short-wave receiver may be regarded as a most useful addition to his equipment, and can be depended upon for a great deal of entertainment.

A two-valve detector-L.F. circuit, as embodied in the Eddystone Scientific Two, is still the most popular arrangement for short-wave reception. In this particular case the design is straightforward and simple, with a minimum of complications. Aerial coupling is direct to the high-potential end of the tuned grid coil, through a very small variable condenser, by means of which the effect of aerial loading may be controlled as required. The detector valve functions, as usual in a set of this class, on the grid principle, and reaction between its grid and anode circuits is regulated by a condenser in the conventional manner.

A pentode output valve is specified, and is coupled by a Ferranti A.F.8 transformer. Output to the loud speaker—or head phones—is direct. A triode may be substituted, but the pentode, which gives more magnification, is generally to be preferred, and will afford sufficient signal strength for loud speaker reproduction when conditions are fairly good.

It would have been better if the on-off L.T. switch had been arranged in some other way; as things are, the valve filaments may be burnt out if an accidental short-circuit takes place between H.T. positive and any part of the metal chassis when this switch is "off."

A well-devised pressed-metal chassis is supplied as a foundation for the receiver, and is ready drilled, so

that nothing more than assembly and wiring is required from the constructor. The tuning and reaction condensers are operated by slow-motion dials fitted to spindle extensions which are "broken" electrically by insulating sleeves. These components, as well as the tuning coil, are mounted so that they may be remote from the operator's hand, in order to avoid capacity effects. The metal base plate is folded in such a way that, as an additional precaution, the condensers are screened.

Apart from the advantage of screening, this method of construction provides a protective cover for the tuning condensers, and, in consequence, there is no need for a cabinet except, perhaps, on the grounds of appearance. Actually, it is very convenient to operate the set in a "stripped" condition, as the aerial coupling condenser, which must occasionally be manipulated when receiving the shortest wavelengths (say 15-25 metres) is then quite accessible.

A regenerative short-wave set stands or falls on the behaviour of the reaction control; in the Eddystone receiver this works unusually well, especially on the middle range, where the detector valve may be maintained on the verge of self-oscillation over the whole tuning scale with the reaction condenser dial at settings intermediate between 39 and 42 degrees—a variation of 3 degrees only, which is as near constancy as one is likely to get. On the higher wave-range control is nearly as good; it tends to become slightly "patchy" below about 25 metres.

Actual "threshold" L.F. oscillation, often a serious handicap to short-wave reception, does not occur at any frequency, and is barely perceptible in its incipient form at the lowest wavelength of the set.

In spite of its simplicity, the set, when directly compared with a standard of similar but more complicated design, proved to have a high degree of sensitivity. Hand-capacity effects, even when using phones, are only troublesome when receiving the shortest waves.

### An Easily Assembled Set of Parts for Building an Effective Short-wave Receiver.

#### SPECIFICATION.

**GENERAL:** Battery-operated receiver, for use with open aerial and for reception of wavelengths between 15 and 93 metres. Three tuning ranges covered by plug-in coils:—15-36 metres; 27-55 metres; 46-93 metres.

**CIRCUIT:** Regenerative detector followed by transformer-coupled pentode valve. Directly connected loud speaker.

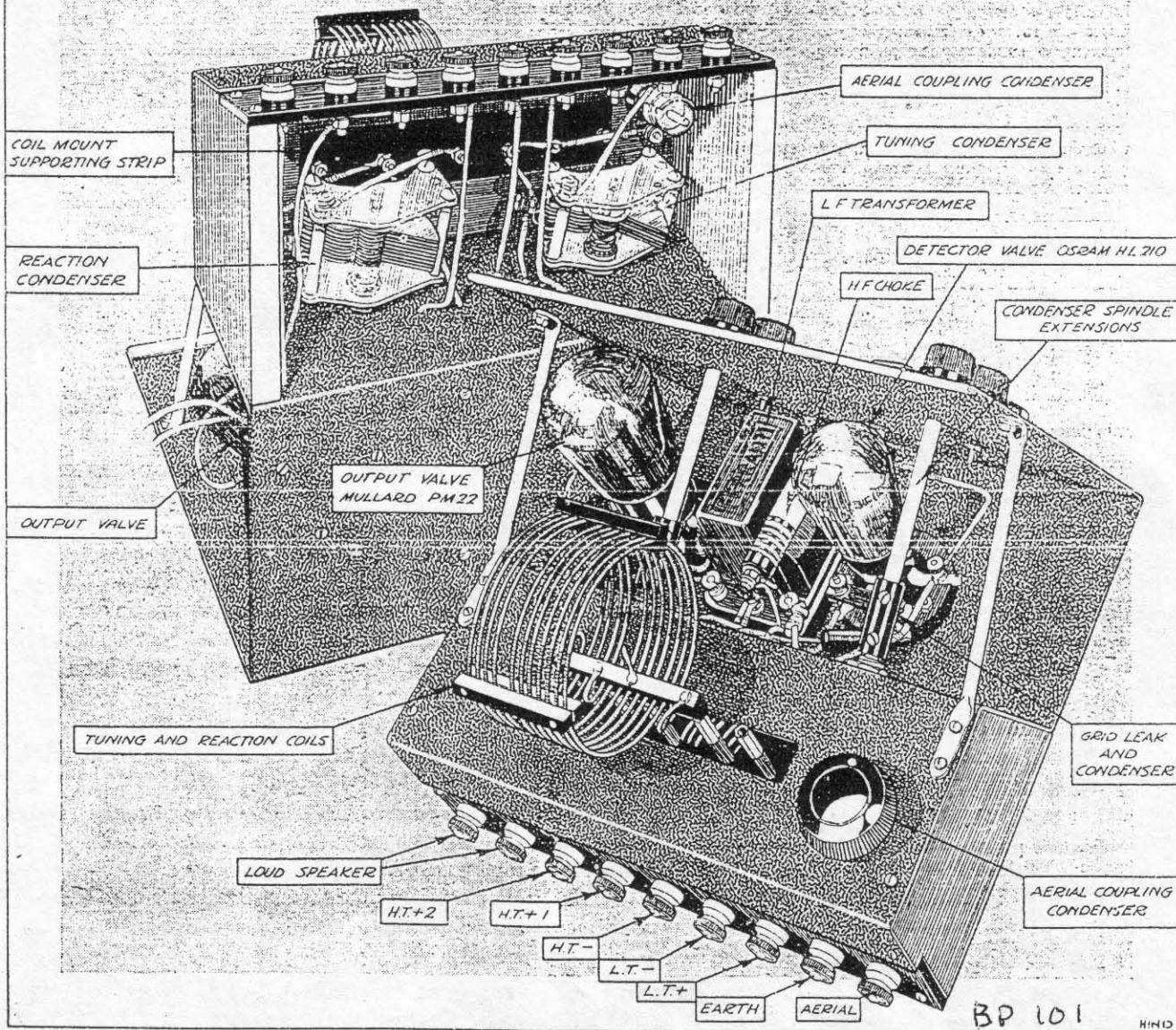
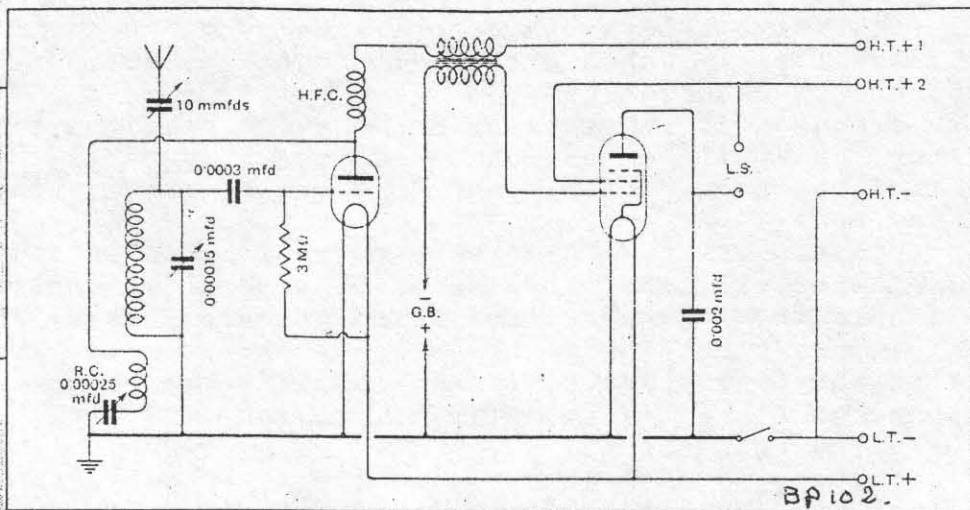
**CONTROLS:** Tuning and reaction condensers; aerial coupling condenser; on-off switch.

**PRICE:** £4 5s. for the complete set of parts.

**MAKERS:** Stratton & Co., Ltd., Bromsrove Street, Birmingham.

JULY 22nd, 1931.

# Wireless World



The Eddystone Scientific Two chassis, as seen from the rear and from below. Inset: Complete circuit diagram.

B19

with acknowledgements to  
The old Wireless World.

## - Preselectors.-

The old valve type preselectors such as the Codar PR30, can - if available - enhance the performance of any set be it an Eddystone or other marque.

The preselector provides in one box the attributes of an attenuator, an amplifier and an aerial matching unit. A potent combination to insert before your receiver no matter what your aerial may be.

For those blessed with an exceptionally good aerial system the preselector will provide a means of separating those high power signals from the weaklings which you are looking for.

If you are operating with something akin to the proverbial wet string then the preselector will amplifier those chosen weak signals whilst the extra selectivity provided will keep at bay the QROers you do not want.

To try one is to love one ! There are not many Codars about these days but there are some ex MoD units on the market which can do an almost equally good job, so check the ads !

- - - - -

## - The 888.-

Writing from the West-country Stan mentions that his 888 has begun to drift quite badly soon after warm up. His more than 30 years of ownership has been trouble free and nothing more than a re-valve in the late -70s has been needed.

This drifting however is a nuisance as Stan likes to use the 888 on SSB and continual retuning is not good for his temper.

The advent of the Xmas season and time off from work meant that he was able to get the set open on the bench, ready for some diagnosticating (his word !).

It took some 3 hours of checking out the still unfamiliar circuitry to find that his frequency drifting was confined to the BFO and was not in the local oscillators, time for a big sigh of relief says Stan.

A detailed study of the BFO circuit showed several possible causes but the first step taken helped to eliminate most of these. A DVM was attached to the anode pin of the BFO valve - not easy but by dint of using a single fine strand wrapped around the valve pin and sellotaped up the side of the bottle it was done. The anode volts measured in this way from switch on through warm up showed a continued slight drop in volts over the first hour of operation. It was eventually ascertained that C81 a paper decoupler was the guilty component. It was definitely leaky and over time it passed more and more current. When left without applied volts it partially recovered its insulating qualities but went rapidly down again when power was applied.

This meant a check on other similar paper types and altogether Stan found 7 that were showing signs of leakage. All were swapped from the stock on hand and a promise made to buy some new stock as others could well be on their last legs.

The repair job was completed and after a soak-in test of several hours, with power applied and gains turned to zero, the 888 was again tried out on 14 Mc/s SSB. As steady as a rock is the verdict from Stan, but he has decided that a visit to a rally is indicated so that he can obtain stocks of polyester

type decouplers, no attempt will be made to disguise them as paper types, a good working set is what he needs - not a visually perfect replica for show purposes.

- - - - -  
- Won't Work 940.-

After some 6 months idle the 940 must have been suffering from lack of TLC. Acquisition of a 958 last year meant that the 940 had, after many years, taken a back seat.

The decision to re-use the 940 came when it was found that the 'orrible green goo' had struck at the co-ax links in the 958, and performance was badly degraded. Work on it had to be put off to enable much reading up of the manual. Alan is nota semicon man at the best of times and all his work had been on valve equipment in the past.

The 940 was opened up with some degree of confidence and a few basic checks made, no power getting through to the mains tranny primary seemed a simple enough problem.

Those basic checks with an Avo 7 showed a lack of continuity through FS1 the line fuse in the live leg of the input.

The fuse itself was okay, looked to be one that came with the set as new. But then a check on the terminals of the FS1 fuse - holder showed that one joint whilst looking okay was showing an o/c on the meter, evidently corrosion inside the joint had taken place over the period of disuse. No more than the application of a hot iron for a few seconds to remove the old solder, and then a dab of new resin cored solder was necessary.

The 940 fired up and is now in pride of place whilst a decision is made on the 958 job.

Sam.

- - - - -  
- Those Letters.-

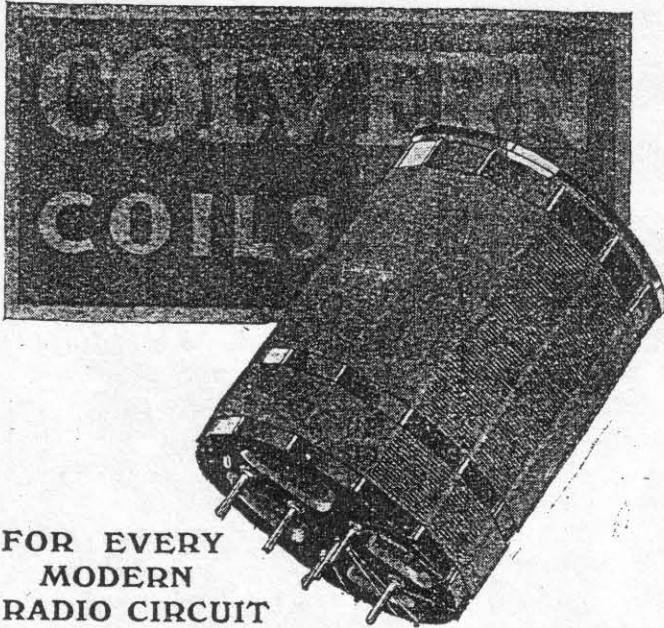
Some comments in mail about those letters that I had received from Geoff, and which where in the Xmas issue. All comments were very much FOR and none against. The historical content was much appreciated by those aficionados of Stratton/Eddystone history. In fact the general consensus appeared to be that "We Want More" (not Moore !).

Since the bringing on line of the EUGNET by Graeme and Anthony has renewed contacts with Bill Cooke maybe we shall be hearing more from Bill, how about some reminiscences of the 'Good Old Days' ?

Ted.

- - - - -  
- Your Mail.....

Keep on sending your mail for this N/L to me, preferably via Jim Murphy in Bradford. The usual drop in mail over the Xmas period has given me time to sort things out here and to begin reorganising so that the future N/Ls can be done on this Word Processor - means I can type away into the wee small hours



FOR EVERY  
MODERN  
RADIO CIRCUIT

Specified by "Radio for the Million"

# COLVERN COILS



## What About Your Future?

ARE you content with the position you occupy now—with the money you are earning—or do you wish for something better and something more?

Ask yourself these questions; then consider for a moment what you ought to do. Don't for a moment imagine that integrity, punctuality, and length of service will of themselves carry you far. The one thing more than any other that enables a man to rise above his fellows and win a way into the better-paid jobs is a sound and practical technical training. He cannot possibly get such a training in the course of his everyday work.

The I.C.S. originated spare-time technical training by post 38 years ago, and is by far the largest institution of its kind in the world. It has teaching centres in eleven countries and students in fifty.

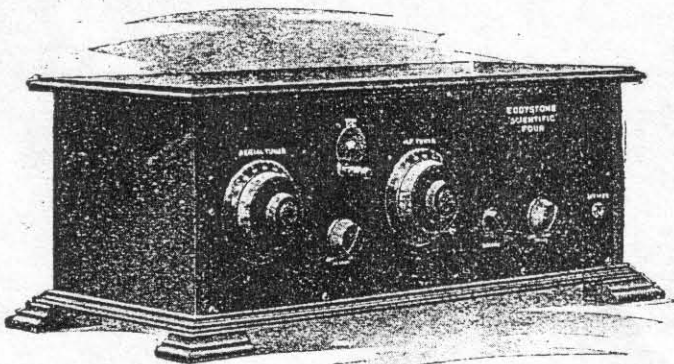
Write to-day for full information as to how the I.C.S. can help you in your chosen vocation. There are 360 Standard Courses, of which the following are the most important groups:—

- |                     |   |                       |
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| Accountancy         | Wireless Telegraphy (Elementary and Advanced) | Saltsmanship          |
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| Architecture        | Engineering (all branches)                    | Showcard Writing      |
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| Commercial Art      | General Education                             | Window Dressing       |
| Commercial Training | Professional Exams.                           | Woodworking           |

*There is a special booklet for each group, which will be sent free on request. Tell us the one you would like to see.*

International Correspondence Schools, Ltd.  
172, International Buildings, Kingsway, London, W.C.2

# EDDYSTONE SCIENTIFIC :: FOUR ::



**THE "EDDYSTONE" SCIENTIFIC FOUR.**  
250-550 metres and 1,000-2,000 metres.  
£18-10-0 Instrument only,  
plus £2-10-0 Marconi Royalty.  
First-class finish throughout. Send for full particulars.

**FOR HOME CONSTRUCTORS.**

A complete constructional booklet giving full details, wiring diagrams and drilling templates is available. Price 6d., post free.

*Sole Manufacturers:*

STRATTON & CO., LTD., Bromsgrove St., Birmingham.

## A "FIVE STAR" RECEIVER

- \* **LONG RANGE.** 40 to 50 stations received easily on loud speaker. Neutralised and screened H.F. stage.
- \* **SELECTIVITY.** Will cut through local station transmissions on B.B.C. wave-band. Will give at least four other stations on 5 X X wave-band with Daventry working.
- \* **QUALITY.** Absolutely first-class reproduction; the anode-bend detector and resistance-coupling stage ensure this.
- \* **SIMPLICITY.** Two-dial tuning only with matched dial readings, volume control and 2 rheostats. Reliability guaranteed.
- \* **ECONOMY.** Filament current 325 amps. for 4 valves. Anode current 15 m. amps. Every valve pulls its full weight. No waste energy.

A receiver that will give its owner full satisfaction and pride of ownership.

*London Service Depot:*

WEBB'S RADIO ELECTRIC STORES, 164, Charing Cross Rd., W.C.2





without the worry of waking others up from their beauty sleep.

All of your technical queries will get an answer from me, if it is just a simple thing you are asking then Jim may sort you out himself.

Ted.

- - - - -  
- 'Phones left plugged in again ?? -

An SOS from Donald saying that he got back from Xmas spent at the "in Laws" and fired up his 640 but it will only work on phones. Checks done with the diecast speaker on another set show it is not THERE, so what has happened ?

Donald does mention that he had left the phones plugged in over the week away from the shack - a garden shed. He will by now have found that my suggestion was the right one. The break contacts on the phones socket have a habit of corroding quite rapidly in a cold damp environment such as a shed in winter. The contacts are held 'open' whilst the phones plug is in situ in the socket, the contacts corrode, when the plug is removed from the socket the contacts 'make' but there is no current path across the oxidized contacts.

A case for a bit of cleaning with a 'contact cleaner tool or a piece of 'crocus' paper. NOT HEAVY GRADE SANDPAPER or EMERY CLOTH !! A dab of fine oil will not go amiss here across the contacts.

- - - - -  
- Special Advert.-

FOR SALE, Model HRO-5T receiver, mil spec receiver, ex RAF, in nice condition and excellent performer, uses all metal octal valves, with 0-1 mA 'S' meter and has the matching National made PSU. No irreversible mods have been made to this set, a BFO injection trimmer (is fitted) for ease of SSB use, and an internal speaker transfo (is fitted) with jack to rear, new bypass condensers fitted some years ago to forestall possible leakage problems, full coil set including bandspread - offers around £160 for this fine set.

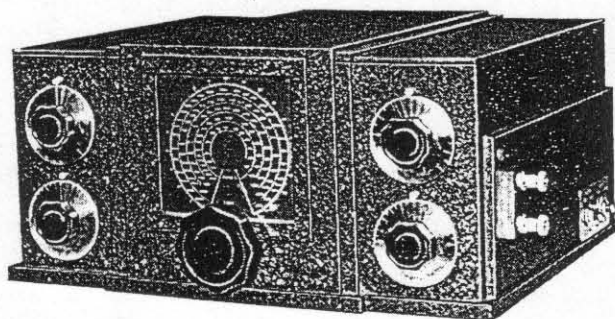
ALSO FOR SALE, Panoramic adaptor model RBW-2 as supplied to the US Navy. 230 volt AC operation, black crackle case, good cosmetic condition and has 5.25 Mc/s IF input. (770 series !)  
CRT and time bases work okay but RF side will need realignment, Want £100 for this, both sets contact John Teague on phone number 01963-240319 (Somerset.)

# EDDYSTONE

## Communication Receiver

### (Type L.P.C.)

#### FOR BATTERY OPERATION



**T**HE L.P.C. Receiver is of the superheterodyne type and employs eight valves. It is especially suitable for long range reception owing to its stability of performance and freedom from drift. The circuit consists of a radio frequency stage, mixer valve, electron coupled oscillator, two stage I.F. Amplifier working on 465 Kc/s, double diode triode for A.V.C. and detection, resistance coupled L.F. amplifier, beam power tetrode and electron coupled beat frequency oscillator.

The chassis and cabinet are aluminium silicon alloy diecastings, the screening of the receiver stages is very complete so that full efficiency is secured. The important leads are as short as possible and all component parts are rigidly mounted and not merely supported in the wiring. Signal to noise ratio has received special attention and the noise level is exceptionally low.

Interchangeable coil blocks in die-cast screening boxes are used for wavechange, each block comprising the three tuned circuits. Tuning is carried out by a special drive employing spring loaded Tufnol gears with a reduction ratio of approximately 100 : 1. The drive has flywheel momentum to assist rapid searching. The standard operating range is 22,000 Kc/s to 530 Kc/s covered by five coil blocks. Additional blocks for higher and lower frequencies can be supplied.

**High Tension current consumption.** 16 m.amps at 135 volts.

**Low Tension current consumption.** 0.9 amps at 2 volts.

**Average Sensitivity.** Better than 7 microvolts for 50 Milliwatt output.

**Dial** is calibrated in Kilocycles for five ranges, and also in degrees.

**Selectivity.** 9 Kc/s at 20 db. down. 16 Kc/s at 40 db. down.

**Output.** High and Low resistance output (2,000 and 120 ohms).

**Control.** Radio frequency and Audio frequency gain controls. Beat frequency pitch and oscillator vernier. A.V.C. and B.F.O. on/off switch.

Price on Application.

---

STRATTON & CO., LTD., BROMSGROVE STREET, BIRMINGHAM 5, Eng.

- Marconi Badged Eddystone Receiver.-

Brian has recently become the owner of an almost mint Marconi HR101 receiver, the property of his late Uncle.

In looks it is very similar to the Eddystone 830 series with the extra incremental tune facility and the crystal position switch. Most controls are similarly placed and a look inside shows that internal construction and layout are to the usual Eddystone standards. It is, in effect, an Eddystone receiver, made in the Bathtub and having no more than the Marconi badge to identify it on the front panel.

Badge engineering has been with the Company for many years and there are many well known companies who have taken full advantage of Eddystone production and quality control standards. The HR101 is in absolute showroom condition with the exception of a slight scratch on the fingerplate, unfortunately replacements for this item just do not exist.

As with any new(ish) receiver that Brian gets he does the usual checks on sensitivity and calibration, there do not appear to be any with this set.

The HR101 perfectly complements the other sets in the shack, an EA12 and a 940. The three sets are just about the limit as far as shack space will permit.

First thoughts on the performance are that it was a bit down on S points against the 940, however it was realised that the 940 had recently had a full new set of valves.

A check on the emission factors of the valves in the HR101 done using the AVO valve tester showed that whilst all were within the green sector the cumulative effect of the older valves could account for the difference.

Brian is now happy with the HR101 and is saving his pennies for the purchase of a full new valve set, with a total of thirteen 'bottles' this is an expensive exercise.

- - - - -

- Using an EP20 with 'other' Receivers.-

The EP20 panadaptor is designed for use with any sets having an IF of 100 Kc/s. Now whilst some Eddystones do use this value of IF, and have the requisite socket for IF output, there are sets with which one could like to use the panadaptor only the IF may be different, or there is no IF output socket.

Sam has just such a set, the 940 with an IF of 450 Kc/s and with no IF output.

The second was easily solved by lifting the earthy side of the bypass condenser in the kathode of the last IF amplifier. A 100 ohm resistor inserted here and with a mini-coax led to the rear panel gives the IF output.

The differing IF meant the construction of an outboard IF convertor with a 550 Kc/s oscillator which when beat with the 450 Kc/s output gave a secondary IF of 100 Kc/s to feed the EP20. The unit was built into a small diecast box (Eddystone natch !) and powered by a long-life PP3.

No problems were encountered with this unit and the two units are perfectly compatible.

- - - - -

August 1939

## ... HERE AND THERE ...

### CALLED UP

A note for those of our readers who are liable for military service under the new Act. If you arrange for the MAGAZINE to be reserved for you by a local newsagent, it will help you to get in touch with amateurs and SWLs in the neighbourhood, as several clubs are within reach of training establishments. This suggestion is inspired by a request from Gunner Kitteringham, Topsham Barracks, Exeter, who will be there from August 15 to November 15; he is an SWL who wants to make contact with Exeter readers.

### THE "Q" CODE

As is well known, the "Q" code used by amateurs is based on, and taken very largely from, the official list of three-letter abbreviations employed by the marine and aeronautical commercial services. For the price of 1s. net, a booklet issued by the Air Ministry and entitled "The 'Q' Code" is obtainable from H.M. Stationery Office, York House, Kingsway, W.C.2 (with sales branches in Belfast, Cardiff, Edinburgh and Manchester) or through any bookseller. Local H.M.S.O. addresses will be found in the telephone directory. Incidentally, a free list, "Publications of the Department of Scientific and Industrial Research," is worth having because it gives the titles and prices of a number of interesting papers issued by the Radio Research Board.

### MAGAZINE TESTS

The support for and success achieved in the various Tests we have organised during the last twelve months—1.7 Mc Trans-Atlantic, 56 Mc and QRP—makes it practically certain that, all being well, we shall stage similar events between October this year and May next. These Tests will be tests, i.e., primarily experimental and not so much competitive, though it may possibly be that we shall offer prizes where point-scoring is involved. Practically every entrant for the QRP Test has suggested this, but we feel that the real inducement to take part should remain the experimental value and interest of the event.

### HEARD ON 160

"I am rather unfortunately placed for working on the other bands just at present, because when I applied for my licence I gave the Post Office a 1.7 Mc crystal frequency which doubles outside the HF bands; so they only licensed me for 160 metres." *Verb. sap.*

### AMATEUR RADIO EXHIBITION

For the three days Sept. 21-23, there will be an exhibition in London of entirely Amateur Radio interest. Organised by the Radio Society of Great Britain—who are to be congratulated on their initiative and enterprise in this matter—it will be held in conjunction with the R.S.G.B.'s 1939 Convention and is to take place at the Royal Hotel, Woburn

Place, Russell Square, W.C.1. The exhibition and meetings are open to members only, and further information can be obtained from the Secretary, 33 Victoria Street, S.W.1.

### CORRESPONDENCE NOTE

Again, we must ask readers to use separate sheets, each with a name and address, when writing to the MAGAZINE on matters affecting different departments or contributors. These are Business, Editorial, Advertisement and Technical Query, with the DX Scribe, F. A. Beane, A. J. Devon and Old Timer as regular feature contributors. Letters for all other contributors should be sent c/o The Editor, and the DX Scribe has certain rules of his own—mentioned from time to time in his pages—in connection with the very large volume of correspondence reaching him. If readers will keep these points in mind, we shall not get, as we so often do, a request for two back numbers, a technical query, several elusive QRAs, a note on some BC DX heard and a sixpenny advertisement all on the same sheet!

### THE CODE KING

Just for practice, the other evening we tuned ourselves in to a nice snappy commercial knocking out what we quite thought was about 40 w.p.m., and proceeded to get it all down; though subsequent calculation showed the speed to be nearer 25's, we still felt we had done pretty well. The next morning a letter came in from Webbs Radio of Oxford Street mentioning, *inter alia*, that McElroy, their American buyer—yes, you've guessed it!—had taken perfect copy for 15 minutes at 75 w.p.m., thus retaining his world code speed title for another year—we should say so. G2NO of Webbs says they hope to get him over here to find out exactly how he does it. That's what we want to know, too. It should be added that this annual American contest is conducted by the Federal Radio Commission, using sealed tapes on an automatic sender, McElroy and other competitors having to copy on typewriters.

### TELEVISION SERVICE AREA MAP

Recently issued by the R.M.A. is a map which will be useful both to readers interested in television reception and dealers concerned in selling it. This map, which is not contoured but shows places names and county boundaries within approximately 50 miles of Alexandra Palace, is intended to indicate the proved effective range of the television transmissions; this can apparently be safely quoted as 40 miles, though it is emphasised that it is impossible to lay down a hard-and-fast dividing line, since local conditions outside the 25-mile "guaranteed"—speaking figuratively—service area may affect reception for better or worse.

The map is on good paper, unmounted, and printed in three colours. It costs 2s. 6d. post free from the Radio Manufacturers' Association, 59 Russell Square, London, W.C.1.

The above is to prove to the two doubting Thomases in EUG that  
 a, - McElroy did do 75s as mentioned in a previous N/L,  
 & b, - McElroy did function as buyer for Webbs aka Strattons.

The page is extracted from the SWM of that era so believe it!

- An oscillating 730/4 ! -

Well Yes, we know that certain stages in this well known and estimable receiver are meant to OSCILLATE, but not an audio stage !

The 730 had been stored unused since the house move some months back. It was only now that with Xmas looming ever closer a decision was made to be back on the air by the start of the festive season. The idea of a 6 day holiday at home and no air-time was distinctly a No-No.

The Tx is a simple "three lunger" for CW on 7 & 14 Mc/s and after some 20 years it is still thoroughly dependable. I had thought the same of my 730 but when powered up there was no denying that the continuous, untunable whistle that emanated from the phones was being produced within the set. Besides that it was noticeable that the AF gain control did nothing to alter either the level of whistle, or its frequency - this latter might have given clues as to its location within the set.

First step was to get the chassis out of its 'box' and powered up on the bench in the new shack/spare room.

There was nothing immediately visible either above or below the chassis, what dust there was came away with a soft bristled paint brush.

Checks had already established that as the volume control had no effect on the spurious oscillation then it had to be located within the V8a, V8b or V15 stages. These are two AF amps in a common bottle (12AU7) and AF o/put bottle (6AM5).

Next step in the diagnostic procedure was to go along and short to chassis the signal grids of each stage, moving backward from the o/put stage.

Shorting the grid of the output stage made for a dead receiver, audiowise. So back a stage to the grid of the 2nd AF amp; and here there was a distinct change in tone of the whistle but it was still there at lower level.

Now this is where the switching in or out of the AF filter is done and there are two bits of mini-coax connecting the anode of the 1st AF amp to the switch and the switch to the grid of the 2nd AF amp. I immediately spotted that the notorious "Green Slime" had invaded the coax centre insulator polythene. Both bits were chopped out and replaced with some modern stuff on hand in the junk box. The whistle had gone but there was now a pronounced low frequency gurgle that used commonly to be called "motorboating" - in the days of Yore.

Some prodding about revealed that the earthy end of R45 was a dry joint and this was remade by sucking off the solder with solder wick, and then remaking the joint with new resin core solder. Magic ! there it wasn't - the mo-boating had gone and operation of the stage with and without the filter in circuit showed up no problems.

Whilst the set was open a check was made on the other screened leads and whilst all appeared sound - i.e no leakage from inner to screen - a decision was made to buy up some at the next rally and do a complete replacement job. For now though the 730 was operating well and the station was set up ready for operation.

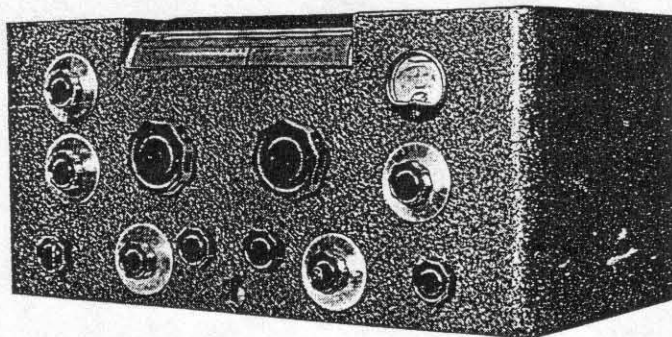
Peter.

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# EDDYSTONE

## Communication Receiver

(Type E.C.R.)



**W**E are very proud to present the Eddystone E.C.R. Communication Receiver. We believe the appearance, construction and performance will satisfy the most critical.

The Chassis, Coil Unit and Crystal Unit are die-cast and the most complete screening is employed everywhere. The layout is such that all leads are a minimum length. No more valve stages than necessary are employed and reduction of noise level has been an ever present thought during the design.

The Superheterodyne circuit comprises 10 valves, including Rectifier, with the following stages:—High Frequency, Mixer, Electron Coupled Oscillator, Two 465 Kc/s, I.F.'s, Doubled Diode Detector, Beat Frequency Oscillator, L.F. Amplifier, Tetrode Output and full wave Rectifier.

Switched coils cover a waverange of 9.5 metres to 190 metres, 33 megacycles to 1.6 megacycles, divided into 4 wavebands. Electrical bandspread tuning is employed. A crystal gate is fitted with phasing condenser and variable selectivity control. Volume controls for R.F. and L.F. adjustment. An "R" meter calibrated in decibels is on the front panel. B.F.O. control and switch and A.V.C. on and off. The following data is given relative to the performance.

Average overall sensitivity better than 3 microvolts for 50 milliwatts audio output.

Average I.F. sensitivity 12 microvolts with crystal out.

Average I.F. sensitivity 15 microvolts with crystal in.

**Overall Selectivity.** Crystal out :

6 db. down at	3.5 Kc/s.
20 db. " "	8 " "
30 db. " "	12 " "
40 db. " "	15 " "
60 db. " "	21 " "

Crystal in and phased :

Bandwidth is at 20 db. down	.15 Kc/s,
at 30 db. down	.3 Kc/s.

With the aid of the selectivity control the bandwidth can be increased 6 times.

3 Watts output.

**Price - £45 0 0**

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STRATTON & CO., LTD., BROMSGROVE STREET, BIRMINGHAM 5, Eng.

## Efficient Operation Of 110 Volt AC/DC Receivers.

By Peter Lankshear

**E**UG Newsletters have on several occasions recommended improving power efficiency by operating transformerless AC/DC receivers from a 110 volt supply rather than the full 230 volts. This is beneficial to both the receiver itself and the user's electricity account, but just what to do, and how to do this safely and without damaging precious receivers, or ourselves, can be confusing to the inexperienced. Hopefully, the following notes will make the situation a bit clearer.

First though, some background history. The great ambition of the radio industry of the early 1920's was to achieve satisfactory mains powering of receivers, and in 1926/27, success came in the form of practical valves with indirectly heated cathodes. In America, the heaters of these valves were rated at 2.5 volts, whilst Britain and Europe settled for 4.0 volts. These were both very successful systems provided that A.C. mains were available. However, many mains supplies were D.C. and whilst the voltage was suitable for H.T. requirements, supplying low voltage valve heaters presented considerable difficulties. The heaters could be connected in series and operated from the mains by disposing of excess voltage through resistors, but the currents involved were too high to be economic. In a practical example, with 4.0 volt heaters operating at 1 ampere, and with a 230 volt mains supply, the heaters and their associated dropping resistor would have consumed 230 watts!

The solution was to produce valves with lower filament current consumption and higher voltage, and by the early 1930's valves with heaters operating at between 150 and 300 ma were in production. As the cathodes of power handling valves required greater wattage heaters than say R.F. amplifier valves, voltages varied, but the current ratings were the same. Thus, to take a familiar example, in the Eddystone 870, the I.F. amplifier valve requires 12.6 volts at 150 ma, whilst at the same current, the output valve requires 19 volts.

These series connected heater receivers proved to be remarkably successful, especially in the USA, and very soon were being equipped with H.T. rectifiers which permitted universal operation on either A.C. or D.C. mains. American mains voltage is nominally 110 volts, which is suitable for H.T. and close to the total voltage of the heaters of a typical receiver. Using again the example of the 870, the filament voltages add up to just over 90 volts, requiring only a small value of series resistor to dispose of the remaining 20 volts..

### TRANSFORMERLESS RECEIVERS

As the mains was directly coupled to the chassis, there was a complication in that all receiver metal work had to have thorough protection from user contact, but the AC/DC receiver proved to have one great advantage commercially. It did not require a power transformer, the most costly single component in a receiver, and advantage was taken of this to produce inexpensive radios in vast numbers. However, Eddystone receivers are just the opposite of being economy models, and the provision or absence of a power transformer would not have been a significant factor in the price. Why then did Strattons produce transformerless receivers?

The answer is of course, ship board operation. It has been standard practice for merchant ships to have D.C. supplies of a nominal 100 volts and superior receivers with series heaters were built by Eddystone for marine use, a function which they performed with distinction..

However, in many countries, and especially in Europe and Australasia, mains supplies have voltages up to 240 volts and, so Eddystone DC receivers catered for land based operation by providing their AC/DC receivers with heavy duty resistors with suitable taps. These resistors dissipate the excess voltage in the form of heat, a system that is brutal, but it works. In the case of 230 volt mains operation, more than half the mains energy taken by the receiver is therefore wasted and this, in the case of larger sets can be 25 watts or more. This represents quite a lot of energy as can be demonstrated by the heat generated by a 25 watt lamp.

### TRANSFORMERS BEST

Both for economy and for a receiver's internal comfort, it is advantageous to convert mains supplies to 100-110 volts. The best and simplest method for A.C. mains is to use the traditional 110 volt stepdown transformer of 50 watts or so rating. Unfortunately though, suitable transformers are not always easy to find and can be expensive to have wound. (Actually, given a suitable core from an old receiver power transformer, a very satisfactory transformer can be hand wound using home workshop equipment, but that is beyond the brief of this article.)

Incidentally, one great advantage in using a transformer is the isolation it provides. The chassis of the receiver is then no longer live to the mains, in important safety feature. A TRANSFORMER SHOULD WHERE POSSIBLE BE USED WHEN WORKING ON A LIVE AC/DC RECEIVER. Another warning :- Some step down transformers have only a single winding tapped at 110 volts, and do not provide any isolation. SINGLE WINDING AUTOTRANSFORMERS DO NOT PROVIDE PROTECTION FROM MAINS CONTACT! A simple check with a test meter will identify an autotransformer. If there is any continuity between the 230 volt and 110 volt terminals, the transformer is not double wound and should not be used to provide servicing isolation.

One possible source of suitable transformers can be black and white T.V. receivers of the mid 1960's. Although these sets were frequently transformerless, there were a few that used power transformers with silicon diode voltage doubling power supplies. The single H.T. winding on these transformers was wound for about 105 volts, and of sufficient current rating to supply any Eddystone receiver. If you can locate one of these T.V. sets you are in luck, but it must have a solid state voltage doubler. Just ignore the filament windings on the transformer. Transformers from receivers using valve or bridge rectifiers are not suitable.

To operate a 110 volt receiver from high voltage supply, we need to reduce the voltage at the input terminals. For DC mains, the only practical way is by means of resistors, and these are already built in. However for AC mains there are some methods other than resistors or transformers. One is by using the inductance provided by chokes or inductors, and another is capacitance in the form of series capacitors. Both methods are more efficient than resistors as they can pass what is known as a wattless current. This is the result of the fundamental fact that in these components the voltage and current are out of phase with each other. In an inductor the current flowing lags behind the voltage, whereas in a capacitor, the current leads the voltage. (Incidentally, when in inductor and capacitor are connected together, the interaction of the leading and lagging currents produces an interesting effect at one frequency in a condition known as resonance where a small amount of energy can generate a considerable voltage. This is of course what tuning is all about and without it, radio as we know it would never have come into existence.)

#### CHOKES IMPRACTICAL

While it is theoretically possible to use a choke coil to reduce the voltage to a receiver, the problem is that practical chokes are not suitable. A very large air cored coil could be used to provide sufficient inductance, but as it would require several henries inductance, at a guess would be at least the size of a receiver, and would be considerably more expensive than a transformer. An iron cored choke would be smaller, probably about the size of a step down transformer and of a similar cost. However, the magnetic characteristics of iron are such as to make the inductance of iron cored chokes very dependent on the currents passing through their windings. Practical chokes therefore are not sufficiently accurate to be used for voltage dropping.

Capacitors however have stable values and can be used, but there are some difficulties, and it means opening up your receiver. First we have to select a suitable type of capacitor, for not all varieties can stand up to the stresses involved. Many modern plastic capacitors have microscopically thin electrode metals deposited on the dielectric and may not be capable of handling the relatively large currents. A more suitable type is the large metal cased paper capacitor. Recommendations have sometimes been given to use oil filled capacitors. This is good advice. There is no special merit in the oil itself but the capacitor is likely to have rugged electrode material. AC mains operation places considerable stresses on capacitors and I personally would not use anything with less than a 600 DC working voltage rating. **Electrolytic capacitors are completely unsuitable.**

The correct value of capacitance must be used. We cannot just add the capacitor's reactance to the receiver's resistance. A vector calculation is needed to provide the correct value. I guess that most EUG readers would prefer a ready made figure, but for calculator enthusiasts, the well known basic formula is

$$Z = \sqrt{R^2 + X_c^2}$$

where Z represents the impedance of the receiver + capacitor combination, R is the resistance of the receiver found by dividing the operating voltage (110) by the current drawn, and  $X_c$  is the reactance of the series capacitor at mains frequency.



## PRACTICAL EXAMPLES

The current consumption of the receiver may be given in its handbook or service data. In the case of the Eddystone 870 it is 190 ma so that its resistance  $R$  at 110 volts is  $110/0.19 = 578$  ohms whilst for 230 volt operation,  $Z = 230/0.19 = 1210$  ohms. Assuming we have a 3.0 mfd capacitor available  $X_c$  at 50 Hz will be 1061 ohms. Using the above formula this capacitor/receiver combination will present a load of 1208 ohms which is spot on. A larger receiver might take 250 ma. In this case our calculations would show a 4.0 mfd capacitor would be a suitable starting value.

## FINAL ADJUSTMENT ON TEST

Unfortunately, real receivers do not present a purely resistive load and we will have to determine the final value "by adjusting on test" as a manufacturer would say. The most practical method is to measure some filament voltages with the set in operation, **not forgetting all safety precautions**. Ideally, a moving iron voltmeter should be used, but a standard moving coil meter will do. Anything within 5% will be quite near enough. If the voltage is too low, add more capacitance and if it is too high, about the best method is to add some series resistance between the capacitor and the set. Use 5.0 watt wirewound resistors. It is important to keep a close watch on the capacitor. If it gets at all warm, switch off immediately or you may have an explosion as well as a damaged receiver.

I have dealt with the use of capacitors at some length, as it is a practical and traditional way of reducing power consumption but there is another method, in many ways better, and cheaper, and it requires some adjustment to the receiver, This is the use of a silicon diode in series with the receiver. Its operation is quite simple. A diode passes only one half of an AC waveform so that a load will only receive half the energy. For reasons that we need not worry about here, the DC equivalent of a rectified sinewave is equal to 0.9 of the RMS (or nominal) mains voltage. Thus the heating effect of the 230 volt current through a diode will be equivalent to  $230 \times 0.9 \times 0.5 = 103.5$  volts, a practical proposition. The current through the heater chain flows for only half the time in pulses, but the thermal inertia irons these out so that the valves operate correctly.

If we needed only to light the valves, there would be no further problem, but there is an unusual complication. A 230 volts AC supply actually has a value at the crest of each cycle of  $1.41 \times 230 = 325$  volts. Therefore the halfwave pulses presented to the anode of the receiver H.T. rectifier have peak values of 325 volts which are passed on to input filter capacitor which, if it is a reasonable size, will charge up to something well in excess of the normal 100 or so volts! So we have the situation of the filaments operating correctly, but with an excess of H.T. The best way of dealing with the problem is to insert a 5 watt resistor between the rectifier cathode and the input filter capacitor. Start with a few hundred ohms and adjust its value until the H.T. reading is correct. Type 1N4007 or similar 1 amp, 1000 PIV Diodes are only a few pence each and two in series should be very reliable, but bridge each one with a 5000 pf capacitor to absorb mains generated voltage spikes that might otherwise damage them. Remember too that they must be connected the right way round or the receiver H.T. rectifier will receive the wrong polarity voltage. Normally it will be correct if the diodes are inserted in the mains live lead with the cathode end of the diode string connecting to the receiver.

To summarise, there are at least five ways of running a 110 volt receiver from a higher voltage mains. Resistors are the cheapest and the only method for DC mains and are already built into AC/DC receivers. For AC operation there are four more efficient methods. Still the best and simplest is a transformer. Practical inductors are not accurate and would be no cheaper than a transformer. Capacitors will work, but those of the correct construction and adequate rating can be expensive. Finally, a reliable and the least expensive way is to use diodes, but the H.T. would require adjustment.

Given a choice, I would still prefer a transformer.



K 

Right, Ted, this is a sort of letter-within-a-letter. Now I find it very difficult to make comments to your list, so I choose the easy way out and present what I've found in Wireless World and leave it to you to use what you find of interest here.

- 25/9-29. There is mentioned an improved three-valve SW-receiver.  
 " A new four-valve receiver is the Scientific four, this can be had in a teak case.  
 " A new three-valve SW-receiver is introduced, metal case.
- 11/6-30. The scientific Portable Three.  
 17/9-30. The All Wave Four  
 " A four-valve kit set could be the Kilodyne Four
- 22/7-31. The Scientific Two.  
 23/9-31. The Kilodyne four  
 " The All Wave Four AC (separate power)
- 9/3-32. 1-valve superhet SW-converter.  
 27/4-32. New version of the All Wave Four  
 20/4-34. New version of the Kilodyne Four  
 " The Kilodyne Four AC
- 24/8-34. The Super Six  
 " The Sphinx  
 " The All Wave Four with crossfeeder aerial connection
- 9/8-35. The Quadradyne  
 " A 5-meter superhet is announced
- 16/8-35. An overseas model is probably The Overseas Four  
 " A new six-valve superhet 13.5-550 metres
- 23/8-35. A six-valve superhet 50-62 MHz
- 12/6-36. The All World Two
- 28/8-36. An eight valve SW-receiver must be the All World Eight ?
- 30/10-36. The Homelander  
 " The All World Four  
 " A four band crystal controlled transmitter  
 " A combined receiver and transmitter for the 5-meter band  
 " A compact two-valve transreceiver
- 3/9-37. The Eddystone ERA7

The prospect of a summer holiday last year without his 670C got James's brain working. The holiday home had no mains power at all, the only electricity around was the Mondeo 12 volt battery, and the remoteness of the site meant that there could be no chances taken on running this flat.

What were available, on loan from the workplace were some of those 10 A/H gel type lead acid batteries giving just over 12½ volts each when fully charged and on light loading. The 840A operating on its 120 volt tapping was just such a light load, less than a ½ amp. Arrangements were made to borrow 10 of these for the two weeks holiday period and they were fully charged before departure. A test at the home QTH showed that they gave more than adequate performance throughout a week of evening listening.

Installed in a plastic fruit box the battery pack could be carried easily and was installed under the table used in the holiday home for operating position. In practice they lasted to the end of the two weeks with only marginal reduction in performance during the last few hours of listening.

- - - - -

- Sale of NATO Sets ?? -

This is the second time I have been told about such goings on, so there may be something in it after all.

One member who attended an auction whilst in Brussels last September reports that a number of EB35 II and EB35 III sets had come up for sale as one lot. All looked in quite newish condition and the lot of 14 sets went for a sum equivalent to about £200 Sterling. The buyer was a Dutch radio dealer so they may come on the market soon.

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- Ultra Short Wave on Everest -

It ought to have said "courtesy of Eddystone" but did not. The occasion was the 1936 Mount Everest Expedition when Strattons Ltd supplied six Eddystone Transmitter-Receiver operating on the 5 metres band for communication between the various base and staging camps of the expedition.

The item in Popular Wireless goes on to state that reliable and consistent radio telephone communication was carried on during both daylight and after dark, even in blizzard conditions over signal paths of up to seven miles in one link. Simple dipole aerials fed by twisted feedwires were utilised and the height above ground of these aerials never exceeded fifteen feet. The batteries used were standard commercial types as sold over the counter in the U.K. One problem mentioned was the need to defrost the carbon microphones as the moisture from the speakers breath continually froze over the microphone and limited the efficiency to transfer speech from mouth to the diaphragm.

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**SHACKWAY**

Dealer in Electronic Valves, Vintage Radio, Public Address Equipments,  
Radio Components and Hardware.  
67, Church Road, Kandana, Shri Lanka.

96. 11. 25  
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The Eddystone user Group,  
c/o Eddystone Radio  
Alverchurch Road,  
Birmingham B 31 3PP

11 DEC 1996

Dear Sir,

I take this opportunity to introduce myself as one of the leading Vintage Radio and NOS popular Valves dealer in Sri Lanka. We do stock almost every type of Valve for earlier and modern communication receivers and for some transmitters. Among demanded items, tubes like 866A- 845- 801- 2A3- 1625- 4033A/L- CV1040- ACO44- 12E1- are available. Selling rates 15% below current prices in U.K, undoubtedly.

Further, we have a collection of 50 yrs old radios (U.K. made & Telefunken) valve types, communication receivers such as RCA, Eddystone, Marconi etc. Surplus spares like plug in coils, Valves, Knobs, capacitors too available.


Hence, any literature regarding Eddystone user Group world wide for our perusal is greatly appreciated. We are glad to give our support to full fill your achievements.

Thanking you,

I remain sir,

Yours faithfully,

-(( for interest only )) -

  
.....  
(Manager- Shackway)

Ted.  
I do not know of this place but  
if anybody does try him - let  
EUG know how you fare, please.  
Ted.

## - FREE MEMBERS ADVERTS -

- WANTED, to purchase by Ted Moore, have you got a GOOD EB35II or III to dispose of ??? Please write me via Jim Murphy, my mailbox. Or contact Graeme who will pass on info. Thanks.

WANTED, your Eddystone models 890,930,940,EB37,870A,and any MIMCO sets, Diecast speakers, 358 with coil packs and psu. I have a few swops so please ask. Telephone Peter on 0374-128170 at anytime, (near Leatherhead Surrey).

WANTED by Stateside EUGer, Eddystone 830 receiver in excellent condition. Any versions considered, can arrange for inspection etc; wherever receiver is located. Bruce Murray, 60 Oxford Street, Winchester, MA 01890, US of A. Phone US code + 617-729-1886. e-mail bmurray@bbn.com - thanks.

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## - My Best Xmas Present, by Ted.-

Well it was really a joint Xmas and New Year prezzie that I got from Graeme, one that I shall hope to build on as the year progresses.

What is this mysterious prezzie ? Well Graeme has discovered a real, genuine, living, Model EY11 'yachtsman' receiver in the Factory. This was apparently amongst some previously unchecked and anonymous receivers that have appeared since the move to a new Factory site.

I had to admit to Graeme that at times over the past few years I had begun to consider that somebody was playing an April Fools joke on me over this set, so little was known, nothing could be found in print, no set was available. Nice to know that it does exist.

Graeme states that the set he has found is marked as DEV0001 so it must be the original prototype set, wonder how many were made ? Anyway more in a later issue - this is just to get you all agog !!! Ted.

- - - - -

## - Right to the heart of it, the 870A that is.-

I suppose that some will debate where the heart of a receiver is, I take it as the crossover point from RF to AF- and that means the detector stage.

What happened is that this 870A was purchased from a club member at one of those so-called Swop-Meets.

The seller was honest and admitted it did not work, needed repairs, but it WAS all there - he said.

Fair enough, for a couple of pounds and an unwanted 807 valve, who could complain. Even if, when the set was opened up at home it was found that most of the circuitry around about the second detector stage was missing, or re-routed.

No clues remained of what had been intended but having

got an EUG copy of the original handbook and circuit the whole thing was rewired as per original. It took some head-scratching and about 3 full evenings of rewiring to get it done and when tested the set worked fine but needed a full re-alignment, another full evenings work for this. Now the 870A worked well and even outperformed the other Eddystone, a 670. It was 'run-in' by doing a soak test period of several hours and no problems were encountered, no observable drift on range 1 and plenty of gain in hand.

The total outlay in cash had been less than £4 (discounting the 807) and the cost of labour was put down to pleasure activities. The 870A has since been the subject of several offers including one from the previous owner ! Alan.

- - - - -  
- Isolating Condensers.-

These are the high voltage working types that isolate the AC/DC sets from their metal cases, or which isolate units plugged into the P.U. sockets of these same 'Universal' type sets.

It cannot be emphasised too much that they must be chosen with a due regard for their working voltage. As a minimum I would suggest a rating of 600 volts but would opt for a 750 volts rating if it was available. Several members have written saying that they have bought sets where these isolating condensers had - at some time during their life - been swapped for 250 or 350 volts rated units. Get it right, and be safe !!!!!!!!!!! Alan.

- - - - -  
- D1 in the EB and EC series.-

This diode is in the circuit of the first IF transformer and its reason for being may appear somewhat obscure to some of the less technical members of the Group.

What it does is to prevent overloading of the stage by damping the signal in the primary of IFT1 when a strong signal appears.

This helps the receiver to handle the strong signal and prevents that well known effect of overloading which would otherwise occur. Nothing seriously magical about it, it is a ordinary OA70 series germanium diode and I suppose that a replacement would be the OA90 which is still available at low cost.

If you need one try the Cirkit or the RS catalogue, they can also be obtained from Electrovalue by mail order.

Steve.

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## Memories of Another Age

*Bob King, G3ASE, was one of the first radio-amateurs licenced in 1946 with the new G3-plus-three callsigns. For a period he worked for Webb's Radio, the Mecca of the ham world, just off Oxford Street at the heart of the Empire. Webb's was the retail branch of Stratton, the manufacturer of Eddystone radios and Bob was an engineer in the workshops. In the late 'forties he felt the pull of another discipline and turned to teaching. By the mid-'fifties he was head of science at a large comprehensive school in St Ives, Hunts, where he set up G3MJJ as the school's radio club station.*

*Before World War Two Bob was just another teenager discovering the delights of dabbling with radio. He was soon to be swept into the whirlpool with no escape. In this, the first of a series written specially for the EUG Newsletter, he describes how he was caught up in the intrigue of espionage and Military Intelligence . . . .*

EDDYSTONE, its contribution in WWII

By Bob King G3ASE

Most people seem to get an interest in radio through a friend and I was no exception. In 1937 I tried to satisfy, with a crystal set, my insatiable curiosity into the mysteries of radio. but it wasn't until a year later that a friend showed me a booklet called, if my memory is to be trusted, "101 Tested Circuits". This book contained variations on the 0-V-1 and 1-V-1 theme. Having little cash (matching my knowledge) a chance breakthrough of a familiar voice one Sunday morning on my crystal set offered a solution. The voice was G8LV, a friend of the family and a radio dealer, who had a business about 200 yards away. Up to then I knew nothing about radio amateurs, but he had a store of old battery sets discarded in favour of the increasingly popular mains receivers. So it was that several Kolster Brandes "Pups" came my way with a very leaky battery eliminator thrown in. I had already somehow acquired a 2 volt accumulator for experiments with lighting bulbs and fusing little bits of wire, so I was in business. The K.B. Pups were my source of components and copying from the book I made two-valve short wave receivers, listening to the world in between shocks from the battery eliminator. The only necessary purchase I remember was a small coil of 'wiring up wire'. This was solid core, cotton covered and coated with green enamel. The circuits were built on a wooden base board, this latter and the K.B. intervalve transformer being the only pieces still in my possession.

After listening to broadcasts from far flung and not so far places I was aware of signals which I couldn't understand but were to lead me to the point of this story. All the circuits I made employed feedback to improve selectivity and sensitivity. When the valve was allowed to oscillate of course morse signals could be heard. In those days there was a lot of hand sent morse and it was the favoured method for 'Hams'. So I obtained a list of morse symbols, probably from a Christmas present "The Outline of Wireless" by Ralph Stranger. This may have been a pseudonym for a name I have forgotten. I read the book page by page several

times and made notes, also learning the morse a letter at a time. There were no classes then. It was up to the individual to make his own way. I tackled the morse by putting it in the dit-da-dit form and every bit of print such as adverts was transformed under my breath. I lived morse day after day until I could understand what I was hearing on short wave. First I listened to beacons and then progressed to faster signals. An assistance was to send morse to myself with a key made from the brass strip of the twin cell cycle lamp battery then in common use and a brass screw in a piece of wood. The buzzer was made from an old earphone and diaphragm. After a few weeks I was sending and receiving at 15 words, i.e. 75 letters, per minute. So most hams and many press stations were now readable to me.

War having started it was rumoured by those who had heard morse coming from G8LV's shop that he was listening to enemy submarines. I thought no more of it; one wasn't encouraged to enquire. But one day he asked me if I would like to do something useful. Being in the Auxiliary Fire Service and the Air Training Corps I thought I wasn't doing too badly but I was eager to know more.

G8LV made no further comment but a while later an Army Captain Hall called on me and asked the same question. It appeared that G8LV, knowing my morse reading ability, had proposed to the Radio Security Service that I might be useful to them. They had already rounded up most of the 1500 or so amateurs to get them listening for enemy agents and were ever on the lookout for more operators. Incidentally by this time the very few enemy agents who had been found had either been executed or were working for us. Radio amateurs had a decided advantage over commercial operators as the amateurs were used to finding weak signals under the QRM. In searching the bands for unusual signals the amateurs discovered some often weak transmissions using a strange procedure and not infrequently a very peculiar tone which suggested a makeshift transmitter. Initially the call signs were three letter and a common copy was "QSA NIL (or QSA0) QRX NEXT".

If messages were sent they were in 5 letter code and the recipient, with one exception, was on a different and perhaps far removed frequency. The exception which was important to me will be described later. It was to help in copying these signals that caused RSS to take an interest in me. After being vetted and then signing the relevant section of the Official Secrets Act I was enrolled as a Voluntary Interceptor with only a home-made receiver and no means of calibration. G8LV provided me with an Eddystone All World Two which was my first commercial receiver. Using broadcast and commercial stations as markers I was able to construct a rough frequency graph and fell to work with my allotted search band. Without the Eddystone receiver I would have been unlikely to have discovered the 'wanted' stations. My home-built receivers used reaction controlled with a 'condenser'. The Eddystone used a potentiometer in the screen grid of the pentode detector. I later added a regenerative preselector to improve sensitivity but in particular the selectivity. How many other Interceptors were using All World Twos will never be known; it would be interesting to know how many sets were sold in the U.K. There were of course many other two-valve sets and the Short Wave Two which was the mains version of the A.W.T. Many V.I.s were issued with Eddystone 358s as the superhet principle was well established at this time but expensive to buy. The reason I was not offered one may have been because I was 17 and would be called up anyway at 18.



Meanwhile I was spending most of my spare time during the anxious year of 1941 listening from 5 to 8 Mc/s (MHz) with most of my attention given to the exception referred to which was the station with the call sign ITI (or E bar). I later learned that this was transmitting from near Berlin. It called outstations 11, 22, 33 etc which replied on the same frequency or often did not reply at all. ITI sent a lot of traffic mainly on 6600Kc/s but at over 20 words per minute and these 'words' were 5 letter groups. This was an excellent opportunity for me to increase my morse speed further and probably led to the events which followed.

Why wasn't I offered an Eddystone 358? Was it because I was due for call up or perhaps because I was one of the few to be copying ITI and my services were sought elsewhere?

*BOB CONTINUES his spellbinding narrative in the next issue of the EUG Newsletter. In the meantime members can satisfy their curiosity about his war-winning Eddystone All World Two by sending for Eddystone Short Wave Manual No 3 of 1938. Its construction is fully described along with another sixteen articles of everlasting interest to the Eddystone historian. Send to Graeme, G3GGL, at the address given on the front cover of this Newsletter. Price £5 includes p & p.*

\* \* \* \* \*

HELP! HELP! HELP! (*Graeme writing . . .*) I've never hesitated to take orders for Handbooks, etc., on the 'phone, but it's finally got me into trouble. In the middle of January I collected an order from Christine in Tech Pubs for a 730/1A handbook. When I got it home I found the entry in the Order Book said "NIGEL - 730/1A". No date, no serial, no surname, no entry in the Journal. And I can't remember who Nigel is! A frantic search of the EUG Office produced a page from the telephone notepad with the same legend on it . . . Now, when I get a letter I date-stamp it, number it, enter it into the Journal, enter any orders into the Order Book, and enter any money into the Cash Book. The members' data-base, (maintained by Chris Pettitt), is in surname order with first-name initials only (with occasional exceptions). There's no Nigel but several N's . . . So the outcome of this sorry tale is: will the real NIGEL please stand up, so I may send him his 730/1A handbook! And will members please make all orders in writing from now on. The telephone is fine for a yarn and a chat, but not too reliable for serious business! Thanks, everybody. - *GRAEME G3GGL*

\* \* \* \* \*

WANTED: K.W. EZE-MATCH Aerial Tuning Unit to go with my K.W. Vanguard AM Tx.  
Call Graeme, G3GGL, 01299 40 3372 (Worcestershire).

WANTED: EC958, 770R MkII, 770U MkII, all in tip-top condition. Your price paid.  
Call Mike, 01892 852817 (East Sussex).

WANTED: Eddystone EA12 hamband Rx. Call Jack 01684 57 4968 (Worcestershire).

## RADIO RAMBLINGS

THIS EDITION'S Eddystone leaflet, the 6200 Series, far from being a piece of history is the Company's current standard Communications Receiver. It is the successor to the highly successful 1650 Series which was the Company's first microprocessor-controlled HF receiver and was in production for over a decade.

Not only is it smaller at just 3¾" high, it's also cheaper. Prices start at £2500, which for a professional receiver which fulfils stringent technical and mechanical specifications, far beyond the 'black box' standards, is quite a snip. Any well-heeled SWL looking for something a little different, easy to use, which will last for ever and is Made in England could do a lot worse than this. Just one point, most users rack-mount, so the cabinet is an optional extra . . .

**EUG HAMS' 80-METRE NET.** This month's report covers two sessions, the Christmas and the New Year Nets. As a result it's a longer account than previously (which only covered the first Net) and runs to no less than six pages. Now as far as I can determine from records (which may or may not be accurate) our membership, which is still hovering around the 300 mark, consist of about 150 SWLs, 75 Class 'B' Hams (VHF only) and 75 Class "A" (all bands). The numbers joining in the chat sessions are about ten each month (including those who try but don't get heard by Net Control.

We don't know how many listen; reports are increasing but they're not a lot. Which brings us to the question: Should we actually be doing all these sparkling, witty write-ups when only a small minority of members are directly involved? Should it be a simple statement of fact: that so-and-so came on the air, and this could fill two lines, or it could give more details of stations (especially, say, the aerials used). Let us know your views (to Ted (via Jim) or Graeme) and we'll take notice.

**APOLOGY CORNER.** In the last issue of the EUG Newsletter I put in a note about EUGers on Packet. I explained how Graham, G8UYD, is now on Packet @GB7HVU and has volunteered to set up a database of EUG Packeteers for inclusion in the Newsletter. So far so good. Then I invited interested members to have a chat with him on the blower and then gave his **WRONG NUMBER!!** Graham can be reached on 01254 682351 (Blackburn, Lancs) Sorry, grovel, sorry, Graham. - Graeme.

FOR SALE: 680X; very nice condition, £100. 4kva isolation transformer, £100. Further details from Peter Lewis, Mi0APE, 0126 42167 (N. Ireland)

FOR SALE: 670C; details from Geoff G8RCZ, 01392 432739 (Exeter)

FOR SALE: 1830, solid state successor to 830; good condx with original handbook, £175. KW77 ham-bands only Rx, KW's answer to the 888, virtually mint, handbook, £75. Racal RA17 table-top model in case. handbook, also virtually mint, £150. Also an Aldis Lamp in wooden case, works OK, anyone interested at £30? (below) . . .

WANTED: grey or green case for EC10/EB35, also two 5" speakers for same. Still looking for a 960! Anthony, 01686 630255 (Montgomery, Powis)

FOR SALE: EC10 MkII, £80; call Paul G1KIV on 01584 881221 (Worcestershire)

## **REPORTS ON EUG 80m NETS**

*by Graeme - G3GGL*

*1st December 1996 - XMAS NET*

At last I was able to make THE NET, after being away from home for the opening round in November. - at least I nearly did. I was just stepping out of the shower when I saw the bathroom clock (all radiomen have clocks in the bathroom, don't they?) - the bathroom clock pointed to one minute past ten! Panic set in as the towel was applied, clothes thrown on, and a mad scramble into the shack. Fortunately the rig was switched on. It's a Trio TS-530S, 1981 vintage, the last one with valves in the driver and PA, with knobs you can get hold of and proper tuning controls for the pi-filter, but with the convenience of a digital readout.

The 80 metre aerial is a full-wave loop (a quad) running horizontally round the garden about 20 feet up with a circumference of 275 feet. It's an attempt to follow the old hams' adage of get out as much wire as possible for a given site. There's not enough room for a 132-foot dipole, the quad takes less linear space but needs more poles (actually one of them's a telephone pole but BT haven't noticed the bit of nylon fishing line hooked over the top footrest). Not much good for DX; the ARRL Antenna Book calls it a 'cloud-warmer'! But excellent for 'short-range' sky-wave; up to about 400 miles, which is all we're talking about on this Island of ours.

The '530 drives it via 15 feet of 50-ohm co-ax as it passes by the shack window (it's a bungalow). So there was ANTHONY, GW4RYK (God bless him!) at R5/S9 calling "EUG" and working BILL, GW0IOM (R5/S7), who passed the mic to HANS, DJ3DB, an old friend visting him in Newport. Hans is the former Eddystone agent in Hamburg who used to look after the arrangements for the Company's marine equipment in that giant seaport. He listens on an Eddystone Model 1837 in Hamburg. They gave a pause for any callers and in I jumped. Success. Hans accused me of using a linear! (And me a fully paid-up member of the G-QRP Club, as well.) Actually I suppose the 530 runs about 200 watts p.e.p. into the quad, so it seems to be throwing it out OK. (Actually I must admit at this point that I usually only go on the air about three times a year.)

The Net continued until 11.45 and during the course of it we were joined by CHRIS, G4LGF (R5/S9), in Trowbridge, Wilts; ROD, G3ZEH (R5/S9), in Lowestoft, on the Suffolk coast; WALTER, G0VKN (R3/S6), in Plymouth; and KEITH, GW4AZI (R5/S9), on the Gower peninsular, 14 miles west of Swansea.

Conditions started off a bit iffy, with Dutch and German splatter making a mess of some of it, but this eased off after a while and the channel became clear for the last half-hour. We have to remember that optimum skip (the distance from the transmitter at which the strongest signal is reflected back to earth) is a very variable commodity, depending on the nature of the transmitting aerial, time of day, season, and electromagnetic radiation from the sun. This means that the reports given are usually

'the best heard' and different people will be hearing different things. We had two listener reports from members; first of all RON reports from Cumberland, about four miles south of Hadrian's Wall:-

E.U.G. 80 MTR NET REPORT 01-12-1996

From Ron Drew, G8URU 2.46 W, 55.4N

Equipment RACAL RA17 with  
RACAL RA121A Independent Side Band Adaptor  
Aerial !! approximately 200ft, heading roughly North/South,  
never more than 20ft above ground.

(Sorry folks. the EC958 has an intermittent in its Master Osc.)

10.00 Heard LA6WA working W4AG, both R4, S5, at this time the Band was wide open and busy.

10.20 Located the Net 3790 kc/s and heard, (not necessarily in order):-

G3GGL R5/S9; GW4RYK R5/S9; GW4LGF R4/S4; GW/DJ3DB R4/S4;  
G3ZEH R5/S9; GOZKH R3/S3; G4AZI R5/S9; GW4DWK R4/S5;  
GW0GEI R4/S5.

The QRM from mainly DL's was very bad, clearly a symptom of too much and unnecessary power, coupled with poor operating technique, particularly tuning on-air and not listening before transmitting. There was a G station operating about 5kc/s below the Net spreading about 6kc/s either side, again with far too much power.

One small criticism of some of you: please could you net more accurately, one of you was at least 500c/s high, which on SSB means retuning or using RIT. Fortunately, the RA121 has a fine means of giving up to +/-5kc/s offset. (Who needs all these oriental black boxes? - safe-crackers' fingers will outclass semiconductors HI)

The Net closed at about 11.40 and, strange to say, the band also went quiet about the same time; Graeme, G3GGL had dropped to R5/S7.

I enjoyed listening to you all, and will be there again on January 5th, all being well. When I can crack the Morse I will be there in person.

Ron J. Drew.

Many thanks, Ron, and good luck with the Morse classes! The next report comes from EUG-SWL Jack Read from Nantwich in Cheshire. Jack writes:-

"This is not a 'reception report' in the proper sense, but just a note to let you know I enjoyed your dulcet tones on both the 3rd Nov. and 1st Dec. Eddystone Net.

My setup, which is more amateurish than 'amateur', for the

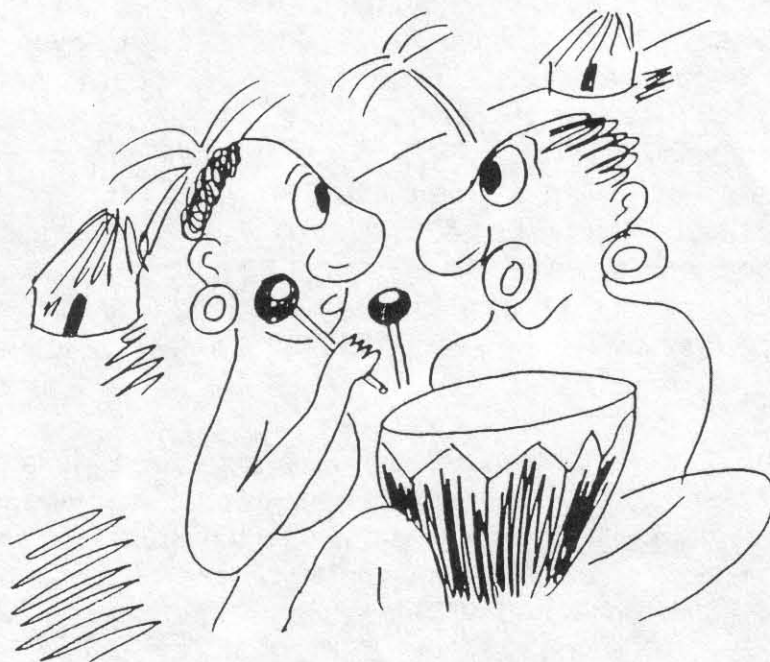
first occasion was my 830/8 and a long wire between the chimney pots. 10.00 to 10.30 was OK; lots of QRM but readable. I don't know the SINPO code\*, or even if it still exists; a max of about 2 on the meter. After 10.30 the Hispanics came in with their mega-burners and that was that! Is there no control over these people? (It may still be a question of skip distance; WE may have been blowing THEM out of the sky! - Graeme)

For 1st December I used my EA12 with my ex-Anchor Surplus, ex-Land Rover, army vertical whip, with rubber doughnut mounting containing a broadband matching transformer, plus three radial wires laid out on the front lawn. Again about 2 on the meter, but excellent readability, courtesy of the slot filter and using the selectivity down to CW rather than SSB.

Best of all was that, presuming that you were right on 3.790, both receivers were calibrated spot on, which was very pleasing. Keep up the good work. Next month I will use my 730/4 with phaseable crystal and see how it goes . . . "

Many thanks, Jack, keep the reports a-rolling; and that goes for everybody. Come on, folks! Up bright and early on the First Sunday and get those reports in!

*\*The SINPO code isn't used by hams, only for SWL broadcast station reports. Hams use the R/S code where R=readability (1-5) and S=signal strength (1-9). In the old days it used to be called the Q/R code, as in "You're coming in here Q5 and R9, fine business" where Q stood for readability (hence the BC453 Q-fiver) and R stood for signal strength (hence the S-meter on the early HRO being labelled "R" instead of "S") Very confusing! Maybe one of our Transatlantic members can explain the history of that one. - Graeme*



". . . . 'Mbonga-'Mbonga only gibben us S3 . . . ."

## *Report on the NEW YEAR Net 5th January 1997*

The New Year dawned very seasonal, one of the coldest for many years and Two Metres going up and down like a yo-yo with the high pressure. Anthony, GW3RYK, had telephoned me to say that he would be away with friends at Aberdovey this weekend and although he was taking his ICOM 735 with him, the aerial would just be a piece of wire through a window . . . could I take over his place as Net Controller as he didn't expect to be up to his usual form. That meant no messing around in the bathroom like last month! In correspondence with EUGers I had been canvassing my AM capability and one or two brave souls had offered to use the mode. We were also scheduled to come up on our new frequency of 3695 (+/- QRM). The day dawned with lots of low cumulus and peeks of blue sky. At 10.00 I called CQ EUG.

The first to reply was Stan, G3IJW, down in Bexley, Kent, with a splendid 5/9 using a 100ft inverted L aerial. Stan says he's got a Heathkit DX40 AM Tx hidden away somewhere; get it out, dear boy! Lets hear it . . . but have you got the VFO to go with it? Next came Antony, GW4RYK/P from his weekend away in Aberdovey; 5 & 8 with me, a little down on his home QTH but others had more trouble with him. Then came a new callsign on the Net, G3TVM, David in Cambridge, 5 & 9 plus-plus with me. Other new calls were: Dave, G0SKE, near Diss, Norfolk, 5/9; Richard, G4ICP, near Colchester, 5/9; and Tom, GW3LJS, in Carmarthen, 5/9; all very good. A 'foreigner' who called in was Mike, G3UJU from Salisbury, who heard all the vintage chat and wanted to know where to get a manual on a Drake TR7! We told him.

Then, after long chats all round, the time came for me to turn the clock back with the 1958 K.W. Vanguard AM Tx. This rig uses a Geloso Signal Shifter, a very popular ready-made VFO of the day from the land of Marconi; a five band (10-80m) unit with Top Band option, using a 6J5 oscillator, 6AU6 buffer, and 6V6 driver. This would drive an 807 or, in this case, a QV06-20 (aka 6146) to full input of around 50 watts in Class-C, giving a 30 watt carrier going up to 45 watts on modulation peaks. The modulator is a crystal mic into a 6BR7 pentode amplifier feeding a 12AX7 (aka ECC83) phase-splitter driving a pair of 6L6s in Class-AB. So the size of one sideband would be about 10 watts pep compared with the 200 watts of the Trio 530. Say 13dB or two S-points down. It weighs in at 60 pounds and is in a table-top 19" rack cabinet, 10½" high and 11" deep. It was considered very light and compact in its day! Doesn't the old hollow-state jargon trip off the tongue! But never mind all that techno-babble; did it work?

Yes, it did. Reports were "OK" from Stan, "Very good" from Richard and Tom, "5/7" from Dave and Mike, "Poor" from Anthony (well, what can you expect from a bit of wire in Aberdovey?). And then came what must be the call of the century. One of our members, John St Leger, near Okehampton, Devon, first went on the air in 1952 from Bahrain in the Persian Gulf as MP4BBE. While he was there he built himself a CW rig with twin 807s in 1956 and is STILL USING IT, 40 years later. What's more, in 1959 he lashed out on an Eddystone 888A hambander, AND HE'S STILL USING THAT! He returned to England in 1965 to become G3VDL and for the past 25 years has worked CW only; 266 countries (253 of them confirmed). His QSL card has a

super photo of a typical homebrew station of the 'fifties with the 888A in pride of place, it bears the slogan "NO BLACK BOXES AT G3VDL". Is this a record?

Well, on 5th January he found a modulator and came on the EUG Net with AM. He was only 5/6 with me, which is strange as he was using a genuine Long Wire, all 400 feet of it and he gave me 5/9. I reserve judgment on that one as the laws of reciprocity should dictate otherwise. We'll be looking out for you again, John, keep it up!

Ok, then, let's get to some other reports . . . The first one came in just three hours after the Net closed down; a ring at the doorbell heralded Colin, G4HNN, and his XYL Liz from Edgbaston, about 20 miles east of here. Colin, who is at present QRT due to lack of aerials in a very built-up area, was brandishing an audio cassette. "Here you are, a recording of the Net taken this morning from my 730/4". And it was too! I've never listened to a tape of a QSO before, talk about bedlam! But seriously, though, it was of the greatest interest and a great lesson in procedure. Fortunately my signal was pretty readable most of the time, although obviously coming in from skywave (a little QSB) with no groundwave (no phase distortion). Some stations, which I was obviously reading (as I gave sensible replies) were very difficult at Colin's QTH; the background noise kept rising to a huge crescendo. (The tribulations of a heavily populated area with everybody DIYing on Sunday?). Thank you very much, Colin.

One of our newer members, Gordon G3NTA from Whitby, wrote to acknowledge the receipt of a handbook for his 830/7 and said he used it to monitor the net using his telephone line as a 'long wire'aerial. Wow! I've never thought of that one. He gave me R4/5 and S2/3 on both SSB and AM but no report for the others. Maybe they're not on the 'phone . . .

One member (name lost to mind, sorry) telephoned to say he had been listening but that by the time I tested the AM rig his QRM level was very high due to band overpopulation (I think this will always be a problem on Sunday mornings). He asked if I could give AM tests a little earlier, at 09.45 - 10.00, before the SSB session. He reckons fewer people have got their rigs on at that time. I'm sure he's right, so from now on I'll do a chatting test at 09.45, particularly for SWL members using earlier Eddystone sets which aren't too easy to use on SSB.

Ron, G8URU, gives another comprehensive report from just South of the Border with more observations and advice. Just one thing; look at his reports of stations' S-levels, note myself and Tom, GW3LJS (Carmarthen). And then say "what sort of an aerial is Tom using". Because that's the only thing that can explain the terrific variations - or is it! Here we go:-

#### RACAL RA17 with RA121A Independent Sideband Adaptor

For those who do not know it, the RA121A is an additional adaptor which accepts a 100kc/s input and produces two independent sidebands, generally used with a reduced pilot carrier so that both sidebands can be used separately. In this mode there is some automatic frequency control, with a small

CRT for accurate tuning. With suppressed carrier (SSB) it behaves like any other SSB Rx, except that an offset of around +/- 4kc/s is available; it is a very rare item to RACAL collectors. (*Don't these Racal Users rattle on about their sets!*)

(Sorry folks, the EC958 still has an intermittent in its Master Osc. BUT I'M WORKING ON IT.) (*I should hope so too - Graeme*)

10.01 Found the Net at 3.695 mc/s suffering badly from QRM from two G3's in Newcastle and Scarborough 1kc/s down, obviously using full power, who were on until 10.45 without a pause for breath! How can the "new boys" ever learn good operating practice when they hear such as this?

Here is the report, there was slow QSB throughout, so these are the best results and some are really only there because Graeme was in contact with them and I only got snatches of the QSO due to the previously mentioned QRM. Not in any order.

G3GGL 5/9+	G3IJW 3/3	G3TVM 3/3	GOSKE 2/3
G4ICP 1/1	GW3LJS 5/9	G3UJU 1/1	GW4RYK/P 3/3

G3GGL on AM was 3/3 to 5/6; G3VDL heard on AM but not for long enough to give a sensible report. An interesting effect was noted on Graeme's AM Tx: the lower sideband was at least 3dB better than the upper sideband; as far as I am aware the RA121 is in balance. It does, however, confirm that the male voice pattern is not balanced as is the female voice (an Audiologist (?) can explain this), but it should mean that if you can get the correct number of phase inversions between the microphone and the modulator, you could gain an extra few dB's of punch! Now there's a subject for discussion or even a letter to the Daily Mail, Graeme. (*Cheeky so-and-so*).

By the way, our ex-colonial friends across the Pond have been pounding in on 80m at certain times of day, but I've not heard many G's (or M's) working them; it's usually our Continental partners who are in QSO.

Here's an EC958 tip: if you find your IF Gain Control is too fierce, replace the 47k resistor just behind it with a higher value. There should be no more than -3V on the junction of the R and the pot. RV5 is the pot. R248 is the R.

Well, thank you, RON, that's quite a dissertation. Now today I had a phone call from an EUG-SWLER in Sheffield who was telling me that he's been building a general coverage Rx, solid state, and he's got it up and running. He listened to the Net and heard my AM much better than my SSB! There must be a lesson to be learned somewhere . . .

\* Well, that just about completes Net reports; the next one on Sunday 2nd February will have happened by the time you read this, but the reports will have to wait for the next Newsletter. Remember, until further notice, there will be an AM pre-amble at 09.45 for 15 mins before the SSB Net. 3695kc/s - keep it rolling. GRAEME - G3GGL

\* SEE 'STOP PRESS' REPORT, PAGE 40.



- Dial Glasses, Both types !-

I guess that there are basically two types of dial glass utilised in the Eddystone range of receivers. You have the plain glass sheet type, as per the 640 or say the 940. Then you have the glass with the printed on scales as say in the EB or EC series of receivers.

For type one, plain glass, there has never been any problem you just get the exact, repeat EXACT dimensions and trot off to a glass dealer, get him to cut you a piece for pennies and Abracadabra, your problem is solved.

Type Two now is not so easy. In fact it is far from easy at all. The only possible source is Centre Electronics who just might have the one you want, alternatively an advert in the N/L for somebody with a scrap set might get you the one you need. These glasses with the scales printed on have always been a problem for us EUGers and what makes it worse is that there are so many different ones. Take the EB series as a prime example. There are the EB35, the EB35 II, the EB35S (for stereo), and the EB35 III. Then we have the EB36 and the EB37.

All of the above have different scales on the glass, if you compute the chances of finding the right one it must be akin to winning the lottery. Somebody told me this is one chance in a quarter of a million years !!!

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- A chance find ? A lucky find !-

At a recent rally on one stall where he was browsing David spotted a small 3 gang variable condenser. Now these are pretty rare, although the two gang version do often turn up on junk stalls.

David felt intrigued because he was certain that this particular 3 ganger looked familiar, very familiar. He would have bought it anyway as such 3 gangers always come in useful - but this one had something about it that David just had to cough up the asking price of £2.50.

When he got home and was able to do some comparisons he was proven right, it was not just familiar it was the identical part as fitted to his EC10 !

Given that the component still was wrapped in corrugated cardboard and bore a part number David was able to compare with the manual for his EC10 and YES it was the correct one.

Whilst there is no need for it at present David is very happy to have it up on the shelf together with several spare OC171s and a spare IF transformer. The makings of a survival kit for his only Eddystone, only receiver for that matter.

He says in his letter that this does show that you must attend rallies and must keep your eyes open, many bits are there and even the seller may not know what the item is for, or from. This was apparently the case here and David is certain that had the seller known what this 3 ganger came from, then the price would have gone up considerably.

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- ENDIT - ENDIT - ENDIT -

That is it again, hope you got a good read out of your newsletter. Keep your mail and any contributions long or short coming in please. Send them to Graeme or to Jim for onward transmission to me. Once again, PLEASE all ADMIN stuff and SUBS to Graeme, items for the N/L are best sent to JIM to limit the stuff Graeme has to sort through. There really is alot of work involved in running EUG and it doesn't help you or us if you write or fax the Company ! In fact it makes for more work and increased costs for EUG, also means that your query gets DELAYED not rushed through. Graeme and JIM really do work very hard for us all so please try to co-operate and be patient when there are delays. 73, Ted.

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Don't miss it !!!

- Next Issue Featured Model - The Edometer. -

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P.S.- This is a super ginormous sized Issue, sorry Pat & Christine, shall try to keep it down in future ! I apologise for the extra workload, Ted.

### **STOP PRESS - STOP PRESS - STOP PRESS - STOP PRESS - STOP PRESS**

**DATELINE SUNDAY, 2nd FEBRUARY 1997, SUBJECT: EUG 80 METER NET**

*During the EUG NET this morning, held under conditions of extreme difficulty due to one of the French Fone Contests being in full cry, EUG Members decided to hold a net on the First Thursday of every month. If this is a success and members so desire, it will replace the established First Sunday Net. For the time being, until members have had time to respond, both Nets will take place.*

**BOTH NETS WILL BE AT THE SAME TIMES: AM testing at 09.45, SSB at 10.00 (Local Time)**

***The Thursday Nets will take place on 6th FEB - 6th MAR - 3rd APR - 1st MAY***

***The Sunday Nets will Take place on 2nd MAR - 6th APR - 4th MAY***

***The situation will be reviewed in the next Newsletter; send your reports and ideas to Graeme, G3GGL.***

LATE MEMBER'S ADVERT - FOR SALE OR EXCHANGE: Eddystone Models EA12, 880/2, 730/4, 770R. Hammarlund HQ170A; KW 204 SSB Tx, KW 201 hamband Rx; Back issues of RadCom, mint (1950's-1990's); many radio handbooks: RSGB,ARRL, F.J.Camm, Terman, plus many others; also computer software (not radio-related). Call SIMON for details 01434 633 913 (N'umb'land)