

Lighthouse

The Magazine of
The Eddystone User Group

Issue 64

Christmas 2000



Christmas Special

Season's Greetings to all our Readers

EDDYSTONE USER GROUP

A non-profit-making group for Eddystone Radio Enthusiasts

Founded in 1990 by Ted Moore

Issue 64. Christmas 2000

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(Continued in next column . . >>>>)

DIECAST FEET AND SPEAKER ENCLOSURES

I have noticed that there is an interest among
EUG members in the above items. If there is
sufficient demand it may be possible to have
some made. If interested members would like to
contact me I will look into the matter.

Mr W J L Stuart

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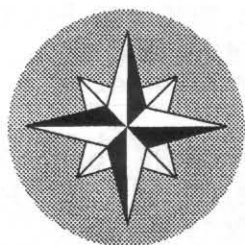
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LIGHTHOUSE

Welcome to the Christmas 2000 issue of Lighthouse. Knowing Graeme he will have made it a bumper issue for us all. I have not heard anything in the past couple of months of any new goings on at the Eddystone factory, but I do know that their Sales Director Les Crompton has been putting in a lot of time out east this year.

I was pleased to see in the last issue of 'Lighthouse' that EUGer David Oakden, G3UFO/VK6DJO, was scanning all our Newsletters to offer on CD-ROM to our members. As I sit here typing this out in my "office" at home I am surrounded by shelves of Radcoms, QST's, BBC Music mags and other sundry magazines. Most of these are now available on CD-ROM and it does make a lot of sense when the paper versions hardly ever get looked at again. Well done David! (*see next page - Graeme*).

I meant to mention last time that I had won my planning appeal for a mast in the back garden. I have let Graeme have a short article on my experiences which he might have tucked away in a corner of 'Lighthouse'. Anyway I have now acquired an ex army 40ft pneumatic pump-up mast which I can raise on the days I need to.

Graeme tells me he is going to insert the Eddystone leaflet on the XE10 FM VHF Transmitter series. This has a bit of history behind it. We had been very successful with the BBC-designed FM equipment for the major broadcasters such as the BBC and IBA. In 1989/90 the government announced that they were going to

allow community broadcasting running up to 10watts. Our ex BBC product was too expensive for this market. I did a deal with another company who had designed a stereo coder, FM exciter (drive) and 10w amplifier. This company was called Phoenix and was staffed by two very enthusiastic young engineers who had been on the periphery of the pirate music scene of the 80's. The company specialised in Restricted Service Licenses which was broadcasting at special events such as pop festivals, sporting events etc. We expected to sell hundreds of these products but the community radio scene never got off the ground. However it did form the basis for the very successful XE15 stereo drive which powered our B6600 series FM transmitters from the mid 90's to the present day. The last time I heard of the young engineers from Phoenix was that one was part of a successful broadcast supplier called Radica and the other had gone off to get a degree in Norwegian history. Great guys, it was always a pleasure working with them.

At work I recently changed offices to something a little larger and decided that it was time to get my old 1570/1 LF/MF/SW/FM set out so that I could listen to the news at lunch time and perhaps do a bit of SWLing. I don't know how many were sold but I never see any on the second hand market. Anyway it is a bit of Eddystone history that I can use everyday.

My best 73's

Chris Pettitt - GØEYO

Patron (chris@g0eyo.freeserve.co.uk)

Eddystone User Group Newsletters and Lighthouse on 'CD'

I recently bought a complete set of the ARRL magazine on CD ROM - These take me back to 1915 !!. I had thought for quite a while that I would like to save my EUGN's on CD but couldn't afford the price being asked for a copy of ADOBE Writer©. ADOBE© seems to be the most favoured media for storing large volumes of printed matter and the reader is available *freely* off the Internet. RSGB RADCOM on CD is also in this format.

No expense spared, whilst visiting relatives in 'VK6' a friend of mine purchased a copy of ADOBE Writer for me, for my Christmas present (1999). Due to family sickness I was unable to do anything with it until about June - when for a bit of fun I did a few sample CD's and sent them to Graeme. The rest is history, as the saying goes.

The CD's are **NOT** professionally produced - just straightforward scanning from my copies of EUGN (Lighthouse) back to issue 43, and prior to that back to issue one from a copy that Graeme kindly loaned me.

The good news -- All issues have been scanned + supplements and Index issues. + Leaflets in colour!!!

The bad news - Some of the copies scanned are very poor in quality - especially the earlier issues - I have done my best. Only Vols 2, 3, & 4 are indexed. The rest are not

indexed on the disk - you will have to print the indexes out from CD1.

What is on the disks:- Thought you would ask!! The disks (to go with current thinking) are labelled 'Lighthouse' Volumes 1 to 8. A reader is available on each volume. Please remember early EUGN's had fewer pages in them.

LIGHTHOUSE Volume 1
Q(quick) R(eference) G(uide)
1998. Quick Reference Guide
2000. Post War Servicing
1946-1956
Eddystone Company Advertising
Leaflets
**Index Vol 1-42, 43-48, 49-54,
55-60.**

LIGHTHOUSE Volume 2
EUGN 55-60 Index.
EUGN 55, EUGN 56, EUGN
57, EUGN 58 (No Supplement),
EUGN 59, EUGN 60

LIGHTHOUSE Volume 3
EUGN 49-54 Index.
EUGN 49, EUGN 50, EUGN
51, EUGN 52, EUGN 53,
EUGN 54.

LIGHTHOUSE Volume 4
EUGN 43-48 Index.
EUGN 43, EUGN 44, EUGN
45, EUGN 46, EUGN 47,
EUGN 48.

LIGHTHOUSE Volume 5
EUGN 37, EUGN 38, EUGN
39, EUGN 40, EUGN 41,
EUGN 42. **No Index**

LIGHTHOUSE Volume 6
EUGN 31, EUGN 32, EUGN
33, EUGN 34, EUGN 35,
EUGN 36, **No Index**

LIGHTHOUSE Volume 7
EUGN 16, EUGN 17, EUGN
18, EUGN 19, EUGN 20,
EUGN 21, EUGN 22, EUGN
23, EUGN 24, EUGN 25,
EUGN 26, EUGN 27, EUGN
28, EUGN 29, EUGN 30. +
Supplement to EUGN 20.
No Index

LIGHTHOUSE Volume 8
EUGN 01, EUGN 02, EUGN
03, EUGN 04, EUGN 05,
EUGN 06, EUGN 07, EUGN
08, EUGN 09, EUGN 10,
EUGN 11, EUGN 12, EUGN
13, EUGN 14, EUGN 15.
Index EUGN 01-06

LIGHTHOUSE Volume 9 -
Available November 2001 - It
is already in preparation with
Lighthouse 61, 62, and 63
prepared.

As the Eddystone User Group is a non-profit organisation, the discs will be available in sets or as single items .

The cost per disk will be £5 each inland; £6 overseas. (This includes p & p).

Place your order (cheques payable to 'EUG') through Graeme Wormald, who will send me the necessary information for sending you the disks. Delivery - normally within 7 days of Graeme receiving the order.

David Oakden
G3UFO/VK6DJO

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Eddystone User Group

Issue 64, Christmas 2000



Founded and Presented
by TED MOORE

Formatting and distribution by
Graeme Wormald G3GGL

Computer processing by
Simon Robinson M5POO

TED's MAILBOX

Christmas Issue

Christmas again! Another bumper issue too! Several letters received complimenting us on the Index sent out with the last issue, sorry, all compliments and thanks must go to Anthony GW4RYK, who does the hard work for this ALONE. May I add my thanks too. Since the very first Index came to us from Anthony I have found them invaluable, although I do miss those whole evenings spent stretched out on the floor going through a myriad of past Newsletters looking for one

particular required item. Thanks, Anthony, from all Eugers.

The EA12

James has written in to say that in the six years that he has been enjoying ownership of his EA12 he has never before realised that it is not quite a standard set.

The recent article in 'Radio Bygones' magazine with a colour photograph of the EA12 on the front cover has shown him that whereas that on the RB mag has 'squared off' section chrome handles, the set which James owns has the older (?) rounded type. Also the knobs on the cover photo EA12 have grey skirts and centre discs whereas the set in James shack has all black knobs. His set has a model/serial number plate with the model type stamped on, out no serial at all, not even one of those PP numbers so often mentioned by Graeme.

He has never had a need to open it up but has just done so out of curiosity, it was surprisingly clean inside for such an old set and close inspection reveals that there is a variety of manufacturers valves fitted. No doubt by some previous owner. These range from CV types to Mullard, Philips, and a Pinnacle ECC83. The under-chassis appears

to conform with the photo shown in RB and since the set works well James has no desire to delve any further. It is once more boxed up and working on an almost daily basis. Whilst the shack also has a Trio R600 for general listening the EA 12 is favoured for amateur listening because of James's preference for the 'readout' where he particularly likes the large scales and the silky smooth tuning. His old WD phones are of 600 ohms impedance and have a much crisper response on the EA12 than on the R600, which may have been designed for lower Z phones.

TED.

A Job Lot

At the Leicester show a couple of months back this Euger was fortunate in being able to purchase a box of miscellaneous control knobs, some fifty of them in all shapes and sizes.

The welcome surprise is that upon close inspection eleven of these knobs are of Eddystone manufacture! Quite a bonus for a mere five pounds. One set of two in particular, they are in as new condition and have now been fitted to his old 840 set. Having paid out a Fiver for eleven Eddystone knobs was good luck but having found a perfect pair to replace those

tired looking Range and Tuning knobs has made his day. It pays to look carefully at all such offers on stalls which would not usually be expected to provide Eddystone goodies. He recalls that last year at the NEC he was able to buy a loose meter which upon closer examination proved to be from one of those S.669 diecast S-meter modules. He is now considering ways of replicating the diecast case so that a complete unit may be made up.

TED.

Bob? Bob who???

It does make things very difficult for Graeme and I when we get a letter such as that which arrived last week. This was asking for help with clearing up a fault on a 740 where there was considerable drifting on all bands.

Fine, except that the letter was signed just **Bob** and nothing else. No surname and no address. I have several Bobs on my list and cannot match up the handwriting to any of their previous letters. So please Bob, if you still want a reply to your letter then do write again with a bit more of an ID, I am not psychic.

This has happened before, several times. So if you have never had a reply to a letter sent to me, or

anybody else, then do think back a bit — did you include an address???

TED

Update on the 1837

The item on page 4 of the August Issue of tLighthouse mentions the Marconi Pacific X version which is the Eddystone 1837/1FS. Henry states that this set has different filters and was used on board ship for reception of Telegraphy by the Frequency Shift method. He also says that the blown C42 is a common problem which can be cured by uprating the specified Working Voltage when a new 'tant' condenser is fitted. Henry has used 35 VDC types in the past and has had no recurrence of this fault on both of the 1837 sets which he owns.

TED.

"Transatlantic Reception Guaranteed"

Reading the original text as reproduced in Issue 62 for the Eddystone Atlantic Two, makes Ian wonder whether any Company could nowadays offer such a cast-iron guarantee that their receiver would receive any specific station?

That Eddystone could state unequivocally that "each receiver

must receive KDKA and 2XAF before despatch" would have quite a few customers returning their sets and asking for their money back.

Ian asks have reception conditions changed so much since the 1920s and 30s? He is much too young to remember such things and yet his father often asserts that reception on short wave was crystal (!) clear in those days with little, if any, noise and interference. Surely, he asks, they must have had ionospheric storms and the like back then? Or is this the familiar case of Ian's Dad remembering only the good days and forgetting the bad?

Being a city-dweller himself Ian's reception is marred by every electronic device under the sun and of the Sun when it misbehaves!

TED.

The Old 740

Whilst perusing the latest opus from Graeme, the QRG, Jim spotted the illustration of a 740 on page 5. This brought back happy memories of the 740-which he owned in the 1970s and which was only disposed of when student finances at university became a bit strained. He never had the chance to operate this set on much more than a length of wire hanging from a third story

window but the results then were sufficient to have hooked him onto SW listening ever since. After a series of Oriental models he is now, having seen the 740 illustration, looking around for another Eddystone, possibly one of the later 'slide-rule' scaled types. He has an offer of an 830 and is now saving madly to get the required purchase price. (Jim — thanks for your letter. However you are not an EUG member are you? So where did you read Graeme's QRG? And why not join EUG?).

TED.

NDBs are Alive & Well

There may not be so many NDBs operating in the UK but abroad they seem to be in continued use. Tony has moved to a QTH in GM-land, on the East Coast near Lossiemouth.

During the six month period since getting his shack set up and operating he has bagged a total of 183 NDBs, both Marine and Aero types. His eighty foot long random wire aerial is run from the chimney stack in a slightly south of east direction and the far end is anchored to a now disused telegraph pole which BT have apparently disowned. The equipment in use consists of an 830/7 and an even older HRO Senior,

either of which can be switched onto the aerial as required. He comments that internal noise is always the limiting factor when Dxing beacons with the HH0 as the 2.5 volt glass valves (*tubes?*) are notoriously noisy. The former USSR states appear to have made no change in their use of beacons and that the same old familiar signals are heard from most of Scandinavia. Several of the Oil rigs in the North Sea are still operating NDBs even though they are by now using much more sophisticated equipment themselves. The use of beacons in Holland and Germany is reduced but there are still many available. Despite the unfavourable directivity of his aerial he has heard a fair number in France, Spain and Portugal plus one or two in North Africa.

He is determined to up his score to 200 at least before going after other 'utility' stations.

TED.

The 840A and 840C

Having bought a nice looking 840A recently this EUGer now has the two versions of the 840 sitting side by side on his operating table. This has provided the possibility of him being able to compare the two sets. For looks the 'C' version definitely wins out but for

performance the 'A' version seems to have the edge. Both sets had been given whatever TLC was possible and had been re-valved several months previous, so they ought in theory to have been pretty much in the same condition for this comparison.

Selectivity proves to be very much better on the older 840A and this is most noticeable on the forty metres band. The later 840C has the better of the 840A when it comes to gain at around 28 Mc/s, and it is much quieter too on this band.

Stability of both sets is quite acceptable although after a long operating period the 840A was still spot on 15Mc/s. The 840C had drifted up to a hundred cycles or more. Whether this was the local oscillator or BFO was not ascertained.

TED.

More on DAB

Apropos my comments in recent issues regarding DAB and its lack of usage by the general population. And my comments in the last issue about 'other' uses for the almost countrywide transmitter network:

A letter has arrived this past week from one member who, just maybe,

knows more about the system than most of us.

It seems that the information transmission capabilities, he calls it the 'bit-rate', of the DAB network are far and away higher than even the Internet, and that this predisposes the network to being utilised for many other purposes besides audio broadcasting and the few station-related messages which it carries.

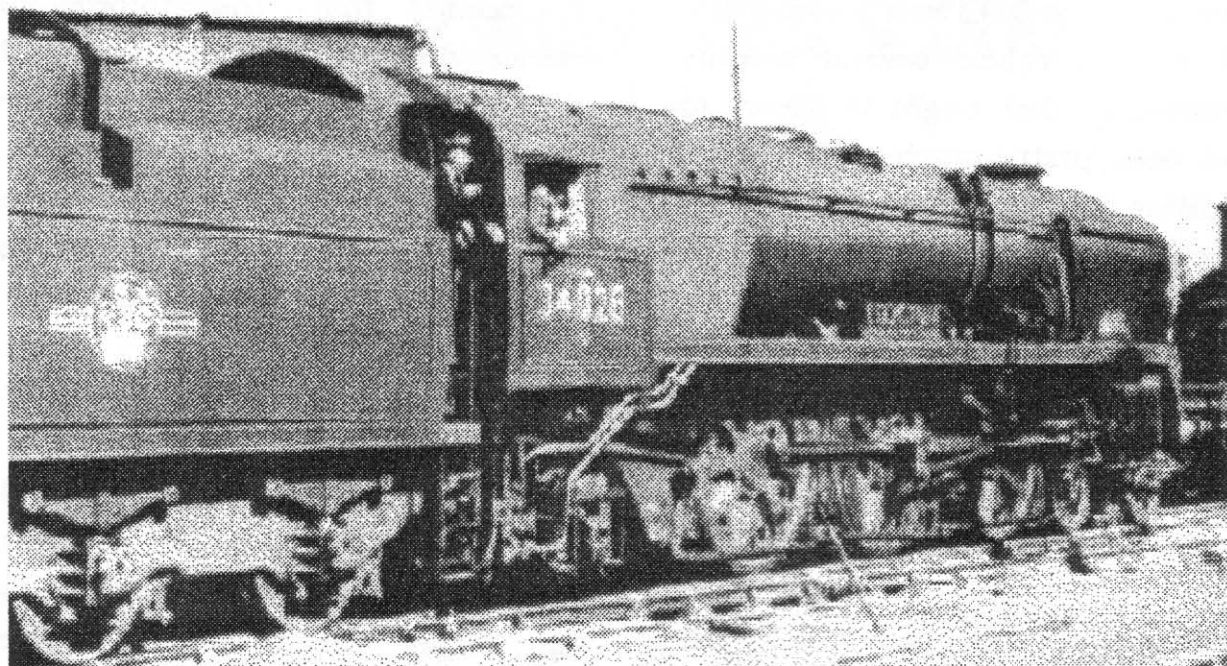
What he imagines as a possible scenario would be a master computer terminal feeding information into the system and any number of receive-only terminals, or simply suitably-fitted broadcast receivers. This setup, whether used for overt or covert purposes would be an extremely effective means of disseminating vast amounts of textual or visual information in minimum time.

The use of military style ciphers would render this a very effective and safe modern version of the old Defence Teleprinter Network which many of us knew as the DTN whilst in the Services.

TED.

**TED'S MAILBOX . . .
CONTINUES ON PAGE 47
WITH THE TALE OF THE
'STREET MARKET 2232A'**

The Other Eddystone



Southern Railway Bulleid Pacific "Eddystone"

At the end of World War Two the railways of Britain were desperately short of locomotives and rolling stock. Southern Railways in particular had suffered badly from the ravages of Hitler's Luftwaffe during the first two years of the war.

In 1945 Chief Engineer Bulleid of Southern Railway designed the 'Pacific' Class of locomotive. Number 21C128 was delivered from the Brighton Works in April 1946 and named 'Eddystone'.

She went straight into traffic service from Ramsgate and took up regular duty on the Kent Coast service up to Victoria and Cannon Street.

Following Nationalisation of the railways in 1947-8 'Eddystone' was re-numbered 34028 and allocated to Exmouth where she hauled on top-link duties such as the 'Atlantic

Coast Express' and 'Devon Belle'.

Re-built in August 1956 '34028' was transferred to Bournemouth, working the services between Weymouth and Waterloo. Every year she transferred to the Summer Saturday trains of the Somerset & Dorset route where she was frequently photographed hauling the famous 'Pines Express'.

Following the decision to introduce electrification and main line diesels 'Eddystone' was withdrawn in May 1964. Consigned to Barry scrapyard in November 1964, '34028' was purchased by the Southern Pacific Rescue Group in April 1986 and is undergoing restoration.

Bill Cooke, former M.D. of Eddystone Radio kept a model of the loco on his desk and it now adorns his home! 🚂

“Reflections from the Bath Tub”

Dear Sir,

I read with interest your comments on the EC10 and its variants in recent issues of ‘Lighthouse’, in particular your speculation on the production rate of these sets. I wondered whether the enclosed information on the initial production of these receivers might be of interest to you and your readers. *(This letter was written before the feature by John Instance was published last month.)*

I joined Eddystone Radio in the early sixties, having spent the first 18 months of my career working for the Post Office (now B.T) on chemical analysis and endurance testing of a variety of items.

I attended a technical interview with Chris Pearce, and then Bill Cooke (Chief Engineer), and gratefully accepted the position of junior Tester. My wage (if I remember correctly) was £6 a week with a 5-shilling clocking-in bonus, for a 40-hour week. Overtime was at the discretion of the management.

On my first day I sat next to Ray Waldron (Test engineer), in a small open-fronted wooden booth, to learn how to fault-find and test EC10 receivers (with background “music while you work”).

The production line was directly adjacent to our test booth, comprising about 6 or 8 workers, with Bob Snape acting as the chargehand.

At that time the production/test procedure was that the R.F. and I.F printed circuit boards were

assembled with components and hand soldered on the production line. Drives were pre-assembled then all of these items were inspected prior to main assembly and final wiring.

Finished receivers would be passed to the end-of-line tester who would first mechanically inspect, then align the I.F stages, and “roughly” align the oscillator and R.F circuitry, fault finding as necessary (these were my tasks when I first started).

I would then pass receivers to

Ray, who would accurately calibrate the gang (to fit scale calibration), and finally align the mixer and R.F stage coils. He would then pass this receiver for final cleaning, fitting of cabinet, and have it returned to him for final inspection and aerial testing.

Subject to approved results it would be packed and despatched to the finished goods stores.

At the time of my arrival, with Ray as the only tester, the production rate into finished goods stores was around ten per week. Quite honestly this was a struggle,

due to the generally poor production quality on those early receivers.

The best, and most experienced workers, were concentrated on the 880, 830 and 770 series of receivers; the EC10 line had less skilled people.

Also it should be remembered that the company was “learning” too. PCB assembly and manufacture was in its infancy, as indeed was its experience of solid state technology.

Production quality was a problem

As promised last month, we present a letter (submitted anonymously) from a former Eddystone ‘old boy’ about the life and times of the ubiquitous EC10

for quite a few months. Drives in particular were consistently poor on initial inspection, and it was not unusual to have two, or even three, test report sheets with lists of faults to be corrected. But changes were "afoot".

The assembly and soldering of the I.F. and R.F. boards were transferred to the Pilot Production department (a new building near Development). Here a flow-soldering machine was installed which removed the drudgery of hand soldering.

Don Illsley was tasked with the production of boards using this technique, but this too had its teething problems. Certainly the temperature control of the solder flow was a problem, leaving boards with "bubbled" solder resist and unwanted solder bridges when too hot, and a multitude of dry joints when too cold.

Back on the production line two very experienced workers were "drafted in" to finally wire up the receivers. Stan Carney (of foreman status) was given the task of controlling production and raising quality standards.

Undoubtedly Stan made a major contribution here and within a fairly short time production quality began to improve. (It must be said that Stan played an ongoing significant role in the production success of this receiver).

The testing of these sets was interesting because of its simplicity. My equipment was an Advance "spot" generator, this provided rapid push button selection of generator frequencies (i.e. no manual tuning), a 9V power supply with 500 mA meter in series, two Neosid trimming tools, one screwdriver, a rubber mat, and a lot of enthusiasm. The in-line current meter was the tuning indicator for all my alignment.

Ray's equipment was similar with the addition of a xtal calibrator, with sample checks using more elaborate test gear to prove specification performance consistency.

With the improvement in standards and techniques, the production/test rate began to climb.

At this point I would guess that 30 to 40 sets per week was achievable, but I think that customer demand was still not being met.

We were to have another addition to the test team. A young Roy Posner came to add his weight; his responsibility was sub-assembly inspection, mechanical inspection, and I.F. alignment. We all got on very well together, it was a pleasure to come to work.

We had a great team spirit and a lot of good-humoured "banter". It was not long before the Test team of three began to "gel". With further improvements in production standards and better availability of receivers we were sending probably 60 units to the finished goods stores each week.

I think speculation began to arise as to what peak production figures could be achieved. Management seemed to sense that there were further improvements to come, and I well remember a fairly informal discussion between John Shipton (Production manager), Stan Carney, and the test team regarding the practicalities of 100 per week. Certainly those of us at shop floor level were anxious to "give it a go".

It should be stressed that with increasing production rate, we were "graced" by Harold Cox's presence (Technical Director) on a far more regular basis. He had the uncanny knack of looking over a batch of completed receivers and selecting the only one with a minor fault. It was a sort of sixth sense that was so accurate that we began to dread his appearance. Usually his visit would be followed by Chris Pearce (Chief of Test) who might just have a further "chat" on any issues raised.

Certainly the possibility of the magic "ton" was greeted with a degree of scepticism by some of the other departments. I well remember Doug Aldis (press shop foreman, and a great character), casting doubts on our motives, on the basis that we would probably be earning more than him in overtime payments alone!

Clearly this was a real team effort across the whole of the factory, the

casting "fettlers", press shop, stores, spray shop, coil manufacture and test; and all associated with sub assembly production had to increase output accordingly.

Well the "die was cast", and a production counter was put up on display showing the active build count, and a loud cheer heralded the first time 100 units were produced in the week.

For two consecutive weeks we achieved 100 per week, on the third week we ran out of many of the bought-in components, leaving the Chief buyer Jack Gwynne a bit "red faced". Production was a bit "ragged" after that until it settled down again, but one thing I can confirm is that production peaked at just short of 140 receivers in one week, which was a mix of Edometers and EB35's; with the same manning levels.

It should be remembered that production of one receiver was not necessarily continuous. It was often broken with the production of other receivers, sometimes on the same production line, and there were odd special small orders, e.g. with Braille fingerplates etc. These, if anything, tended to be of nuisance value in terms of interrupted production.

Whilst on the subject of variations of the standard produced item, I would like to clearly state that this was not unusual. For example, I well remember being given six FET's (in the early days of their production), to be fitted in the oscillator stages of production EC10's with some minor modifications, and requested by Bill Cooke to report on their effectiveness, or otherwise.

It was difficult to keep sensible levels of stability (these were probably operational to frequencies in excess of 1 Ghz). The net result was that these six receivers "bristled" with ferrite beads and added "stopper" resistors.

Bill Cooke joined me on the production line, spent some time looking at the performance and attendant problems, before making a decision. Significantly three of these receivers were then sent out "as

built", with appropriate qualification of the test report sheet, and why not? Their performance was deemed acceptable, if not an improvement to spec.

Also I can remember trying a new type of F.M tuner on an EB35. This required a change to the mechanics of the drive assembly, once again this went out as a production model. It may well be that these "oddities" went to selected customers for trial. I would not be privy to this information, but I can confirm they went into finished goods stores for despatch to the outside world.

I can look back on this period with considerable nostalgia, and immense job satisfaction. Equally, I should not forget the young lady who started some 6 months after me on the EC10 production line. After completing appropriate shorthand/typing education she became secretary to Joe Addison (Works Manager), and for whom I paid the princely sum of seven shillings and sixpence (and these are her words) for the privilege of marrying! (- *the cost of a Marriage Certificate in those days - Graeme*)

She also reminded me that she left Eddystone on approx. £9 per week to take a secretarial role at Austin (later B.L., then Rover) for a wage of £11 per week, (rich beyond her dreams!).

There was a time when the company lost a number of more senior operatives to this outfit. However, Eddystone continued, keeping a very stable workforce (despite the lure of bigger money at Austin for its production supervisory staff). Testament to this fact is that my younger colleague, Roy Posner, from that early EC10 test team, has remained with the company as a very respected engineer.

★★★

What a super personal recollection of the early days of bespoke 'solid state'. I know this copy reaches 'Eddystone', - any more Tales of West Heath out there? Please!

***Graeme
(Bill Cooke took one look at this and told me who wrote it!)***

TED's MAILBOX

Continues from page 9

I've had a long letter from Dave Simmons, our spares and manuals provider, about Steve's problem with the 'Chrome Switch Lever' (page 50, Lighthouse #63).

Dave is pretty certain that he didn't supply the item concerned as he stocks THREE different varieties and he always makes sure the customer knows which one he wants. He goes on to describe them for members' elucidation:-

TYPE 1. Small lobe at 90° to the shaft; 'pip' in line with lobe. As used on 680X, 840, 888, etc.

TYPE 2. Medium lobe at 70° to shaft. 'Pip' in line with lobe. As in EA12, 940, 830, etc.

TYPE 3. Large lobe at 25° to shaft. 'Pip' at 90° to lobe. As on 730/4.

N.B. (*says Dave*) the 730/1 used the small-lobe knob. Did Eddystone fit the larger-lobe knob for "Army Mits" on the 730/4?

Dave charges £3 each plus p & p for a rapidly reducing commodity (they ain't gonna make no more.)

On the subject of Black Wrinkle Finish, Dave points out that he can provide this service, but he doesn't give it away!

"Professional paint costs £9.26 per litre, plus VAT, minimum quantity 5 litres; special thinners £13.74 for 5 litres; etch primer at £27.35 for 5 litres and acid component £19.35. It will take about two hours to shot-blast, strip, spray, and bake one front panel. I charged my last customer £20 to do a 640 front panel and case and he thought it was too much! My local spray shop tells me it should have been at least £50!!"

Graeme tells me that members call him to ask the price for such-and-such an Eddys-

tone. As he says: it all depends on condition. When you are considering the value of (say) the very popular and obtainable 730/4, you need to remember that it cost £235 in 1960. That's the equivalent of about £5000 in today's money, and any work done on it today will be commensurate with this. Consider the cost involved in restoring (say) a forty-year-old Daimler Sovereign. That's why condition is paramount!

Dave has one more 'moan' about our dearly beloved EUGers . . . "I get a message on the ansafone like 'Can you send me a knob for an EC10?'. Some leave a phone number but no name! Others just leave a name and I can't find it on my (slightly out-of-date) members' list! Hardly ever do they leave an address. NEVER do I get the serial or Mark number of the receiver or the knob style (at least three different patterns and two sizes for the EC-EB series). The best one so far is 'Can you supply me a coil for my 830; Range 3 doesn't work.' . . ."

So there you go, folks, remember that Eddystone used to mix and match components and that Dave's stock is a factory clearance lot. It's not labelled and boxed and although Dave is pretty good at guessing, he's not actually psychic. If possible draw him a picture and send it.

Isn't it amazing how one thing leads to another? The discovery of the hitherto unknown New Zealand 'Atlantic Two' led us to a latter-day version in last month's 'Eddystone Specified' feature. This month it's led to 'The Atlantic Three' from 1932, where it featured in the first edition of the Eddystone Short Wave Manual.

I'm running out of space here and there's lots more to come, so watch out for:

**More of TED's Mailbox on
pages 43 and 47**

RADIO RAMBLINGS

Gottings from my Notebook



By
*Graeme
Wormald*
G3GGL

Christmas 2000

WELCOME TO THE REAL MILLENNIUM

Merry Christmas Everybody! And welcome to the Real Millennium. Just in case I'm confusing anyone, I'll remind you that the start of the 21st Century takes place at 00.01hrs on Monday, 1st January 2001. May the best of health and good fortune smile on you all.

PLEASE ACCEPT...

Many, many moons ago the ITA - (that meant Independent Television Authority, not Invalid Tricycle Association!) - the ITA was having one of its periodic redistributions of the old ITV television contracts. Several of us, engaged in the more arcane disciplines of that industry, feared that we might become displaced; unemployable even.

The result was a panic rush to the Birmingham Labour Exchange, where a learned team of psychologists would analyse ones aptitudes and pronounce upon them.

Dim though the memory is, I can recall two things that came out of it. One was that I was eminently suited to my existing job. The other was that if, by some quirk of fate, I should find myself out of a place, then I was quite suited to several other disciplines BUT, whatever I did I should not engage in any kind of office work. I was quite unsuited to routine paperwork!

Fortunately the problem never arose and I retired from the industry shortly before the robots took over. But what I'm getting round to saying is that running the Eddystone User

Group involves a certain amount of routine paper-work! And I'm still not very good at it.

I therefore offer my grovelling excuses to all of you who feel that they should have heard from me in some way or another. A reply to a letter, for instance, or the acknowledgement of a piece for 'Lighthouse'.

I do know that this happens because I keep finding little hoards of letters that I've put in a safe place until I should reply to them. But I have difficulty in addressing a problem that's 12 months overdue. The little grey cells go on strike.

Please accept my apologies and let me know when I'm a problem!

THE 100k SYNDROME

Whilst chatting recently with Dave Simmons (our spare-parts supplier), I happened to mention that I had found two 100k screen-grid droppers (in different Eddystones) go extremely high or open circuit.

This caused him to recall his early days as a radioman in the R.A.F. His chiefy (flight sergeant) told him that when looking into a receiver fault always check the screen droppers first. So there's confirmation from way back! It must be something to do with the disposition of carbon molecules . . .

PAGE NUMBERS & TITLES

I've been asked recently by a member if I could standardise on a smaller typeface for the 'Lighthouse'. He would prefer 10pt New Times Roman, like this paragraph which you are now reading.

Now back to 12pt like the rest of the feature. Some time ago I held a referendum on the question of magazine format (ie this size or A5, about ¾ the size). The overwhelming response (six to one) was in favour of this size because members didn't care for the smaller print, even if it would save on postage. Has there been any change in outlook, I wonder? Let me know.

I personally find, now long-sighted and using reading glasses, that the small typeface favoured by some magazines is a strain on the brainpower as much as the eyesight. The BVWS Bulletin, in particular, I find incredibly difficult to read.

Another publishers' trick is to change the typeface, both in size and font type, to make the article fit the page (because it never does if you don't!), so that goes to explain the different varieties which will crop up from time to time.

I've also been asked to print the Issue Number on the bottom of the page and the Page Number at the top! Here I have to admit my problem in the system which otherwise does us proud; namely the use of a P.C. to create 'Lighthouse'.

I must reveal that my (self-taught) skills in this matter do have some failings. I don't actually know how to put the Issue Number below (or above) the information area of the page! I'm sure that Simon, our computer expert could show me, but as he lives 200 miles away it's not all that easy!

In the question of numbers at the top of the page: the sequence of pages is not determined until just before I take the copy to the printer. That's when the pages have to be numbered, i.e. a separate operation. I did start off some time back by running each page through my old Amstrad PCW in typewriter mode. This allowed me to enter the number above the actual page frame. But that was 39 separate manual operations, which was incredibly boring and prone to error. It took me all morning and in the end I decided to paginate by hand. Now this doesn't look very professional so to make it less obvious I transferred it to the bottom of the page.

My machine does have a facility to paginate automatically, but of course this can't be done at the writing stage (as we don't know the numbers yet). I thought I could overcome this by creating a page-number-only document, and running the master copy through this before taking it to the printer. A brilliant idea!

But nothing's perfect in this world. A sheaf of papers, which have (has?) already been printed and handled, won't guarantee to go through the printer without at least two sheets sticking together. I know; I've tried. So I guess that for the time being we're stuck with it as it is!

CONDENSER MEASURER

From time to time I mention the condenser meter which I built from an article in an old magazine which I have since lost! It's much easier to use than a traditional bridge (especially for low values) and members still write to me asking for a copy of the article.

Well here's some good news: Practical Wireless for November 2000 features an article on constructing such an instrument, and it's a simpler circuit than mine! So check it out, and those members without a copy get a back number before there's a run on them! One of the best little helpers I've seen.

EUG RADIO NET

We've not mentioned this lately so I think it's time we did. In the United Kingdom we have around 80 EUGers holding HF ham licences (out of a total membership of 310).

On the first Sunday of each month at 10.00 local time we put out a 'CQ-EUG' call on 3695 (+QRM), in the LSB mode. This attracts about five members; usually the same five.

Now Sunday morning is a rotten time for a net, the band gets rather packed. So two or three years back we inaugurated a 'First Thursday' net at the same time. This however, never caught on and after three successive months with no reply we abandoned it. (There's nowt so queer as folk, as they say up north!)

Recently we've had suggestions that we move from 80m. to 40m. for our net. This is based on the fact that for distances over 100 miles the 40m. band usually does better. So after opening on 80 last month (Nov) we all moved to 40.

Results were interesting. First of all the band has only 1/3 the width of 80m. (You lucky North Americans still have the 1947 allocation of 300kc/s!) Secondly, the two weakest stations on the net, namely Anthony GW4RYK (Montgomery, mid-Wales) and Simon M5POO (Northumberland) increased to S9+. And thirdly, here at G3GGL in the West Midlands, S9+ stations from the EU swamped them both! No wonder they call the 40 metre-band Frenchman's Creek. . . .

I'm not quite sure of the answer and the current long nights may favour 80 metres for the next few months. So for the time being may I suggest that we start off on 3695, then QSY to 7070 (+/-QRM), and see how we go.

And at the same time may I invite more members to give us a shout? We keep leaving little pauses, you'll all be very welcome.

CHRISTMAS EXTRA

As well as a few extra pages of text in this month's 'Lighthouse', we have the inclusion of a unique piece of Eddystone ephemera.

The constructors' handbook for the 'Eddystone Scientific Screened Grid H.F. Short Wave Three' (What a mouthfull!) is the oldest Stratton radio booklet in captivity. It's dated September 1928, and in the introduction it states that Stratton & Co., Ltd. were the pioneers of marketing short wave components in this country in 1924.

As this was only four years previously, I think we can take it as a definitive statement. And it's a fair bet that this was the first short wave constructors' kit to use the new tetrode valve, thus overcoming the problems of neutralisation which had bedevilled the home constructor using a triode H.F. amplifier.

You may leave it stitched in the 'Lighthouse' or carefully extract it and re-staple. The shortage of early Eddystone

ephemera is tragic. Has anyone ever seen an advert for the Eddystone Twin? Or the 'mythical' one-valver which may have preceded it?

In the next issue I shall start a feature to find the earliest printed mention of 'Eddystone' (we already have some examples. Start searching!)

NVCF at the NEC

Already we are booking space at next spring's National Vintage Communications Fair. This popular event takes place at the National Exhibition Centre, Birmingham on Sunday 29th April 2001. We shall be happy to take subscription renewals, sign up new members, or just have a chat.

I think you can guarantee there will be no trace of floppy disks or keyboards!

HELP NEEDED FROM 830 BUFFS!

A transatlantic phone call from Brian Cauthery VE3DFC (what a callsign!) in Ontario posed a question that I couldn't answer, can you?

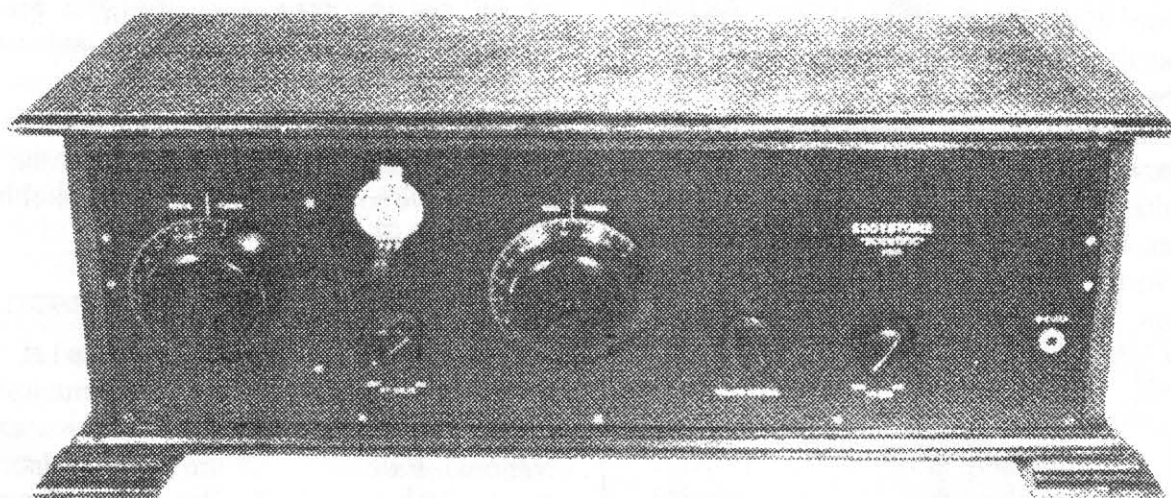
He's been restoring an 830/4 (the Canadian version with extra long waves instead of medium). All went OK until he was aligning the second IF (100 kc/s). Part of the routine is to check the symmetry of the response and, if necessary, adjust the pre-set xtal phasing capacitor (C88 - which in some handbooks is shown as C84!). This is achieved with a 5/64" tommy bar.

The problem is that Brian finds that nothing happens and he wants to know what to expect! He has another 830/4 and that behaves exactly the same. Any model of 830 should be the same in this area, so can anybody help?

All the local e-mails out there are down due to lightning zapping, so answers please, on a large postcard to Brian at 19150 Hurontario Street, RR#1 Caledon, Ontario, L0N 1C0, CANADA.

And many thanks to those of you who enquired about the state of flooding in Bewdley. The River Severn was 17ft over the norm, but we are about 6 ft higher! ★

The 1927 Radio Show



Eddystone Radio had Stand number 77, according to the *Wireless World* in September 1927. Besides showing a number of new and innovative components they produced their latest model in the 'Scientific' range, the 'Scientific Four'.

Amongst the components on show was the new Short Wave Unit. An interesting series of air spaced coils wound with 16 gauge enamelled wire and provided with two pins for attachment to an ebonite plug strip give scope for experiment on waves between 15 and 200 metres. On 30 metres, for example, a three turn aperiodic aerial coil could be used next to a six turn coil, part of which would serve as a reaction coupling by the Reinartz method.

The ebonite strip allows of a third coil being attached, which can be hinged to give a variable coupling if desired. The turns of wire touch the dielectric at only three points, yet the coils are mechanically strong. The same type of coil with two pin fixing is now wound on Paxolin formers to cover the ordinary BBC band.

The Scientific Four Receiver circuit and design follow closely that of the 'Everyman Four' (a *Wireless World* set). The Paxolin formers on which the aerial and HF transformers are slotted so as to cut down by about 1/3 the amount of dielectric used without impairing strength. The aerial and HF transformers have a series of pins to

make contact with sockets on a baseboard, thus allowing the coils to be easily changed.

For Daventry, Litz coils wound to the full inductance are used rather than loading, and the HF stage is not cut out. Within each Paxolin tube at the top is an ebonite cross-bar to facilitate the removal of coils. A potentiometer is shunted across the LT, while a connection from the grid return lead of the detector is taken to its moving arm, thus giving a volume control by causing the input to be impressed on the bend or the straight of the characteristic.

To prevent HF impulses from reaching the LF portion of the set, a HF choke is incorporated in the grid circuit of the first LF valve. Resistance coupling follows the detector and a Ferranti transformer couples the third and fourth valves.

The new HF Choke for Short Waves is wound on a skeleton former of about two inches diameter, this choke is suitable for wavelengths of between 8 and 100 metres. The length of the fine silk-covered winding is about four inches and the turns are air spaced.

The problem of evolving an efficient HF choke for short waves is a difficult one, but this firm appears to have produced an article built on sound lines. All Enquiries to Stratton and Co, Ltd. Balmoral Works. Bomsgrrove St. Birmingham.

(In their catalogue for 1927 Harrods feature a 'medium wave only' version of the Scientific 4)

HARRODS LTD., LONDON SW1
ALL PRICES ARE SUBJECT TO MARKET FLUCTUATIONS
TELEPHONE: SLOANE 1234
TELEGRAMS 'EVERYTHING HARRODS LONDON'



This remarkable receiver is one of the most dependable models on sale today. Outstanding points:-

QUALITY

The highest standard of reproduction is assured by the circuit which gives even amplification over a wonderfully large range of the audible frequency scale. The low notes of music, the voice in song and speech, are faithfully recorded. The volume of sound can be controlled to the exact strength required.

RANGE

With the standard 100-foot outdoor aerial at least 30 stations can be received. The waveband range of the Receiver is from 260-550 metres -

covering all the British and most Continental stations.

SELECTIVITY

Alternate programmes always obtainable even under the most adverse circumstances. The large amplification factor of this set permits the use of a small aerial which increases selectivity.

SIMPLICITY

Two Eddystone Microtune Dials only are used for tuning, which give a direct rapid movement, and a vernier motion for accurate adjustment of 128:1. A master rheostat for putting the set on or off, a volume control and a switch for cutting out the first valve. Simplicity itself.

Short Wave Two Battery Receiver

The 1999 Christmas Newsletter contained an article on this model which was featured originally in Eddystone Short Wave Manual Number 6 of 1947. I was quite taken by the simplicity of the circuit and decided that my junk box should be able to provide most of the necessary bits, or equivalents thereof.

A 5 x 7 inches diecast box made by a Company well known to us in EUG was pressed into service. It began as a relay box for a tower mounted aerial rotator in the '60s and was later used to build a two-valve converter for 10 metres. Already having the necessary holes and bases was deemed a help. Then came the question of the valves to use.

Nothing even approximating to the suggested KF35 and KL35 appeared in my valve stock but some thought was given to the valves already on the chassis, two off SP61s. Hardly the correct type at all but this valve has in the past been used for just about every role that thermionics can throw up. I myself used two of them in push-pull strapped as triodes for a simple AF amplifier at one time.

But then, this is a Battery set, No? Well sure but 2 times 6.3 comes to 12.6 or near enough to run from a 12 volt 'dryfit' battery. The HT supply was to come from a battery eliminator type of psu which has existed since about 1948 in my shack.

Since only the Eighty Metre band was required the coil was not pluggable but was wound onto a WWII type ceramic former which came originally from one of those ubiquitous TU tuning units and

the leads fed through chassis via 5m/m holes with insulated sleeving. VC1 the aerial trimmer had to be replaced with a compression type trimmer fitted on the rear panel, this was eventually a 2.5 to 25 type after trials with a larger (50pF) trimmer went awry.

Similar problems were encountered with the C3 and C2 Bandsread and Bandset condensers. As the specified Bandset type 586 wasn't available it was necessary to prune the plates on a surplus type until the capacity was approximately correct. The matching of the fixed resistors and pot values to suit the SP61 valves was a long and frustrating task but the eventual silky smooth reaction and the nice enough audio output are a happy result.

Used with 600 ohms type AM 'phones the sensitivity and selectivity are quite amazing after being used to a 940 for so long. Stronger signals can be read comfortably with the 'phones left on the operating table.

The set is a delight to use even though there is as yet no scale, nor for that matter a case. A scale is being drawn on 'Bristol Card' by a pal and it is proposed to make up a case from double sided PCB as this seems to be the cheapest yet best method of ensuring full screening - the reaction is quite audible on a set downstairs from the shack.

Considering that this is my first ever 'Home-Build' project for more than 20 years I am more than happy with the results. Try it yourself this coming winter!

Mike.

From the Short Wave Magazine, February, 1968 . . .

THE NEW EDDYSTONE 990R VHF RECEIVER

GENERAL DESCRIPTION AND SOME PRINCIPAL DETAILS

ONE of the most versatile and compact professional VHF receivers ever designed by Eddystone Radio Limited is designated the 990R. It is completely solid state (using 39 transistors and 14 diodes) and big sales are expected for applications such as interference and noise measurement and detection, as well as normal communications work on land and sea.

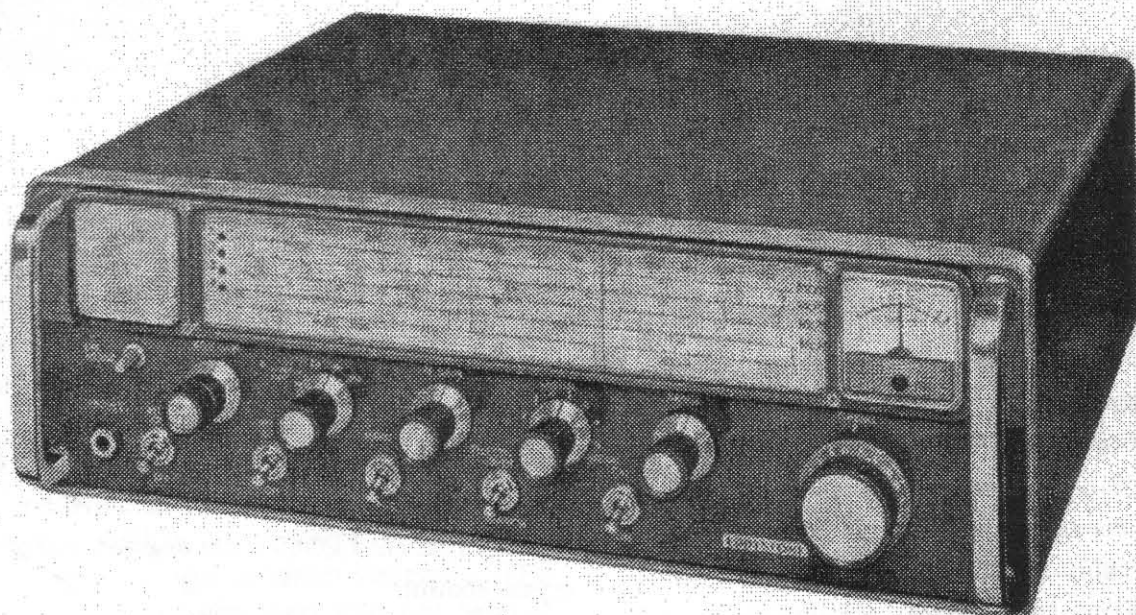
The 990R can be operated directly from a battery supply. Thus, it can be used in a wide

variety of portable roles, including road vehicles, small or large boats, and even light aircraft, without any additional facilities apart from an aerial. (A mains power unit forms an integral part of the receiver.)

The complete tuning range of the 990R is 27-240 mc, covered in four switched bands. The local oscillator arrangement provides for free running throughout the range of the receiver or permits up to eight crystal-controlled channels to be selected.

The flexibility is further increased by the provision of a socket for an external synthesiser. Filters are included giving bandwidths of 30 kc and 200 kc, although other bandwidths can be provided.

The 990R is designed to be operated with the Eddystone Panoramic Display Unit (Type EP17R) if required, to provide analytical display of all signals received over a given section of the frequency spectrum. An internal crystal calibrator gives reference points at 10



The new Eddystone 990R is claimed to be one of the most versatile and compact VHF (27-240 mc coverage) receivers ever designed. It is completely solid-state, suitable for mobile, portable or fixed-station operation in a variety of applications over the metre bands and, though a mains PSU is built in, it can be run directly from a battery supply if required.

mc intervals. It has a tuning meter, also a muting system which silences the receiver in the absence of a signal; this reduces operator fatigue on long listening watches.

The 990R is arranged as a superhet together with a number of additional circuits, of a high degree of technical elegance. Printed wiring techniques are employed extensively and high-grade components are used throughout. Special attention has been paid to the layout to allow easy servicing.

RF Section

This employs a high-gain RF amplifier, a low noise mixer and a comprehensive local oscillator system with a total of five transistors. An associated circuit is the crystal calibrator which involves two transistors. The whole section is subdivided into three parts.

The five stages of the local oscillator provide for continuous tuning over the whole range, spot frequency working on up to eight switch-selected crystal-controlled channels, or continuous coverage using external synthesized drive equipment when high-stability operation with flexibility of frequency selection are required. The method of oscillator control is selected by a system switch which also serves as crystal-selector. Local oscillator injection is always higher in frequency than the received signal frequency, the IF being 10.7 mc.

The IF section has four amplifier stages and detection for AM/FM/CW and video reception. Two IF bandwidths are available, selected by a panel control.

Circuitry associated with the IF section includes the AGC system, muting circuits and video amplifiers.

AGC Circuits and Gain Controls

Separate manual gain controls and AGC are provided for the RF stage (together with the IF

pre-amplifier) and the IF stages. The desired mode of operation is selected by the "Manual/AGC Switch" which routes the base returns of the various stages to the appropriate parts of the circuit.

A sensitive graduated microammeter is fitted for relative carrier level measurement and is also usable as a tuning indicator, and is scaled in arbitrary divisions (0-10). The muting suppresses noise voltage at the output of the FM discriminator (in the absence of a signal). Circuit constants are chosen to give maximum amplification at frequencies above the speech and music range.

Two transistors form a low-level audio amplifier for connection to 600-ohm line circuits. Gain adjustment is by a pre-set control; maximum output is limited to 10 mW.

Output can be arranged to suit balanced or unbalanced lines. The high-level amplifier employs a total of five transistors and provides output for an external loudspeaker, an internal low-level monitor speaker and low impedance telephones.

Typical Performance Data

Some figures for the 990R are:

Noise Factor, of the order of 10 dB.

Sensitivity, 5 μ V for 10 dB S/N ratio with 50 mW AM output at 30 kc selectivity.

Calibration Accuracy, within 1 per cent, markers at 10 mc intervals, 27 to 240 mc.

Frequency Stability, 1 part in 100,000 per degree C change in ambient temperature; of the order of 1 part in 1,000,000 per degree C under crystal control.

AGC characteristics, audio output level does not change by more than 10 dB for an increase in input of 80 dB above 10 μ V.



GØEYO WINS HIS PLANNING APPEAL

Our Patron Chris Pettitt, GØEYO, former M.D. of Eddystone Radio, recounts the story of his successful brush with beaurocracy.

This article was first featured in the Wythal Radio Club Newsletter

Following a complaint from my next door neighbour to Bromsgrove District Council about the VHF/UHF beams sited on the corner of my house, I decided to apply for planning permission for a mast at the bottom of my garden.

Thus was started a saga that was to last 18 months; result in two planning refusals and a successful appeal to the Planning Inspectorate; cost me £120 in fees plus three days off work. Not to mention a lot of heart-ache and, at one point, seriously thinking about giving up the hobby.

I have been a radio amateur at this location for about 14 years. Like most of us I made do with unauthorised antennas mounted on the rear or side of the property and with a 26ft pole down the bottom of the garden supporting one end of a wire antenna. For all of those years I only ever had one comment about TVI and none about the visual impact. Then the husband of one of my neighbour dies and the suppressed feelings of his widow about my 14 years of operation come to the surface. As you all know I am an easy going sort of guy who likes to get on with everyone so I played it by the book, no confrontations, no histrionics.

I thought I would test my democratic rights and apply for planning permission for a modest 14.5m mast to support a couple of VHF/UHF beams and a compact HF tri-bander. I followed the guidance given in the RSGB booklet on planning plus an excellent RADCOM article from September 1996. (I also had the experience of gaining planning permission for the

clubs mast in the late 1980's). I also sent plans to my other neighbours in the hope that they would not object to the application.

Four months later I got my first refusal on the grounds of impact on visual amenity adjacent to Green Belt. I then rang up the planning officer and got him to come around and give me his advice as to what would be acceptable. I scaled my proposal down from a 14.5m Strumech to an 8m Tennamast which only had a 90mm square section tube supporting a 50mm diameter pole. Wait another four months and yet another refusal.

This was a shock. I was then advised to visit the Council offices and view my file. (For some obscure bureaucratic reason the Council will not send you copies of your file). This made depressing reading. One of my other neighbours to whom I had sent details of my first application had written a long letter of reasons why the Council should not give planning permission to my first application.

I had no knowledge of this, they never said a word to me. The original complaining neighbour also wrote in as I expected. They repeated their objections to my second application. I was also shocked to find that the planning officer whose advice I had followed also recommended refusal. This was my lowest point. I felt like giving up and for several months did nothing.

It was reading the Council's bumpf that came out with council tax notices that stirred me to action. Buried in the 'how great we are in serving your needs' was a sentence that said that

they lost 30% of their planning refusals on appeal. Why not? It was free, so I decided to see it out to the bitter end.

You have up to six months following refusal to make your appeal. After three months I made my submission. You have the choice of a written submission or a public meeting. I chose written submission as it was the norm although I have been told subsequently that asking for a public meeting is so much trouble to everyone that the Council often give in at this stage. Your written submissions and the Council's are circulated to the other party as well as the Inspector. Neighbours who have objected are also advised of the process.

Choosing the grounds for my appeal was clearly going to be important. Through a friend I discovered a Planning and Policy Guidance Document issued by the Dept of the Environment concerning planned development for telecommunication structures (cellphones, etc). Basically they allow development of up to 15m without the need for planning permission.

In this wordy document there is one sentence devoted to amateur radio which basically means that planning authorities have to have a very good reason for refusing amateur radio masts. I decided to show that I had been very reasonable in my requests, that I had had prior use for many years without any problems and that the council had not taken the PPG document into account.

Eventually a site inspection was made. Everything was very formal. The planning inspector introduced himself to me as the appellant and the planning officer as the plaintiff. You are only supposed to answer his questions rather than bombard him with your views as how unfair the whole process was. He wanted to know what was staying, what was to be installed and what was to go on it. He had viewed the point of development from the road and from the private land to the rear. He also viewed it from my neighbour's

garden and upper bedroom. I felt he was sympathetic to my appeal but of course he gave nothing away. The discussion with the neighbour showed that he had not visited the council to see any of the proposal plans and had raised his objections solely on my first proposal. His objection to my second proposal was in effect irrelevant because he had no knowledge of what he was objecting to. This was not lost on the inspector. Well, in the end the Inspector issued his judgement and that was that **my appeal was allowed and that the proposal was a reasonable one.**

I have had lots of advice, nearly all of it too late to be of any help but with hindsight what would I do next time. Here are my tips if you want to put up a mast:

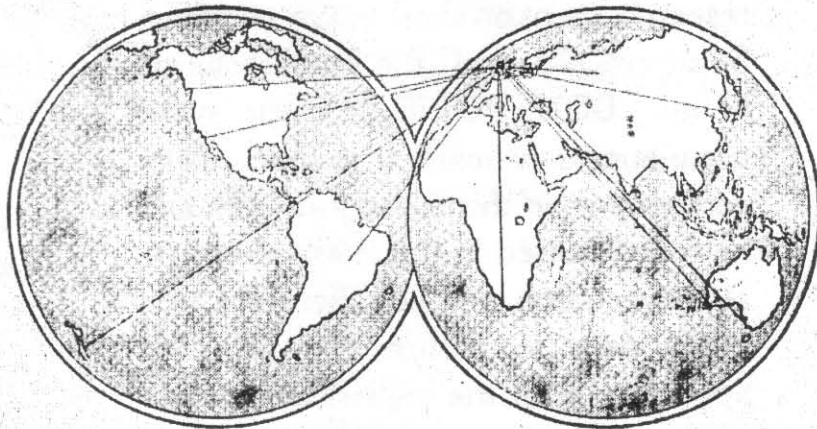
- ◆ Try and make sure that your neighbours will not raise any objection
- ◆ Just build it anyway because after either two or four years without complaint they cannot make you take it down.
- ◆ Apply for permission just for the mast as that is the permanent development, say that the antennas will be temporary and will vary considerably. Show them a Cushcraft catalogue!
- ◆ If you get a refusal go and read your file and make notes of who said what and when.
- ◆ Be reasonable, very few urban gardens will get permission for a 100ft heavy duty Strumech.

Anyway I have five years to build this mast, I am in no hurry, like a good wine I think I will take my time and savour the thought that the longer I leave it the more of a shock it will be for my neighbours who think they have probably won! Probably won't be an 8m Tennamast anyway!

Chris GØEYO

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EDDYSTONE

Short Wave Specialities

are the outcome of much time and research spent on short wave working. Stratton & Co., Ltd., the manufacturers of all EDDYSTONE products, were the pioneers in marketing short wave components in this country in 1924, and have specialised in this class of apparatus ever since. They therefore take every care to ensure that all their apparatus is of the highest quality and efficiency and unreservedly guarantee their manufactures in this respect.





Preface.

One of the chief directions in which wireless has been most rapidly extending is to the realm of what are termed the short wave lengths. Perhaps twelve months ago, we should have said, that is, those wavelengths under 100 metres, now we are almost tempted to say those under 50 metres.

In any case, the new wavefield under 100 metres is certainly full of interest to the wireless experimenter. With a well designed short wave receiver, the whole world can be toured, and stations thousands of miles away listened to clearly. The fact that all amateur transmissions are now using the short wavelengths and that the number of regular broadcast short wave stations is steadily increasing, ensures a never ending field of enjoyment.

Those resident in remote parts of the world can by short wave reception listen to their home country or to other distant programmes; and in the tropics, where atmospheric conditions render ordinary reception useless, a short wave receiver can be operated successfully without severe interference.

We do not think that anyone who possesses an efficient short wave receiver will ever regret the time and outlay spent in this direction, such are its boundless sources of experiment and interest.

Finally, the Eddystone Scientific Short Wave Three is a thoroughly stable yet efficient type of receiver evolved after a long practical experience of short wave sets, and we are confident it will give every satisfaction to its owner. It incorporates the latest type valves and circuit arrangement and is a most powerful receiver.

THE EDDYSTONE SCIENTIFIC SHORT WAVE THREE.

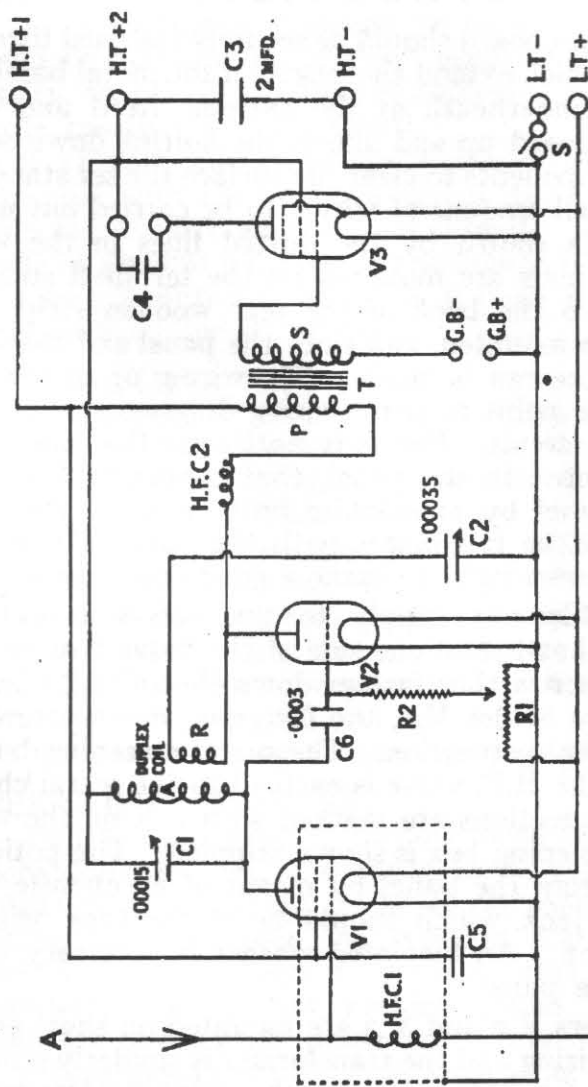
DESCRIPTION.

This receiver makes use of a stage of high frequency amplification. Hitherto, short wave receivers have rarely incorporated such a stage, since the additional complications in tuning and stabilizing gave them little advantage, if any, over a well designed detector circuit followed by L.F. amplification. The advent of the 4 electrode screened grid valve, however, with its high amplification factor and needing no external neutralising methods, now allows the full benefit of a H.F. stage to be successfully and easily used in a short wave receiver.

Ordinarily the addition of a H.F. valve entails the use of an additional set of tuning inductances and tuning condenser. This "Eddystone" design, however, incorporates a new arrangement for making use of the special features of the screened grid valve, so that these additional tuning encumbrances are unnecessary.

Referring to the theoretical diagram opposite, it will be seen that a high frequency choke H.F.C.1 is connected between the control grid and filament of V.1. This enables a slightly negative potential to be applied to the grid through the choke, and at the same time effectively stops the high frequency impulses coming in on the aerial from getting to earth and forces them through the valve V.1, where they are amplified before reaching the detector stage. At first sight this method appears much inferior to the normal tuned stage. On the broadcast bands certainly, selectivity is affected, but on the lower waves under 100 metres, tuning is already so critical that this becomes an advantage, and though theoretically the tuned circuit should obtain a higher percentage of efficiency from V.1, in practice the losses occurring in the additional circuit and the greatly increased difficulty in tuning due to the two dials render this method little, if any, superior to the simple arrangement used in the "Eddystone" circuit. The ease of tuning, only one set of inductances to change, and the entire absence of body capacity effects, indeed, make the set a revelation after the detector only type of short wave receiver.

The Eddystone Scientific Three Screened Grid H.F. Short Wave Receiver.



- C1 Eddystone .00015 Condenser.
- C2 " .00035 "
- C3 Sterling 2 mfd. "
- C5 " 1 mfd. "
- C4 Polymet .0003 " "
- C6 Aerovox .0003 " "
- S Filament Switch.

- H.F.C.1 Eddystone Scientific H.F. Choke.
- H.F.C.2 " " "
- R1 Polymet 400 Potentiometer.
- R2 Special 3 meg. Grid Leak.
- T Transformer.
- HT+1 75-80 volts.
- HT+2 100-120 volts.

THEORETICAL DIAGRAM OF CONNECTIONS.



CONSTRUCTION.

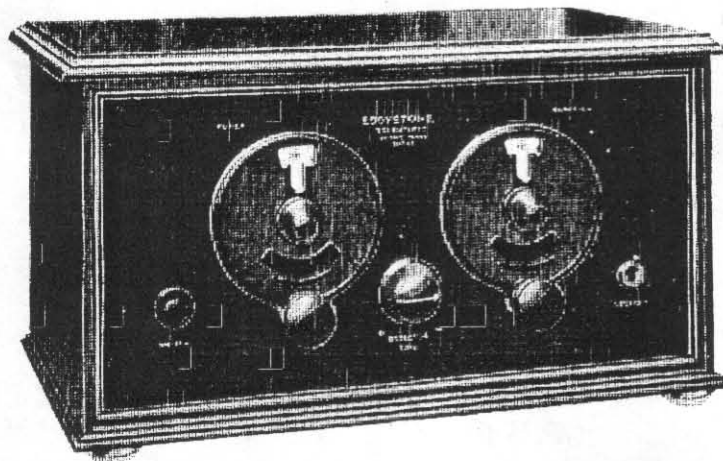
The panel and baseboard should be securely fastened together, the plywood strips which extend the length of the metal baseboard should be screwed underneath at the extreme front and back. This raises the baseboard up and allows the bolting down screws from the various components to clear the surface the set stands on. It also enables a small amount of wiring to be carried out underneath, this wiring is shown by the dotted lines in the wiring diagram. The terminals are mounted on the terminal strip and this is screwed on to the back of the rear wooden strip. The components are then mounted, and since the panel and baseboard are drilled, no mistake can be made. The wiring up of the parts can be seen from the point to point wiring diagram and checked with the theoretical circuit. Points to notice are that one side of the switch is connected to the panel, that condenser C.1 is insulated from the panel by an ebonite bush, but the spindle of condenser C.2 should be in contact with the panel, the locking nut being screwed down tight to make a good connection.

The negative filament supply to the valves is obtained through the metal chassis and one side of the valve filament legs is connected to the screw that fastens down the valve holder. In the case of the valve holder V.1, the fastening down screw also holds the filament leg in position. The metal screening box for the grid portion of the H.F. valve is earthed to the metal chassis. All these chassis connections are marked with a X on the wiring diagram and the screening box is shown stippled. The potentiometer is insulated from the panel by means of an ebonite bush, as is also the P.61 jack, which should be of the type with an insulated bakelite top. An insulated washer is necessary at the back of this, on the panel.

The valve holders V.2 and V.3 are mounted on short erinoid pillars to facilitate wiring and the transformer is similarly mounted up, one of the filament connections to the valve holders passing below it. The wires passing underneath the metal baseboard, should be run in Systoflex sleeving.

See that all joints are securely made or soldered and that an excess of flex is not used, also that all nuts holding apparatus down are tight. All that remains is to mount the dials on the condensers and knobs on the grid control or potentiometer and switch. The dials are supplied with spanners to facilitate mounting.

THE EDDYSTONE
SCIENTIFIC SHORT
WAVE THREE



SHOWING THE FRONT LAY OUT OF THE COMPLETELY FINISHED RECEIVER.

WAVELENGTH RANGE TABLE.

COIL	TUNER DIAL READINGS.					
	0°	20°	40°	60°	80°	100°
D2	14.5 metres	17.5 metres	22.5 metres	27 metres	32.5 metres	38 metres
D3	27.5 metres	30 metres	37 metres	44 metres	50 metres	63 metres
D4	42.5 metres	47.25 metres	54 metres	68 metres	80 metres	99 metres

The above table may vary slightly in the accuracy of the figures given, owing to varying circumstances such as different valves, but will always be approximately correct, and serves as a useful guide.



VALVES.

The set is designed for use with British valves of the types specified, genuine valves all bearing the monogram B.V.A., and if other valves are substituted, no responsibility can be taken for the set not performing as we claim.

The correct valves for each position are as follows :—

	H.F. VALVE.	DET. VALVE.	OUTPUT VALVE.
2 volt accumulator.	Mullard P.M.12.	Mullard P.M.1.H.F.	Mullard P.M.22.
4 volt accumulator.	Mullard P.M.11.	Mullard P.M.3.	Mullard P.M.24.

Osram, Cossor or six sixty valves of similar characteristics may also be used.

The 2 volt range consume a filament current of .55 amps. and a high tension current of 9 to 10 milliamperes.

The 4 volt range have the lower filament consumption of .3 amps., but give a slightly higher high tension flow of 11 to 12 milliamperes.

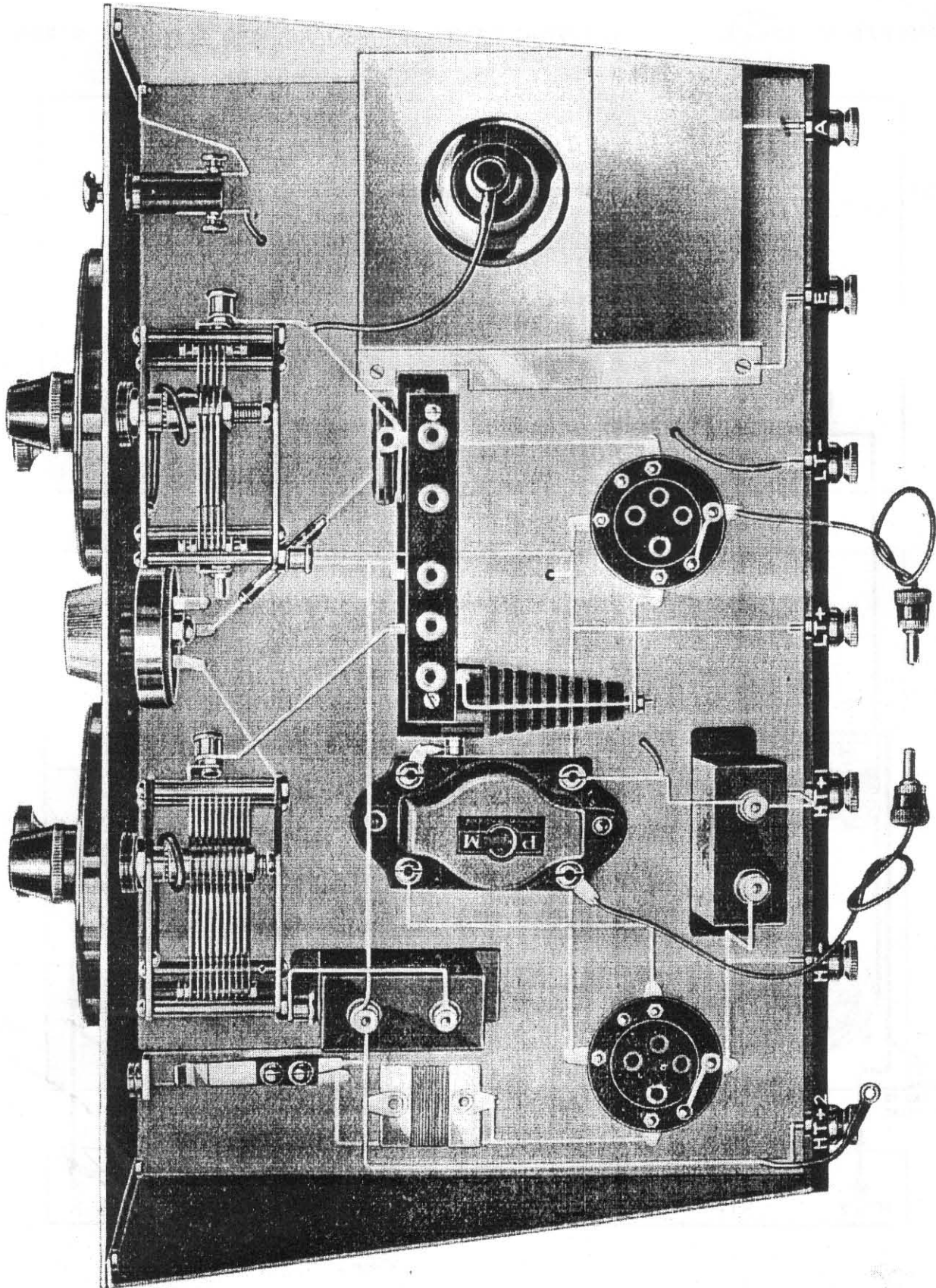
HIGH TENSION.

A 100 volts to 120 volts high tension supply is essential. The tapping H.T.+1 requires from 75 volts to 80 volts and the whole of the voltage is applied to the terminal H.T.+2.

High tension accumulators form a very satisfactory source of supply for a short wave receiver and have the advantage of being rechargeable; they need, however, reasonable attention periodically to keep them in good order. They should not be totally exhausted and left in this condition for long periods. When dry high tension batteries are used, these should be of a large capacity. Small size cells are not economical in the long run and results are affected adversely when they begin to run down. Two Hellenes 60 volt triple capacity type units will give several months' hard service and are recommended.

The set can be operated from a mains supply, but a certain amount of hum, which may be very detrimental for headphone work on weak short wave signals, is usually found.

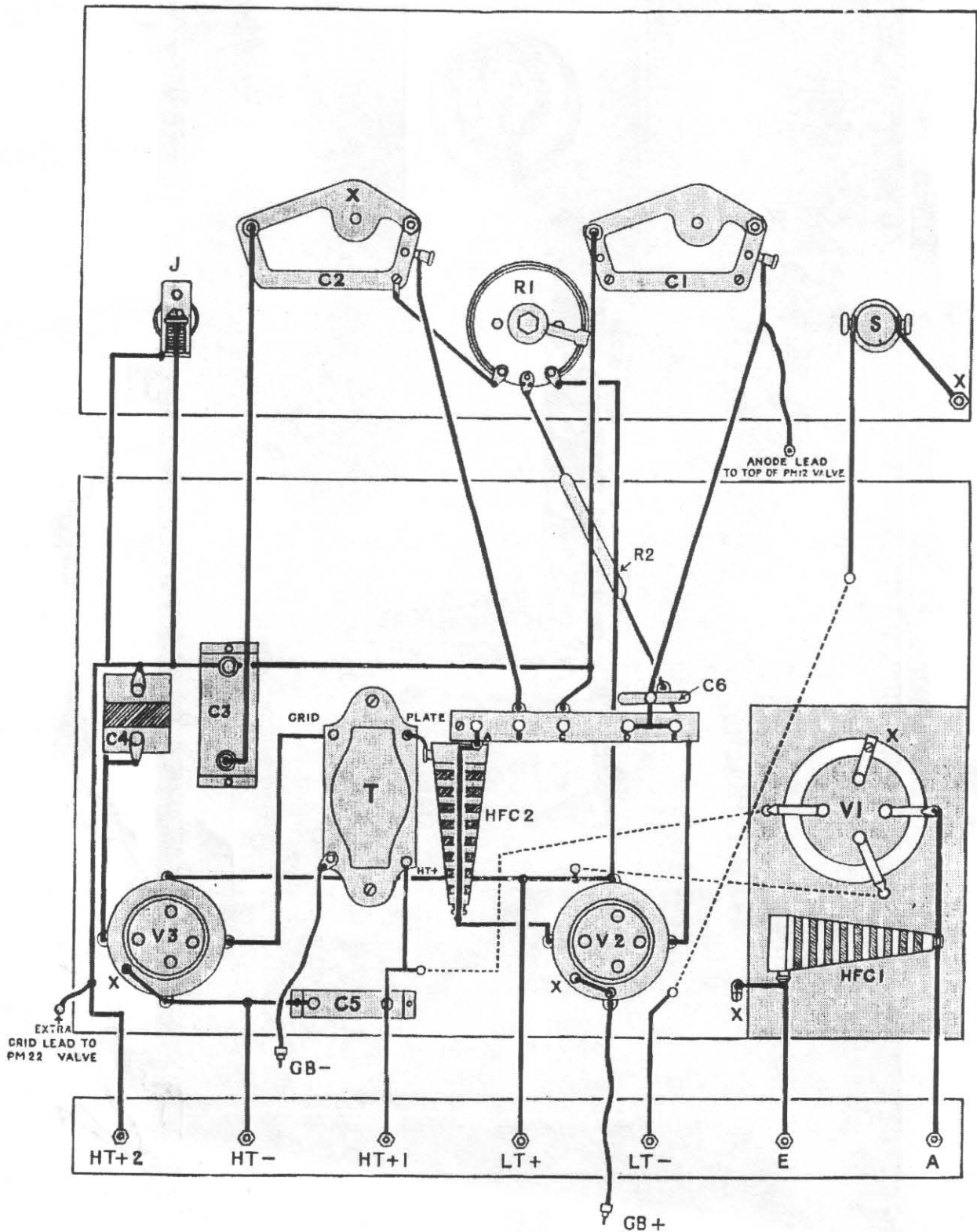
THE EDDYSTONE SCREENED GRID H.F.
SHORT WAVE RECEIVER.



Photograph showing Wiring and Baseboard lay out.

The Eddystone Scientific Short Wave Three.

COMPLETE WIRING DETAILS SHOWING PANEL, BASEBOARD AND TERMINAL STRIPS.





GRID BIAS.

A 15 volt battery should be used, the lead marked G.B. - should be taken to 9v. or $10\frac{1}{2}$ v. negative if 100 volt H.T. is used, or $10\frac{1}{2}$ v. to 12v. if 120 volts is applied. The G.B. + lead is taken to the positive of the battery.

A $1\frac{1}{2}$ volt cell can be inserted in series with H.F.C.1 at the earth end, with the negative side to the choke, and the positive connected to earth and L.T. - if desired. This does not materially affect results, but a saving of 1 milliamp H.T. current is obtained. On a very powerful local signal, it is an advantage. This cell is not shown on the diagrams.

CONNECTING UP.

Care should be taken to see that all leads are correctly made, and to see that the extra leads to the first and last valves are not lying loose in the set when the batteries are connected. Grid bias leads should also be correctly inserted in the grid battery first. When the set is ready for trial, before inserting the valves, it is as well to test the voltage across the filament legs of the valve holders to make sure that no H.T. connection has been made in error, or an old bright valve can be tried in the set. Remove the H.T. connections temporarily, insert and join up the correct valves, join up the grid bias and put in one of the duplex coils. Join up phones or loud speaker to the jack.

OPERATING THE SET.

Pull on the switch, turning both dials, however, to zero before doing so, and also the detector grid control to negative. A distinct click should be heard as soon as the filaments are switched on. Increase the reaction dial slowly; at a certain point the set will begin to oscillate, this will be noticeable immediately, since a low rushing sound will be heard. Then commence to turn the tuning dial slowly, increasing the reaction dial gently to keep the set in an oscillating condition if this should be necessary. The reaction dial only requires to be increased just enough to make the set oscillate. Probably the first signals to be heard will be morse code. When a telephony transmission is picked up, it will be heard first as a shrill whistle, which varies in intensity if the tuning is varied. To receive clearly the speech or music, decrease the reaction dial reading, retune slightly on the tuning dial and the transmission should be quite clear. Clear telephony can never be received with the receiver oscillating,



although for C.W. morse signals this condition is necessary. The grid control knob can now be turned round towards the positive side until the best position is found. For the very short waves, it will probably have to be full negative, while a slightly more positive position will be found better as the wavelength increases. This control should always enable the set to slip smoothly in and out of oscillation; if a plop occurs when the reaction is increased, the control is too near a positive potential. The coils will require changing to accommodate the various wavelength ranges. A rough chart showing the approximate wavelength ranges and condenser settings will be found on page 5.

RESULTS.

The set used on an ordinary type 90 feet long aerial, 30 feet high and not badly screened, gave loud speaker results regularly from the American Stations KDKA on 43 and 27 metres, and 2XG, 2XAF and 2XAD; the Australian Station 2FC; the Dutch Stations PCJJ and PCLL; and numerous French, German and amateur transmissions. These results were obtained during the summer period and were on the whole most consistent. Using headphones, the range on the weaker stations was chiefly governed by atmospheric conditions, and a large number of transmissions from all parts of the world were logged at different periods. 5SW, the English Station, only gave a poor carrier wave, but from our reports and experiences from previous models of short wave receivers we have sent abroad, we have no hesitation in stating that this station would be received well in other countries, when out of the area of bad reception caused by the skip effect of short waves. On the broadcast waveband, the set did not prove highly selective, at 35 miles from 5GB this station interfered with nearby transmissions, although Manchester, London, Bournemouth and a large number of Continental stations were received without interference. The range of the set is excellent and if no powerful local interference is present, stations can be tuned in all round the dial. It must be remembered that the tuning condenser is only of .00015 capacity, but the special broadcast coil nevertheless covers a range from 230-500 metres. Quality from the receiver is excellent and the volume ample on broadcast, and of quite sufficient amplitude on short wave stations to be heard over a room. A sensitive loud speaker of the cone or horn type should be used.



AERIAL AND EARTH SYSTEM.

Contrary to expectation, it is not necessary to take any extreme precaution with the aerial system to make it suitable for short wave results. The average broadcast aerial answers extremely well on the low wavelengths, and unless it is desired to erect a special aerial that is to be used for short wave working only, can be used without alteration. In fact, very bad aerials that give poor results on long waves give quite good reception of short wave stations. Loss from screening by nearby objects is also less.

The above paragraph is not intended, however, to imply that no trouble whatever should be taken in regard to the aerial for short wave use, but more to imply that those who are unable to erect ideal aerials can still get short wave results from a poor aerial. Naturally a really efficient aerial, unscreened, well insulated and with a low capacity leakage to earth, will give better results. If the aerial is to be used for longer waves as well, we should recommend an L type or T type 80 to 85 feet total length, of enamelled copper or phosphor bronze 7/22 wire, at least 30 feet high and in as open a position as possible. The insulators should be of a low loss type and not of the variety where the two wires form a condenser between them, which may cause a capacity leak to earth. This latter condition should also be guarded against in the leading-in arrangements and in any form of switching or lightning protectors in the aerial lead. The lead to be set should be short and well away from the earth lead. Loose or dirty connections and broken strands of wire should also be guarded against; we have known trouble from these sources to make a short wave receiver unpleasantly noisy. Such noise is liable to be attributed to atmospherics or local noise, since it disappears when the aerial is disconnected. For short waves only, the same insulating conditions apply, but a 60 feet length of wire is sufficient, and it should be taken as high as possible and dropped down to the lead-in as vertical as convenient. The earth connection does appear to make material difference to results on waves under 50 metres; it may be best with or without it, and experiment should decide. Over 50 metres, it is generally an advantage. It may be responsible in some cases for bringing in additional external noise. When used, it should be well-made in the usual manner.



Remedy for Faults.

The few causes of trouble which may occur are as follows:—

NOISY RECEIVER.

Loose wire or bad contact. See that valve pins and coils are fitting well into their sockets, that there are no loose nuts on chassis, that accumulator, G.B. and H.T. connections are tight and that H.T. battery is silent.

FIERCE REACTION.

See that the potentiometer or grid control winding is unbroken.

NO SIGNALS.

Test the H.F. chokes and transformer windings for continuity, the condensers for insulation, and see that the variable condenser plates are not touching. If the reaction condenser plates touch, the H.T. battery will be shorted. A .005 fixed condenser can be inserted in series with the lead from the reaction coil to prevent this, if desired. Again, see that coils and valve legs are tight in their sockets.

List of Parts

FOR EDDYSTONE SCREENED GRID SHORT WAVE RECEIVER.

- | | |
|---|--|
| 1 Eddystone Oak or Mahogany finish aluminium Panel, drilled and engraved. | 1 Igranic Jack P.61—Insulated bush with Plug. |
| 1 Eddystone aluminium Base-board, drilled—and side-wings. | 1 Eddystone short wave Valve Holder. |
| 1 Eddystone aluminium Screening Box. | 2 Cason Valve Holders. |
| 1 Eddystone .00015 short wave variable Condenser, with ebonite bush. | 1 Eddystone Terminal Strip, drilled and engraved. |
| 1 Eddystone .00035 ditto. | 7 N.P. Terminals. |
| 2 Eddystone Scientific H.F. Chokes. | 1 Mullard Permacore Transformer. |
| 1 Eddystone push pull Switch. | 1 400 ohm Potentiometer with insulated bush. |
| 2 Indiagraph Vernier Dials. | 1 Special type 3. meg. Grid Leak. |
| 1 Sterling 2 mfd. Condenser. | 1 Eddystone Duplex short wave Coil Set with stand. |
| 1 Sterling 1 mfd. Condenser. | 1 yard insulated Flex. |
| 1 Polymet .0003 Condenser. | 8 Oz. reel 16g. tinned Wire. |
| 1 Aerovox .002 Condenser. | Quantity Screws and Nuts. |
| | 6 Erinold Supports. |
| | 6 Tags, length of Systoflex. |
| | 2 Wander Plugs. |
| | Cabinet if desired is extra. |

If a complete set of parts is purchased, a royalty of 5/- for the first valve holder and 2/6 for the remaining two is payable to the Marconi Company, but not if the set is to be used for experimental purposes solely.



EDDYSTONE
RADIO PRODUCTS

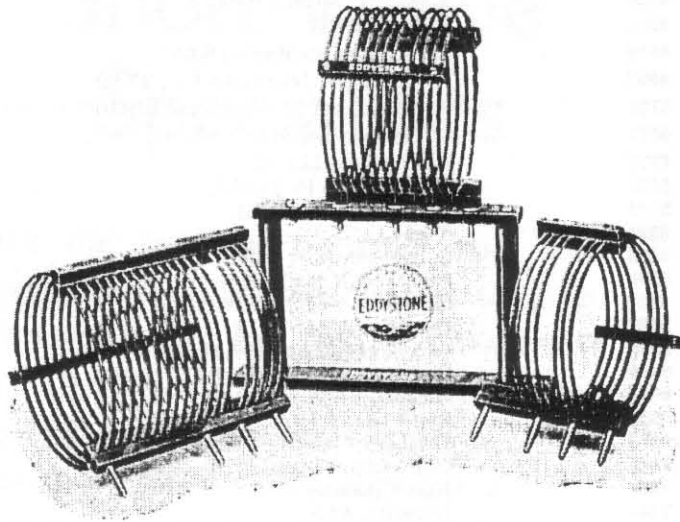
List of Principal Short Wave Stations

Metres	Kilocycles	Alterations.	
90	3333		Nairobi (Kenya).
70	4285		Springfield (Mass.) WBZ.
70	4285		Vienna, OHK2.
66.04	4542		Los Angeles (California) 6XAL.
65.18	4602		Newark (New Jersey) 0.5 kw., 2XBA.
63	4762		Pittsburg East (Westinghouse Electric) KDKA (U.S.A.).
62	4838		San Francisco (Cal.) 6XAR.
61	4918		Paris (Radio LL) GC.
59.96	5003		Bound Brook (N.J.) 3XL.
58.5	5128		New York City (2XE).
56.7	5291		Nauen, AGJ.
54.02	5553		Columbus (Ohio) 8XJ.
54	5555		Brooklyn (N.Y.) WCGU.
52.02	5767		Cincinnati (Ohio) WLW.
51	5882		Casablanca, AIN.
51	5882		Bergedorf (Germany) AFL, 3 kw.
50	6000		Karlsborg (Sweden) SAJ.
50	6000		Moscow, RFN.
43.5	6896		Rome (Italy) IMA.
43	6976		Pittsburg East (Westinghouse Electric) KDKA.
42.8	7000		Constantine (Tunis) 8KR.
40.2	7463		Lyons (Rhône) YR.
37.65	7968		Doberitz, AFK.
37.5	8000		Ibarakiken (Japan) JHBB.
37	8108		Radio Vitus.
37	8108		Vienna, EATH.
32.9	9118		Perth (W.A.) 6AG.
32.5	9231		Sydney, 2BL.
32.5	9231		Copenhagen, 7MK.
32.5	9231		Paris, Eiffel Tower FL.
32	9375		Melbourne, 3LO.
32	9375		Berne (Switzerland) EH9OC.
32	9375		Detroit (Mich.) 8XAO, 0.75 kw.
31.93	9395		Bandoeng, Java (Radio Service) ANE.
31.5	9523		Helsingfors, 0.3 kw.
31.4	9554		Hilversum (Holland) PCJJ.
31.4	9554		Schenectady (General Electric Co.) N.Y., 2XAF, 10 kw. (Aer.).
30.91	9706		New York, 2XAL.
30.7	9772		Madrid, EAM.
28.5	10526		Sydney, 2FC.
27	11111		Pittsburg, 8XK.
26.92	11144		New York, 2XAG.
24	12500		Chelmsford, 5SW, 15 kw. Aer.
22.83	4838		Oakland (California) 6XG.
22.8	13158		Fort Wayne (Indiana) WOWO, 1 kw.
22.1	13575		Richmond Hill (N.Y.) 2XE.
21.96	13661		Schenectady (General Electric Co.) 2XAD.
18	16666		Kootwijk (Holland) PCLL.
17.2	17441		Nauen, AGC.
17	17647		Bandoeng, Java (Radio-Malabar) ANH, 30 kw.
16.02	18726		Rocky Point (Long Island) 2XG.
15.93	18832		Bandoeng, Java (Radio Service) ANE.
15.5	19354		Nancy (France).



THE EDDYSTONE
SCIENTIFIC SHORT
WAVE THREE

EDDYSTONE Duplex Coils.



THESE ARE THE COILS USED IN THE SHORT WAVE
RECEIVER DESCRIBED IN THIS BOOKLET.

They are a set of interchangeable coils designed for use following screened grid H.F. valves either in tuned anode or in tuned grid circuits, with Reinartz reaction winding incorporated.

Absolutely low loss, yet rigid and strong, with patent four leaf contact pins. Can also be used for aerial coil with aperiodic coupling. Full instructions and diagrams with each set.

Coil D.2, for 14/38 metres.
Coil D.3, for 28/63 metres.
Coil D.4, for 42/100 metres.
With Stand.

Price, **19/-** per set of three.

Coils for any wave range can be supplied; the following additional coils from stock :—

D.1,	10/17 metres	5/-
D.6,	230/500 metres	8/6
D.8,	1000/1900 metres	10/-

Life at Quartz Hill Fifty Years Ago.

By Peter Lankshear, Broadcast Engineer, NZBS (Retired)

In Bulletin No.61 Graeme mentions the coincidence of a half century ago when, 12,000 miles away, I was listening to BBC broadcasts that were originating from transmitters under his control. He has asked me to describe what life was like at the receiving station, known as Quartz Hill.

I touched on this in Newsletter 37 where I related how I came by my 680 Eddystone, and I trust that readers who have read it will forgive a few bits of repetition that I have included for completeness. Incidentally, in the original story, I referred to my receiver as a 680X. I slipped up on this, as it is in fact a 680/2 with crystal filter. Sorry about that!

Life on the Farm

Imagine being actually paid to listen to short-wave transmissions with an Eddystone receiver. Fifty years ago, this was part of my job, and yes, with high grade professional receivers coupled to a dream aerial "farm" it could be very exciting and interesting. But for even the most dedicated DXer it could also be a bit of a chore at 3.00am on a stormy winter's night, with a solar flare messing up the ionosphere and you trying desperately to raise a BBC news broadcast above the noise level. At that time, bed could seem a most inviting spot.

But what was Quartz Hill all about anyway?

During the late 1930's New Zealand became increasingly dependent on short-wave communications. The only alternatives were vulnerable slow speed undersea telegraph cables to Australia or across the thousands of miles of the Pacific to Canada. These and the deteriorating world political situation therefore lent urgency to the New Zealand Post Office setting about upgrading its radio receiving facilities.

They acquired a fine isolated site at Makara, some distance to the west of Wellington

City, comprising several hundreds of hectares of rugged and elevated farm land with no houses or power lines nearby. These hills overlook Cook Strait which is about the same width as the English Channel, but much deeper.

Up the Pole!

The Post Office proceeded to set up an extensive receiving establishment, in a large well appointed building surrounded with aerials of many types suitable for their various services. Two of the more interesting types of aerials were long co-linear arrays built on standard telephone poles for the Australian radio telephone service and an enormous loop aerial, comprising two suitably spaced tall poles and with 20 turns of wire supported by pairs of standard 10 insulator cross-arms.

This was used for direct low frequency reception of Rugby in England! Nearby a residential village was built. Makara proved to be an excellent choice of site for worldwide reception.

Another important function of the station was frequency measurement. For this there was a dedicated control room with several racks of equipment comprising a General Radio Primary Frequency Standard. There was even a National HRO receiver included as part of the equipment.

War Clouds Gather . . .

Before long WWII had broken out, and New Zealand became mobilised. News via radio became extremely important and none more so than the hourly bulletins from the BBC. The N.Z. Broadcasting Service soon found itself in need of improved short-wave

reception facilities and joined with the Post Office at Makara. It was decided to set up an independent station at the southern end of the Makara land, centred on an area known as Quartz Hill, named after its white silica outcrops. (I understand that some were gold bearing but I never saw any!) There was already a small building on the site, and aerials were constructed.

The Quartz Hill operation proved to be very successful and during the next few years the building and installations were extended.

Dream Aerials

By the time that I arrived in 1950, the station and procedures were well established. There were 18 aerials, any of which an amateur or a DXer could only dream about.

There was a 5mHz dipole used for a reference but the rest were either sloping V or rhombic, (diamond), the Rolls Royce of receiving aerials. All were supported by 70ft (21 metre) guyed Australian hardwood poles and each aerial was 2000 ft (600 metres) long.

The V's had single wire legs, but the rhombics were 3 wire to increase their bandwidth, which was optimised from 6 mHz to 30mHz. In practice, the interception area of the aerials was so great that even on the MF broadcast band, any signal above the atmospheric noise level was receivable. Over the whole spectrum, signals that would be barely audible on a good domestic installation provided a quiet, solid and useable signal

The spacing and size of the aerials required some feeders to be a mile or more long. These were all constructed as standard open wire telephone lines with those for the V's being 4 wire quads to provide 300 ohms impedance. (Rhombics have about the same impedance as a standard telephone line.) Connection to the rhombics was complicated by their being reversible. This

entailed a feeder to each end with a relay and terminating resistor at the junction point.

There was a varied collection of communications receivers, but as this is an Eddystone oriented publication I will give them only a brief mention. There were several Canadian Marconi CSR5 sets, good solid receivers built with an emphasis on marine service. The workhorses for rebroadcasting were five or six of the legendary Hammarlund Super Pro 400. Notable too was a triple diversity installation using three New Zealand-made versions of the National HRO.

Quartz Hill receivers had two basic functions. One, normally performed by rack mounted sets, was to provide reception of specific transmissions for news and programmes. These sets would be tuned to a station and left for as long as required.

Nation Shall Speak Peace unto Nation . . . One was always left tuned to the best BBC General Overseas Service signal, which was more or less continuously monitored by the operator. Any important newsbreaks were passed on immediately to the appropriate authority.

The other function was for signal assessing, a continuous occupation for the duty operator. Every BBC GOS (General Overseas Service) and Pacific Service transmission was checked at 15-minute intervals and the merit of the signals recorded on specially printed charts. These were forwarded weekly to the BBC and were considered to be of considerable value to the Programme Schedulers.

Next Month Peter describes the arrival of the first Eddystones at Quartz Hill and the prosecution of the Cold War, by radio.

NOT the 830/7!!

It had been noted for some weeks that at several points on the HF bands it was possible to hear quite strong, but distorted speech and even ringing tones of the BT kind.

After several hours of listening carefully to one of these emissions, it became clear that it originated in a nearby PUB. It was from a Payphone of the 'wired' type, not a cell-phone nor one of those radio remote cordless types but one wired into the BT network. When the 830 was removed and a rather ancient AR88 was substituted the same signals were there, out slightly less in volume.

This effectively cleared the 830 and put the problem elsewhere. Carting the 830 around to the next door neighbour's and powering it up produced no such signals, despite sending the neighbour into the Pub to make a phone call. A guess was made here, a good one as it happens but this was hardly Good Fault Finding Practice.

The 830 was taken back home and powered up again in another room. The signal was not there, but wait a mo' - , this was using a different aerial — a random bit of wire. So could the shack aerial be at fault ?

The aerial in use is a random long wire all in one piece until it reaches the shack window, which is a full sized sheet of perspex with a hole drilled for insertion of a feedthrough ceramic insulator. The outside aerial wire and internal lead-in are screw-connected to this insulator's rod.

It was easy to see that on the outside of the window the nut and the washers

were quite rusty and so it was decided to renew this connection. A 2BA solder tag was made up onto the end of the aerial wire and this was then screwed up tight with new shake-proof washers. The whole thing was then covered in some grease as used on the old car.

It was only then that the penny dropped (well, it was a payphone remember!). For most of its travel the aerial ran almost parallel to the wires on the telegraph poles behind the house. Sure enough, upon checking, some of these wires went to the PUB. With the joint renewed, both inside and outside, the set was turned on and tested, left on for a couple of hours during 'Opening Time'.

No more earwiggling of distorted phone calls. This means that the rusty joint must have been acting as a non-linear conductor, just like a rectifier diode. The proximity of the phone wires made the pickup easy.

Plans are now to relocate the aerial as far from the phone wiring as possible, even if this means a mast of some kind instead of the handy tree used at present. One question remains unanswered, there appeared to be some harmonic spacing between the signals, several hundreds of kilocycles.

So was the rusty joint also acting as a harmonic generator? And where did the original 'f1' carrier come from? Nothing was audible on the LF bands.

Ted

“Reflections from the Bath Tub”

As promised last month, we present a letter (submitted anonymously) from an ex-Eddystone ‘old boy’ about the life and times of the EC10

Dear Sir,

I read with interest your comments on the EC10 and its variants in recent issues of ‘Lighthouse’, in particular your speculation on the production rate of these sets. I wondered whether the enclosed information on the initial production of these receivers might be of interest to you and your readers. *(This letter was written before John Instance’s feature was published last month.)*

I joined Eddystone Radio in the early sixties, having spent the first 18 months of my career working for the Post Office (now B.T) on chemical analysis and endurance testing of a variety of items.

I attended a technical interview with Chris Pearce, and then Bill Cooke (Chief Engineer), and gratefully accepted the position of junior Tester. My wage (if I remember correctly) was £6 a week with a 5-shilling clocking-in bonus, for a 40-hour week. Overtime was at the discretion of the management.

On my first day I sat next to Ray Waldron (Test engineer), in a small open-fronted wooden booth, to learn how to fault-find and test EC10 receivers (with background “music while you work”).

The production line was directly adjacent to our test booth, comprising about 6 or 8 workers, with Bob Snape acting as the chargehand.

At that time the production/test procedure was that the R.F. and I.F printed circuit boards were assembled with components and hand soldered on the production line. Drives were pre-

assembled then all of these items were inspected prior to main assembly and final wiring.

Finished receivers would be passed to the end-of-line tester who would first mechanically inspect, then align the I.F stages, and “roughly” align the oscillator and R.F circuitry, fault finding as necessary (these were my tasks when I first started).

I would then pass receivers to Ray, who would accurately calibrate the gang (to fit scale calibration), and finally align the mixer and R.F stage coils. He would then pass this receiver for final cleaning, fitting of cabinet, and have it returned to him for final inspection and aerial testing. Subject to approved results it would be packed and despatched to the finished goods stores.

At the time of my arrival, with Ray as the only tester, the production rate into finished goods stores was around ten per week. Quite honestly this was a struggle, due to the generally poor production quality on those early receivers.

The best, and most experienced workers, were concentrated on the 880, 830 and 770 series of receivers; the EC10 line had less skilled people.

Also it should be remembered that the company was “learning” too. PCB assembly and manufacture was in its infancy, as indeed was its experience of solid state technology.

Production quality was a problem for quite a few months. Drives in particular were consistently poor on initial inspection, and it was not unusual to have two, or even three, test

report sheets with lists of faults to be corrected. But changes were "afoot".

The assembly and soldering of the I.F. and R.F boards were transferred to the Pilot Production department (a new building near Development). Here a flow-soldering machine was installed which removed the drudgery of hand soldering.

Don Illsley was tasked with the production of boards using this technique, but this too had its teething problems. Certainly the temperature control of the solder flow was a problem, leaving boards with "bubbled" solder resist and unwanted solder bridges when too hot, and a multitude of dry joints when too cold.

Back on the production line two very experienced workers were "drafted in" to finally wire up the receivers. Stan Carney (of foreman status) was given the task of controlling production and raising quality standards.

Undoubtedly Stan made a major contribution here and within a fairly short time production quality began to improve. (It must be said that Stan played an ongoing significant role in the production success of this receiver).

The testing of these sets was interesting because of its simplicity. My equipment was an Advance "spot" generator, this provided rapid push button selection of generator frequencies (i.e. no manual tuning), a 9V power supply with 500 mA meter in series, two Neosid trimming tools, one screwdriver, a rubber mat, and a lot of enthusiasm. The in-line current meter was the tuning indicator for all my alignment.

Ray's equipment was similar with the addition of a xtal calibrator, with sample checks using more elaborate test gear to prove specification performance consistency.

With the improvement in standards and techniques, the production/test rate began to climb. At this point I would guess that 30 to 40 sets per week was achievable, but I think that

customer demand was still not being met.

We were to have another addition to the test team. A young Roy Posner came to add his weight; his responsibility was sub-assembly inspection, mechanical inspection, and I.F. alignment. We all got on very well together, it was a pleasure to come to work.

We had a great team spirit and a lot of good-humoured "banter". It was not long before the Test team of three began to "gel". With further improvements in production standards and better availability of receivers we were sending probably 60 units to the finished goods stores each week.

I think speculation began to arise as to what peak production figures could be achieved. Management seemed to sense that there were further improvements to come, and I well remember a fairly informal discussion between John Shipton (Production manager), Stan Carney, and the test team regarding the practicalities of 100 per week. Certainly those of us at shop floor level were anxious to "give it a go".

It should be stressed that with increasing production rate, we were "graced" by Harold Cox's presence (Technical Director) on a far more regular basis. He had the uncanny knack of looking over a batch of completed receivers and selecting the only one with a minor fault. It was a sort of sixth sense that was so accurate that we began to dread his appearance. Usually his visit would be followed by Chris Pearce (Chief of Test) who might just have a further "chat" on any issues raised.

Certainly the possibility of the magic "ton" was greeted with a degree of scepticism by some of the other departments. I well remember Doug Aldis (press shop foreman, and a great character), casting doubts on our motives, on the basis that we would probably be earning more than him in overtime payments alone!

Clearly this was a real team effort across the whole of the factory, the

casting "fettlers", press shop, stores, spray shop, coil manufacture and test; and all associated with sub assembly production had to increase output accordingly.

Well the "die was cast", and a production counter was put up on display showing the active build count, and a loud cheer heralded the first time 100 units were produced in the week.

For two consecutive weeks we achieved 100 per week, on the third week we ran out of many of the bought-in components, leaving the Chief buyer Jack Gwynne a bit "red faced". Production was a bit "ragged" after that until it settled down again, but one thing I can confirm is that production peaked at just short of 140 receivers in one week, which was a mix of Edometers and EB35's; with the same manning levels.

It should be remembered that production of one receiver was not necessarily continuous. It was often broken with the production of other receivers, sometimes on the same production line, and there were odd special small orders, e.g. with Braille fingerplates etc. These, if anything, tended to be of nuisance value in terms of interrupted production.

Whilst on the subject of variations of the standard produced item, I would like to clearly state that this was not unusual. For example, I well remember being given six FET's (in the early days of their production), to be fitted in the oscillator stages of production EC10's with some minor modifications, and requested by Bill Cooke to report on their effectiveness, or otherwise.

It was difficult to keep sensible levels of stability (these were probably operational to frequencies in excess of 1 Ghz). The net result was that these six receivers "bristled" with ferrite beads and added "stopper" resistors.

Bill Cooke joined me on the production line, spent some time looking at the performance and attendant problems, before making a decision. Significantly three of these

receivers were then sent out "as built", with appropriate qualification of the test report sheet, and why not? Their performance was deemed acceptable, if not an improvement to spec.

Also I can remember trying a new type of F.M tuner on an EB35. This required a change to the mechanics of the drive assembly, once again this went out as a production model. It may well be that these "oddities" went to selected customers for trial. I would not be privy to this information, but I can confirm they went into finished goods stores for despatch to the outside world.

I can look back on this period with considerable nostalgia, and immense job satisfaction. Equally, I should not forget the young lady who started some 6 months after me on the EC10 production line. After completing appropriate shorthand/ typing education she became secretary to Joe Addison (Works Manager), and for whom I paid the princely sum of seven shillings and sixpence (and these are her words) for the privilege of marrying! (- the cost of a Marriage Certificate in those days - Graeme)

She also reminded me that she left Eddystone on approx. £9 per week to take a secretarial role at Austin (later B.L., then Rover) for a wage of £11 per week, (rich beyond her dreams!).

There was a time when the company lost a number of more senior operatives to this outfit. However, Eddystone continued, keeping a very stable workforce (despite the lure of bigger money at Austin for its production supervisory staff). Testament to this fact is that my younger colleague, Roy Posner, from that early EC10 test team, has remained with the company as a very respected engineer. ★★★

What a super personal recollection of the early days of bespoke 'solid state'. I know this copy reaches 'Eddystone', - any more Tales of West Heath out there?

Please! . . . Graeme. (Actually, Bill Cooke took one look at this and told me who wrote it!)

43

TED's Mailbox Continues from Page 43 with a letter from Ron G4MRH which is so big that it has turned into a feature!

STREET MARKET 2232A

— "I thought you might be interested in a recent purchase of an Eddystone 670C badged as a MIMCO 2232A.

On Saturday mornings I usually prowl along the street market in Brighton — keeping an eye open for Morse keys and any radio related bits 'n' pieces; one does find things occasionally. This time I noticed the Eddystone right away amongst a lot of 'junk'. The street trader obviously didn't think much of it as it was beneath many other objects. But to the trained eye there was no mistaking just what it was. Though at this stage I didn't know which model.

My method is of course, never to show much interest in whatever object I may be contemplating buying, as any enthusiasm shown just increases the price. So I casually inquired how much did he want for that old receiver laying there, and was informed £25.

There was no way of knowing at this stage if it was even complete or if some wrecker had been at work inside. Never-the-less, what can one buy for £25 these days? I normally bargain with them on price, but on this occasion I never thought twice about it.

It was not too heavy being the '670A', I had to carry my prize some

distance back to the car, but as there are not too many bits inside (no mains tranny) it wasn't too bad a chore.

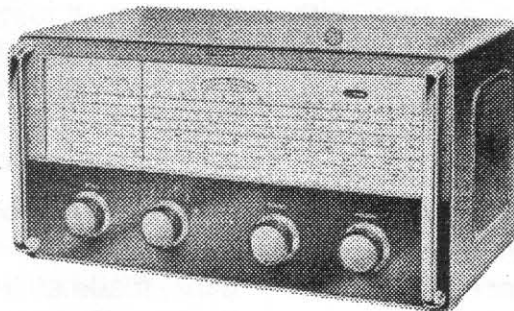
On getting it home — on the bench, I took the back off to have a quick look. All seemed to be in order.

The main tuning was extremely reluctant to go anywhere, so a bit of work was done on this to get it moving, it still isn't perfect. On checking the fuses I found that one of them was a 36 amp, and blown at that. So there was obviously something that needed further inspection. The test meter showed a short across the mains leads.

Out came the Newsletters and looked for the gen. I phoned Dave Simons to inquire the price of a manual, it arrived here two days later without me having parted with any money. Such trust, not misplaced may I add; the cheque was in the post by return. Such service cannot be passed over without a Thank-you to him.

May I say that I am not a technical man, I have been a radio operator all my life, But one doesn't make friends with our technical staff without some of their expertise rubbing off. I found the most useful information came from the pages we received with one of our Newsletters, "Compilation of Faults".

Looking at the circuit diagram — I immediately suspected the first condenser C60, a 0.05uF at 500 volts, even before I had looked at the



"Compilation of Faults" gen. Unsoldering one end of the condenser the test meter showed that the short no longer existed. I replaced it with a modern one of 47nF at 630 volts, these being obtained from Maplins. Even though I could have switched on without it — I didn't do that. I rather like to do things in order. As I've already said I am no technician.

I didn't immediately apply full voltage as I didn't know how long the set had been in damp circumstances. I kept it in dry conditions for two weeks before changing the condenser.

Taking the set outside, as I didn't want to stink the place out. I set the voltage to 230 — put my 110 volt transformer with a 60 watt bulb in series and switched on.

Not much to report at this stage, couldn't see any valves lit up — it was much too bright outside for that. I left it in that state for an hour, then put the set onto the 220 volt setting, again for an hour. On feeling the valves now I felt sure that I could feel warmth in V5 the UL41. I then gave it half an hour with the full 110v on the 220v setting. I was now sure there was warmth in the V5, also on all of the other valves. I could even see the heater in V5 lit up.

Finally with the full 110v on the receiver set at 110v she came to life, signals from all over the place. A success story. Had another couple of problems, one with a suspected dry joint —but this was the speaker connections gone gooey. The other is that the magic eye glows very low in the dark, i.e. not working. Think chances of replacing this is almost nil.

The case is in reasonable condition, there are some chips here and there but quite acceptable for a set this age. The colour is the red bronze, so am assuming it was made for the Indian market (if

my deductions are right). Since it is MIMCO badged perhaps this is not so.

It is missing the front badge which is at the top of the scale window, and don't know just what was marked on it. I have replaced the direct mains cable with a socket for mains connection, so that it can be unplugged for convenience in moving around.

Perhaps I should explain that a previous owner had done a bit of cutting of the case in that area so it was not in any sort of mint condition. I rather liken it to an animal which has been badly treated and have given it the necessary injections of TLC. I do not in any way claim that this is a restoration job, merely a repair.

Having given it a good clean up, it now does look good and does work very well, the sound quality is extremely good, one would hardly know the set was switched on when a signal isn't present. Since I have a thing about panel lights I propose to put these on at a later date. I have never seen a ship which did not have bright lights on it. So the set must follow that path since it is a Marine Tuner unit. When the set is switched on and not on a station it is difficult to know that the set is actually on. Hence the need for panel lights.

Oh yes one other thing, the previous owner had put in a BFO unit, and I think, made quite a good job of it, hence the possible reason for the bit of cutting at the rear of the case. He included a variable control and a switch for the battery — all sited at the back with the unit inside. The switch had its toggle broken off, so this is replaced, and the whole thing works fine.

Cost of repairs virtually nil. Can you tell me what the missing badge on the front would have had on it ?

The plate on the back says:—

CABIN TUNER UNIT TYPE 2232A

SERIAL No CMO 733
MANUFACTURED FOR
MARCONI'S INTERNATIONAL
MARINE Co Ltd by
STRATTON & Co Ltd

Note on CMO 733 — the O is nearer to the CM than 733, it could be CM 0733 but the O is an O and not a 0, if you see what I mean.

The set is marked in the left panel opposite the magic eye as Type 2232A; as it is a four band job it doesn't equate to the 670C as per the Quick Reference Guide, in which it apparently ceased production in 1964.

Another white plastic plate marked Serial No. SG 55384, which is July 1967 — a friend in my radio club questions the number 55384 and says it is only four figures but I confirm it as 55384.

Ron, G4MRH

(If anybody has comments to make on the above, or can help Ron, then drop me a line and I shall pass on the gen.

—TED.)

(NOTES HERE FROM GRAEME:-

As I've just type-set the above I couldn't help reading it, could I? Just to advise readers, the 670A was one of the few post-war Eddystone valve sets to be manufactured with holders for scale lights but with none fitted!

The question of Serial plates: The white plastic one is the Royalty Licence plate and is nothing to do with Stratton & Co. It is the plate fitted to all British domestic radios from 1922 until the late 1960s. The number SG55384 is the serial number of the licence, not the set.

The 'SG' is a red herring!

Note the 'caveat' in QRG about Eddystone Serial Numbers. They are frequently slightly muddled, and the apprentice who was punching them out was quite likely to use an 'O' instead of a '0'.

In fact all Eddystone numbers of this period are two date letters and four numbers. In this case CM0773, the C standing for the month of March, and the M standing for 1961. The 0773 is the 773rd 2232A to be manufactured. If the set was made in 1967 it would have had 'Eddystone Radio Ltd' as the manufacturer, not 'Stratton & Co Ltd,' who had sold it in 1965 to Marconi.

I'm a bit puzzled about the 'Red bronze case' and the Indian market! Never heard of that one before. All the red bronze cases I've seen have been ships' cabin sets, like this one.

The poorly magic eye is quite easily replaced; it's a DM70, obtainable from Jim Fish at 'Wilson Valves' - 01484 654650.

The other matter is the MIMCO Badge. I have a similar cabin set, a model 2232B, Serial LR0130, type 670C/1 (December 1966) made by Eddystone — not Stratton. This has no MIMCO badge, nor does it ever seem to have had one. It has the 2232B number on the scale (as in Ron's set) but at the bottom left, below the Tone control, it has a small 'ELETTRA' badge, about an inch long. It has six wavebands. and scale lights!

I do have a 670A clone, (type 'B' case) badged as a MIMCO 2245, with four wavebands, serial AK0076 (October 1959) which does have a MIMCO badge above the scale in place of the usual Eddystone badge. It looks like this:-



"EDDYSTONE SPECIFIED"

A Series of Articles featuring Constructional Projects
In which the use of Eddystone Components is specified.

NO 1 (1932)

EDDYSTONE SHORT WAVE MANUAL

7

THE ATLANTIC THREE

12.5-85 METRES.

A three valve short wave receiver of simple and inexpensive design that gives really good results.

For the many experimenters who prefer to build a separate receiver for the reception of the short waves, and while not willing to use as many as four valves, consider that two valves are not quite sufficient for their requirements, the Atlantic Three is available and will be found to give every satisfaction. The design has been so arranged that although a stage of S.G. amplification is incorporated only one tuning dial is necessary. Handling the receiver, therefore, presents no complications and with the specially designed disc drive for accurate short wave tuning and the slow motion reaction control, the finest adjustments are possible. Reaction is smooth without any trace of blind holes or overlap and hand capacity effects are absent. The use of a pentode output valve gives sufficient signal strength for a loud speaker to be utilized and the receiver on test gave excellent reproduction of several American short wave transmissions. Although primarily designed for short wave reception, the receiver can be converted for use on the normal broadcast wavelengths up to 1,800 metres by the addition of extra coils.

CONSTRUCTION.

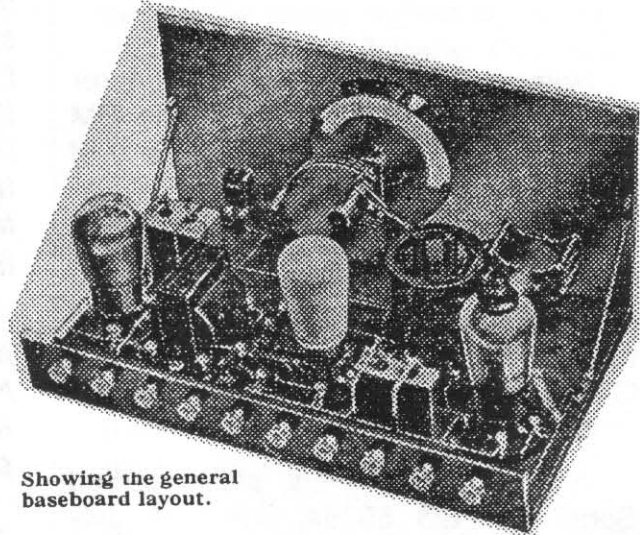
Follow the wiring diagrams and point to point details, making sure that connections are all strongly and cleanly made, and no trouble should be experienced as the design has been kept as simple as possible. Take care that connections Nos. 4 and 9 are well made to the left hand panel bracket and that this in turn has a good contact with the metal panel. Be sure also that the contact made by the reaction condenser and disc drive to the panel are similarly well made. The .002 condenser across A and F of the last valveholder is fastened in place by bending the tags of the condenser and slipping them over the terminals. The L.F. transformer and 6 pin coil base are both raised slightly from the baseboard with $\frac{1}{2}$ " pillars. This is done so that most of the wiring can pass underneath these components, facilitating the design.

VALVES.

Mullard	Mazda	Mullard
P.M.12.	H.L.210, metallised.	P.M.22.

BATTERIES.

A 2 volt accumulator is required and 120 volt H.T. supply.



Showing the general baseboard layout.

H.T. +1 should be 60-80 volts; H.T. +2, 40-60 volts; H.T. +3, 120 volts.

A 15 volt grid bias battery is needed with 12-15 volts negative bias on G.B.—.

OPERATING THE SET.

First of all, the suitable coil for the wavelength range which it is desired to receive upon should be inserted and then starting with both tuning condenser dial and the reaction condenser at minimum, switch the receiver on. Increase the reaction control by means of the vernier knob gently until at a certain point the set will begin to oscillate; this will be noticeable immediately since a low rushing sound will be heard. Throughout the whole tuning operations, this reaction control should be so adjusted that the set is always only just in this oscillating condition. The reaction control should never be turned any more than is necessary for the first reaction sound to be heard. Now commence turning the tuning dial slowly, increasing the reaction control gently if necessary to keep the set in the oscillating condition. Probably the first signals to be heard will be morse code. When a telephony transmission is reached, this will also be heard as a shrill whistle similar to morse code because the set is in an oscillating condition. The difference, however, between a morse signal and a telephony signal is that the first named is a constant note, whereas

Continued on page 9.

THE ATLANTIC THREE—continued

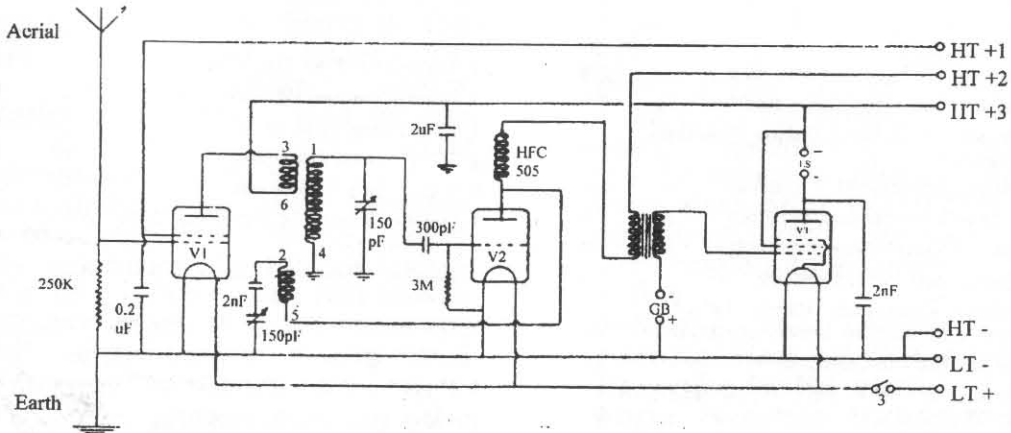
telephony, when the dial is moved very slowly, will be heard as a high pitched whistle which builds up, reaches a silent point and then appears again as a high pitched note which gradually dies away. To receive telephony, the dial should be turned until the silent point is reached and then the reaction control gradually eased off. The tuning dial will perhaps now require slight readjustment, when

the speech or music should be quite clearly heard. It simplifies the operation of the receiver when searching for stations, to keep it in the oscillating condition, but it should be borne in mind that clear telephony can never be received with the receiver oscillating, although for reception of morse signals, this oscillating condition is always necessary.

POINT TO POINT CONNECTIONS.

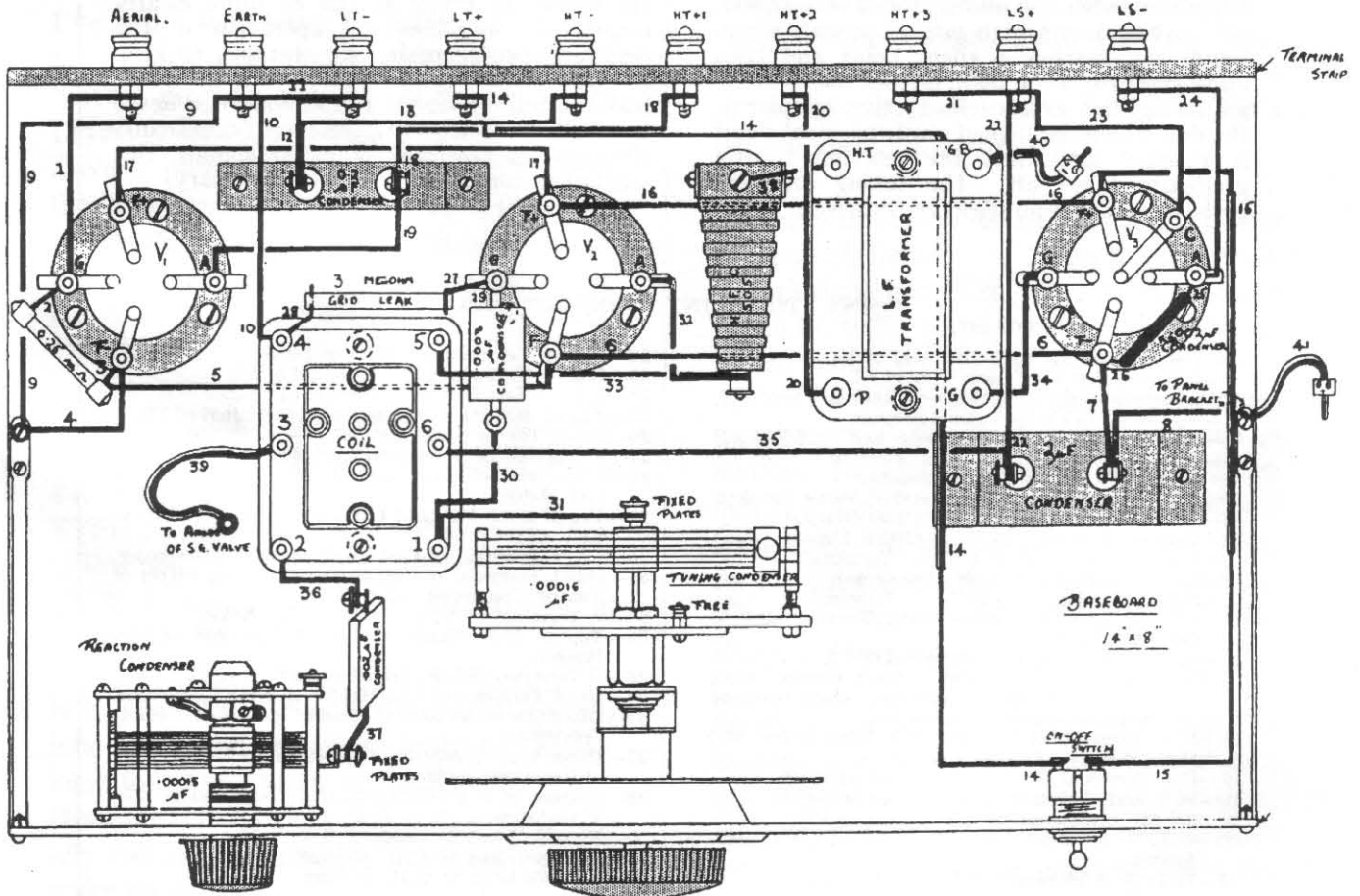
- 1—Aerial Terminal to G Terminal of V1.
- 2—0.25 megohm Grid Leak to G of V1.
- 3—Other end of 0.25 megohm Grid Leak to F — of V1.
- 4—F — of V1 to Earthed Panel Bracket.
- 5—F — of V1 under the Coil Holder to F — of V2.
- 6—F — of V2 under L.F. Transformer to F — of V3.
- 7—F — of V3 to 2MF Fixed Condenser.
- 8—2MF Fixed Condenser to Earthed Panel Bracket.
- 9—Earth Terminal to left hand Panel Bracket.
- 10—Earthed Terminal to No. 4 of Coil Holder.
- 11—Earthed Terminal to L.T. — Terminal.
- 12—L.T. — Terminal to 0.2MF Condenser.
- 13—0.2MF Condenser to H.T. — Terminal.
- 14—L.T. + Terminal, under L.F. Transformer, to On-Off Switch.
- 15—On-Off Switch to F + Terminal of V3.
- NOTE.—In order to prevent a short circuit, wires Nos. 14 and 15 have systoflex tubing covering them as shown in blueprint.
- 16—F + Terminal of V3 under L.F. Transformer and H.F. Choke to F + of V2.
- 17—F + Terminal of V2 to F + Terminal of V1.
- 18—H.T. + 1 Terminal to 0.2 MF Condenser.
- 19—0.2 MF Condenser to A Terminal of V1.
- 20—H.T. + 2 Terminal to P Terminal of L.F. Transformer.
- 21—H.T. + 3 Terminal to L.S. + Terminal.
- 22—L.S. + Terminal to 2 MF Condenser.
- 23—L.S. + Terminal to C. Terminal of V3.
- 24—L.S. — Terminal to A Terminal of V3.
- 25—Tag of .002 MF Condenser to A Terminal of V3.
- 26—Other Tag of Condenser to F — Terminal.
- 27—3 megohm Grid Leak to G of V2.
- 28—Other end of Grid Leak to No. 4 Terminal of Coil Holder.
- 29—Tag of .0003 MF Grid Condenser to G Terminal of V2.
- 30—No. 1 Terminal of Coil Holder to Grid Condenser.
- 31—No. 1 Terminal of Coil Holder to Fixed Plates of Tuning Condenser.
- 32—A Terminal of V2 to Top of H.F. Choke.
- 33—Top of H.F. Choke to No. 5 Terminal of Coil Holder.
- 34—G Terminal of L.F. Transformer to G of V3.
- 35—No. 6 Terminal of Coil Holder to 2 MF Condenser.
- 36—No. 2 Terminal of Coil Holder to .002 MF Fixed Condenser.
- 37—Other Side of .002 MF Condenser to Fixed Plates of Reaction Condenser.
- 38—Bottom of H.F. Choke to H.T. Terminal of L.F. Transformer.
- 39—Flexible Lead to Anode of S.G. Valve.
- 40—Flexible Lead to G.B. — Plug.
- 41—Flexible Lead to G.B. + Plug.

THEORETICAL DIAGRAM.



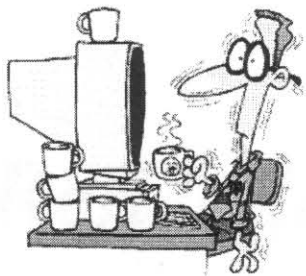
All connections marked \perp are taken to metal chassis for earth return.

WIRING PLAN. THE ATLANTIC THREE



LIST OF PARTS.

	Price		Price
1 Eddystone .00016 mfd. Condenser ..	9/6	1 Ferranti A.F.8. Transformer	11/6
1 Eddystone Disc Drive Type 933W ..	7/6	1 Iganric On and Off Switch	1/6
1 Eddystone .00015 Slow Motion Reaction Condenser	8/6	1 Erie 3 meg. Grid Leak	1/-
1 Eddystone Scientific H.F. Choke ..	4/6	1 T.C.C. .0003 Condenser	1/-
2 Eddystone Valveholders, type 501 ..	2/6	2 T.C.C. .0002 Condensers	2/8
1 Eddystone Valveholder, type 500 ..	1/6	1 Helsby 2 mfd. Condenser, 250v. A.C. working	4/-
1 pair Eddystone Panel Brackets ..	1/3	1 Helsby .2 mfd. Condenser, 250v. A.C. working	2/-
1 Eddystone Aluminium Panel, 14" x 7", drilled and finished brown crystalline	6/-	1 Dubilier Resistance, .25 megohm wire ends	1/-
1 Eddystone Six Pin Coil Base	2/-	1 3/8" ply wood Base Board, 14" x 7". ..	1/6
1 Eddystone Six Pin Coil, Type 2LB, 12.5-28 metres	5/-	10 W.O. type Terminals, N.P.	1/3
1 Eddystone Six Pin Coil, type 2Y, 24-50 metres	5/-	1 Hellesen 15 volt F.B. Battery	3/-
1 Eddystone Six Pin Coil, type 2R, 40-85 metres	5/-	Wire, Flex, Wander Plugs, Screws, etc. ..	1/3
1 Eddystone Drilled Terminal Strip, engraved	2/6	4 No. 2P Insulating Pillars, 1/2" x 3/16" ..	4d.
		Cost of Parts	£4 13s. 9d.



POO'S PONDERINGS

'Stray thoughts from an absent mind!'

by Simon Robinson M5POO

By the time you read this issue of "Lighthouse" it will be late November or early December. I am however putting pen to paper (actually pixel to screen) in early November following what is possibly the worst rain and flooding in my living memory. Whilst up here in the Arctic climes of Northumberland we got off fairly lightly, the likes of Graeme in Worcestershire had a thorough soaking. Apparently a large wooden boat was spotted floating up the River Severn full of the weirdest looking tourists; all of them twins.

Last issue I promised some more information on the 730/10. One of the 'brace' I received was passed on to a friend who switched it on; as you do. As luck would have it there were no fireworks and the set works like new. On 10m SSB it was rock solid stable and the audio was great. No need for wimpish product detector add-ons here; this is a man's radio! Just turn up the AF gain and keep the RF gain at a minimum, that's all you need to do. Anyway, the main differences are in the audio output where the impedances are 50 and 600 ohms for line drive. A small step down transformer allowed the use of a normal 3-ohm speaker. In addition there is a filter choke and fuse in each leg of the mains input. There is a small modification to the cathode circuit of V5, part of the selectivity switching. The official Eddystone revision sheet is on the following page. Neither of the two sets actually has the standard Jones plug connectors on the back but simply uses terminal block. The latter is not original but there is no evidence of any other form of connector present. Has anyone a similar set who can shed light here?

The 730 series was a successful range of models and rightly so. Our 730/10's were produced for the Fighting Vehicles and Development Establishment and both are virtually new complete with their fuses and trimmers.

Rest in Peace

November saw the demise of POO's trusty 5-year-old Kyocera laser printer. The cost of resurrection was terrifying so a new Brother HL1250 has been procured.

Fortunately this means the quality of your magazine rises to even loftier heights, as the black bits really are black!

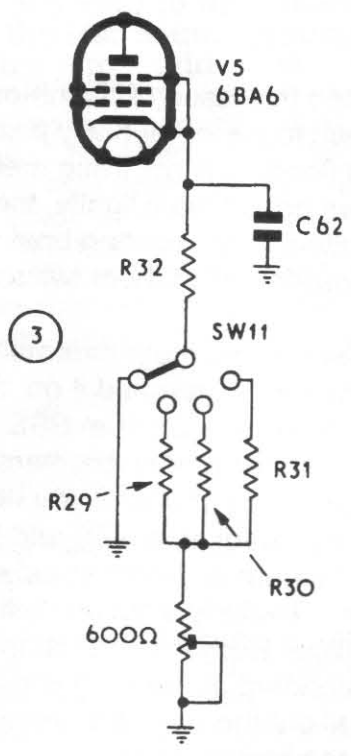
For the last two years I have had my beady eye on an Eddystone set lurking on a friends landing. The usual temptation of folding stuff failed to re-home it so alternative methods of leverage had to be sought. In all the time I had known about the set it had never moved from it's lowly resting place.

Very recently some choice morsels were acquired that were of no interest to POO so they were submitted as offerings to the owner. Eureka! after two weeks a call came to say the deal was on. But what was the set? Read on.



'POO told you to check it first!

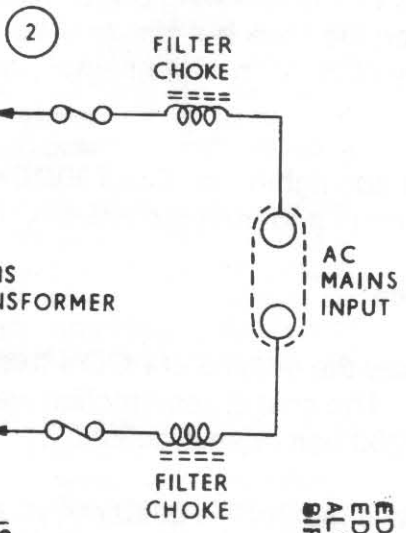
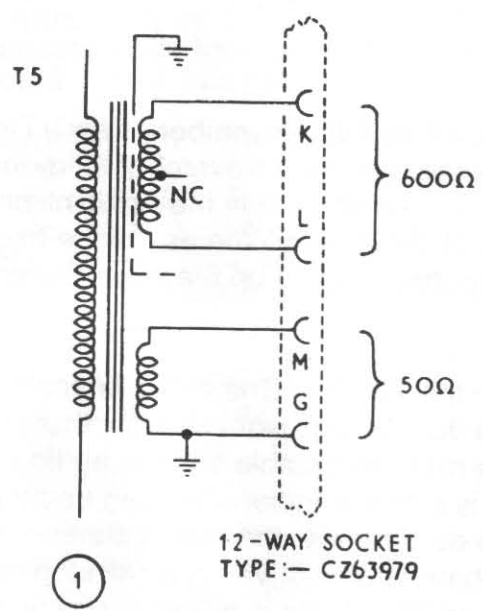
REVISIONS.



CIRCUIT MODIFICATION SHEET

MODEL 730/10

SEE AMENDMENT SHEET AT FRONT OF MANUAL.



EDDYSTONE RADIO LTD.
EDDYSTONE WORKS,
ALVECHURCH ROAD,
BIRMINGHAM. 31.

ISSUED: 7 JUL 1981

MATERIAL.	
SUPPLIER.	
OUR ORDER.	
FINISH.	

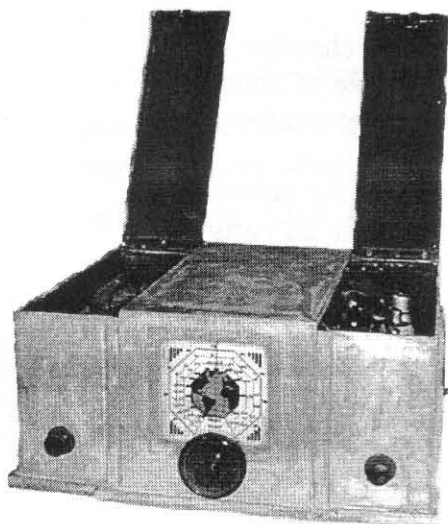
EDDYSTONE RADIO LTD. BIRMINGHAM, 31 ENGLAND.	
DRAWING NO.	BP1057
DRAWN	J. BRATBY.
TRACED	S.M.I.
CHECKED	<i>[Signature]</i>
APPROVED	
DATE	15-3-62

The Eddystone All World Eight

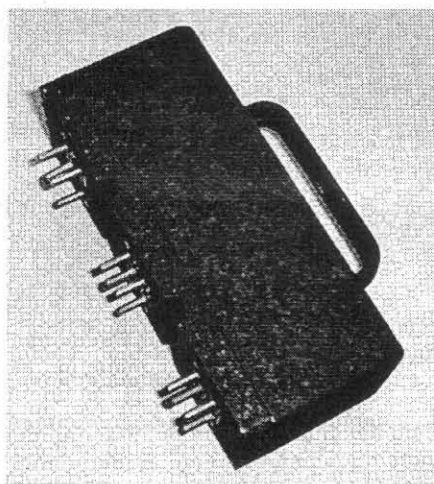
Without a doubt this is one of the most interesting pre-war sets produced by Eddystone. It is an eight-valve superhet battery radio with push pull output, proper RF stages and more but no BFO. Introduced in 1937 it featured a fully die cast case in the "Art-Deco" style of the period. A matching speaker was available but not with mine. As standard three coils were supplied covering popular wavelengths however extras could be purchased if desired. Mine has one of these extra coils and all three of the standard issue units. Eagle eyed readers will notice how similar the coils are to those used in the slightly later model 358.

Like many of Eddystone's later sets the All World Eight is built like a proverbial brick outhouse and features the unique facility of gull wing doors – see below. For a full review of the All World Eight see issue 13 of the newsletter. Dave Simmons has copies if you need one.

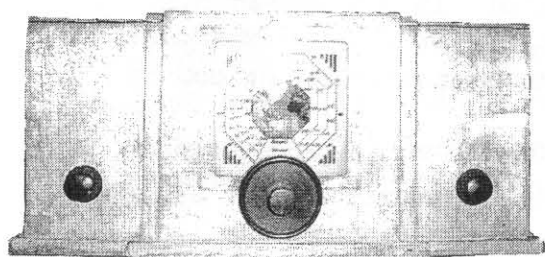
I am sure that lurking in lofts all over the world are Eddystone sets like this one just waiting to be discovered; in many cases for a very small sum. My set originally came from a local car boot sale for around £30. For some reason as yet unknown, a previous owner has carefully removed all traces of the brown crackle finish paint from the case. Early Eddystones finished in this manner are famous for peeling paint and one must assume the listener preferred the "All Metal" look to the peeling brown crackle. As a TV show once claimed "We can rebuilt him (it) and better than before". I have some brown crackle paint purchased from Antique Radio in America. That will do nicely!



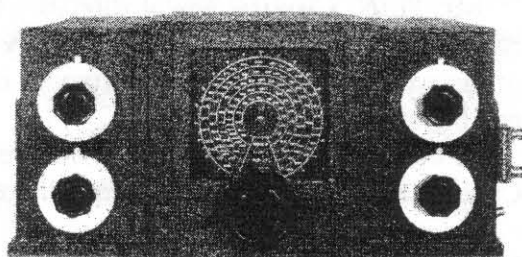
Left: The All World Eight in all its glory complete with those "Gull Wing Doors"



Left: One of the four coils obtained with the set. Very like the 358 me thinks.



All World Eight



R101

The R101

Shown above are front views of the All World Eight (*left*) and its military version, the R101 (*right*). Little is known about the R101 except that it had a BFO, which the original receiver did not. The other 'extra' knob is a mystery. Apparently the R101 was intended for use in tanks. A production prototype was duly installed in a tank! The first time they fired the main gun all the valve heaters went open circuit! OOPS! Does anyone have any more information on the R101? If so may we borrow it to copy and return? Some pictures of a real one would be really nice.

That's all folks! See you next issue and don't eat too much turkey will you.

The Birmingham Mail, August 1949

(found by Graeme in the Stratton archive)

These Radios Get 4,000 Bumps Each

The average listener who treats his radio with great respect "in case something goes wrong" would shudder to see the way sets are treated at the Eddystone works of Messrs. Stratton and Co. Ltd., at West Heath, Birmingham.

There is, for example, the "bump test." The finished set is placed on a board which every second is automatically raised several inches and then allowed to drop with a bump which gives the innards of the set a thorough shaking. And the set stays on the board until it has had 4,000 such jolts.

Then there is the humidity test, in which the set is placed in a steam chamber with 95 per cent humidity at 158deg. Fahrenheit for 12 hours. After a couple of hours to dry out it is expected to play. A third test gives the set a thorough roasting in conditions of dry heat.

The reason for these tests is that Eddystone sets are designed, not for suburban fireside listening, but for hard work under the most exacting conditions in all parts of the world.

International Reputation

Strattons are short-wave specialists with an international reputation. Their list of agents reads like a world cruise itinerary. Their sets have been taken on expeditions up Mount Everest, into the Antarctic, and are in daily use in ships sailing the seven seas.

Mr. H. N. Cox (technical director) told a reporter of "The Birmingham Mail": "Sets that work perfectly in this country would be no use in the tropics or other parts of the world. Much of our equipment is for vital communications work, and nothing can be left to chance."

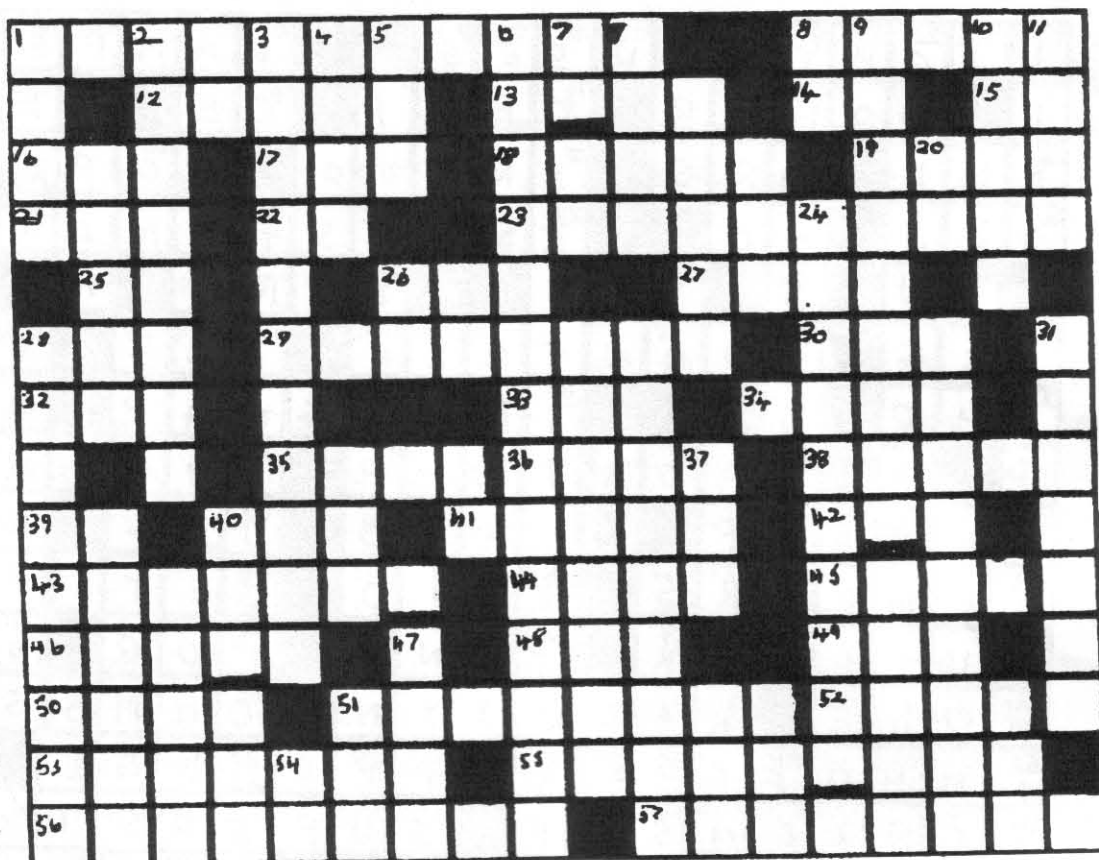
In the face of keen American competition Eddystone sets are now selling well in Canada, and it is hoped will eventually enter the U.S. market.

Unusual Beginning

No radio firm could have had a more unusual beginning. Strattons at one time made hairpins by the ton, but found their order books empty almost overnight when, in the 1920's, women adopted bobbed hair as a fashion.

The directors, looking round for something new, saw that radio was in its infancy, but held great promise. They began making sets in 1925. After being bombed from the centre of Birmingham, they took over the former lido, The Bath Tub, at West Heath, and converted it into an efficient little factory.

EDDYSTONE USER GROUP BUMPER CROSSWORD



CLUES ACROSS

1. Tall structures built on rocks.
8. Palms that light up, anagram.
12. A 680 is much Than a 680X.
13. Fastener across the earhole!!
14. Equipment sold must have this marking.
15. An abbreviated form of antenna.
16. A type of aircraft beacon.
17. Eddystones — great sets !!
18. One is needed if you are to get an output.
19. A secure type of guy.
21. An award presented by the Queen.
22. Should you ever scrap an Eddystone???
23. Our favourite sets.
25. Not out.
26. A resting place for weary radio rally attenders.
27. Wyatt's other name.
28. Heart monitoring machine
29. Spring of youth or life.
30. What you might drink at 26 across.
32. The 17th letter of the Greek alphabet.
33. Prefix of a popular series of MOSFETS.
34. A broken type of fastener.
35. 19 Inch wide Eddystones live in these.
36. Turn over your Eddystone maybe?
38. A slow moving type of cam ?
39. A radio term for a male senior citizen.
40. This will kill an EC10, but a 940 may well survive.
41. Badged Eddystones from Chelmsford.
42. Later type of mains lead.
43. Serial ones tell the age of your Eddystone.
44. Coil for a Renault maybe, anagram

45. They search space for signs of intelligent life.
46. The Braid of a co-ax cable is earthed.
48. Enjoyment with your Eddystone.
49. Mr. Marthinsen, informally.
50. This switch changes between AM, FM, CW, ...
51. This Eddystone kit "would bring in the world " In 1933.
52. Units of resistance, not the place where volts live.
53. Once, a famous Eddystone agent in London.
55. An AC/DC Eddystone, such as the 840C.
56. Ted's capacitor.
57. This receiver was blueprint BP253, dated 10.4.35.

CLUES DOWN

1. Former use of the works recently vacated by Eddystone.
2. Dreaded corrosive gunge in cables, especially in 958
3. Eddystones like 55 across have no mains one.
4. Saviour of an Eddystone?
5. Raw iron or other metallic element.
6. 1929 model, with quadruple valves.
7. Spanish term for THE .
8. A resonant circuit must contain both of these.
9. Very famous Eddystone dial, not often seen these days.
10. What the NL is printed on.
11. When he looks, he - - - -
20. Not off.
24. Three or four legged fuse, according to some.
28. Like all Eddystones with well placed controls.
31. Although he is a Yank, he makes some great sets.
37. G8 is now M5, but does he smell ??
40. What 45 across will find if they are lucky.
47. Romantic way of ensuring there is no over complication.
54. The chemical symbol for iron.

EDDYSTONE USER GROUP BUMPER CROSSWORD



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JIM MCGOWAN, M5AIP, DISPLAYS EDDYSTONES AT HAVERING, ESSEX.

“**O**ur local radio club, The Havering and District Amateur Radio Club, were asked by our local authority, Havering, to put on a display at our local town show. The theme was to be ‘Radio Communication Past & Present’. We displayed the following topics:-

‘Morse’, by Oliver, G3TPJ, with set-up for visitors to try their hands on the key. Results were being displayed on a Morse reader. Some weird and wonderful words appeared!

‘Weather satellite’ display by Derek, G3OBX; Vintage radio Receivers by Eddie, G8FBV, and one homebrew from the mid-twenties (not Eddystone, regretfully). My own contribution was a display from my Eddystone collection (See yours truly above, propping the table up).

The left hand display board (*a bit cut off, sorry – Graeme.*) contains vintage Eddystone advertisements courtesy of Eddystone Radio and EUG. The right hand board contains a copy of the article ‘The Eddystone Radio tory’ by Chris Pettitt, GØEYO, our Patron. Kind permission was given to use the article from February 1994. We had quite a number of visitors with a lot of interest being shown in our beloved Eddystones!

The club HF and VHF stations were very active during the day, yours truly helping out with operating, which netted a total of over 200 QSO’s world-wide. Not bad for a one-day rig-up with temporary aerials.

The weather was pretty kind to us and a lot of interest was shown in our club marquee.” *Jim McGowan M5AIP*

Was ist das?



**Ist der New
Eddystone
Atlantic Four**

**New Eddystone Found in
Schleswig-Holstein
(Have a Happy Christmas)**

KIWI COLUMN

Veteran EUGer Ross Paton sends us Comment & Views from Down Under

Hullo Graeme, Interesting to see your endorsement ('Radio Ramblings', Issue 63) of Radio Canada International. I listen to RCI here in Auckland and they come in pretty well, considering that they don't broadcast to this part of the world. I listen as well to BBC World Service, VOA, Radio Australia and English services from Spain, Austria, Swiss Radio International, Deutsche Welle, Radio Nederland, etc.

A pity that the last named is stopping Media Network, a programme that I listened to every week.

Re page 14, the 358 IFT repair. The fixed tuning capacitor that you describe sounds very much like the 140pf ones used in the IFT's on the ECKO PB189 domestic radio. These capacitors are early silver mica ones, and the wax sealing on one side of the cap. develops cracks and lets moisture in, presumably.

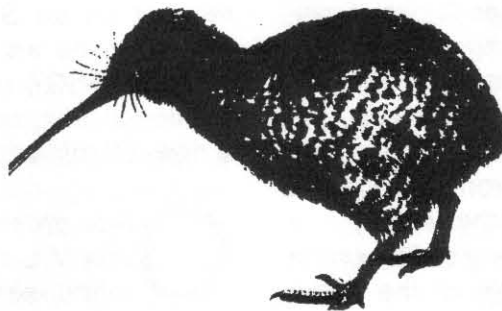
I restored one of these ECKO PB189's some years ago, and upon powering it up, discovered a total lack of IF gain and these capacitors were the culprits. They measured ohms rather than puffs!

Silver migration was the cause, no doubt. The PB189 was made in 1938. I've never seen an S358 or even the circuit diagram for one so found your description of the amiss condition of the fixed IFT tuning cap. of interest.

I haven't found defective tuning caps in any Eddystone that I've worked on, but have found them in domestic radios, e.g. the aforementioned ECKO PB189, and several Murphy TA160 and my own TU160, 10-band table radios.

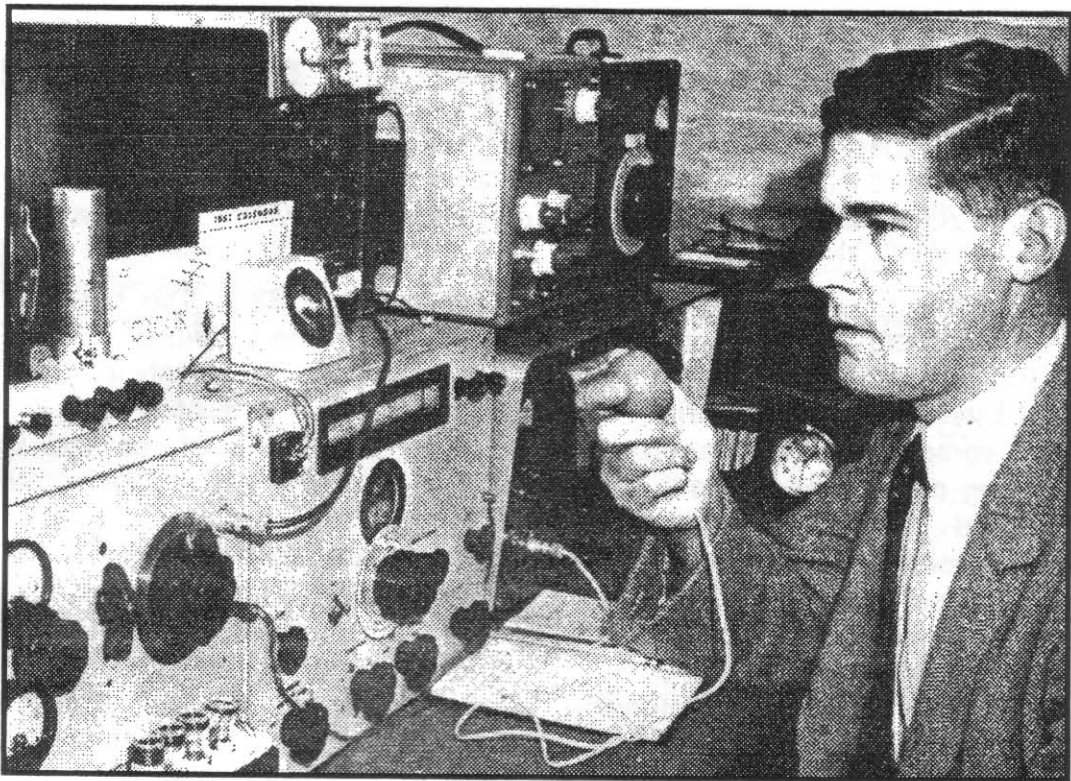
Regarding the S358, I've heard of the existence of one or two of them in NZ. After all, there are plenty of CR100's, B40's, R1155's and AR88 (LF & D) in this part of the world, so you would have expected a few S358's to turn up. A mate of mine up the road, who is a military radio collector, has 3x B50's! However the S358 and 400 remain stubbornly elusive to most of us in NZ.

Regarding the reproduction of the constructional article by F.G.Rayer, G3OGR, I remember his articles well, from Practical Wireless, etc. He also used to write science fiction for New Worlds magazine, and I have a couple of these with his stories in them. They are good yarns, too, especially one called "Variant". He used the name Francis G. Rayer for his SF stories. A couple of weeks ago at a ham junk sale I bought a couple of books for \$1; "Amateur Radio" by F.G.Rayer and "Beginners' Guide to Practical Electronics" by R.H.Waring (1966). Both of these books are rubber stamped 'Discarded & Sold' and 'Stirling County Library'; in Scotland? There is no Stirling County in NZ. They are both definitely ex public library books.



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P.14 "An Embarrassing Problem", now I know why the cabinet backs on my Eddystones vary from tight to bloody near impossible to re-fit. Possibly it may also explain why the holes in the cabinet and chassis don't always line up exactly, and these are sets that don't appear to have been dropped or thumped, prior to my ownership of them.



F.G.Rayer, G3OGR, in his shack in 1964. He is no longer in the callbook.

Re Digital Audio Broadcasting (Ted's Mailbox, P.50). It's nice to know that I'm not the only person questioning the actual need for DAB, at all. The need for it, if there ever was one, has now been superseded by the Internet.

Here in NZ, we hardly hear of it, except on recent editions of "Media Network". It's a classic case of "an answer looking for a question", or "a solution looking for a problem".

It reminds me of the Philips Digital Compact Cassette of a few years ago. I was employed by Philips NZ at the time, and remember thinking that it would take off like a lead balloon, which proved to be the case. It was a typical case of "brilliant idea, wrong timing" and so it proved. DAB will be another example of it, I'm sure. Remember Sony's Elcassette audio tape? Another example of the same thing.

Regarding P.19, "Old but Unused Condensers". I found these observations on "New, Old Stock" paper capacitors of great interest. Those grey, plastic coated, Radiospares capacitors sound like the same ones that were sold in NZ in the 1950s and 60s by a local electronic parts wholesaler called TeeVee Radio Ltd. They had their branded "Teerad" and they were made in England. These things are really bad news. I recently found one, rated at 500V Working DC, by-passing a back-bias network in a domestic

radio with about 40V DC across, and it had gone dead short. It measured a few ohms! Others I have encountered of this breed have been O/C. Also, I have found that those tubular blue and two-tone blue/grey ones made by Dubilier in the UK are also now very leaky and these are unused caps we are talking about.

The red tubular capacitors found in early 1960's Hallicrafters (S107, S108, SX110, etc) made by Cornell-Dubilier seem to be a lot better, but on an S108 recently acquired by a mate of mine we found that the .02 mfd coupling the 6SQ7 plate to the 6K6GT grid was starting to leak, and we intend to replace it with a new .02 mfd cap.

Other gross offenders are the supposedly MIL-spec tubular metal cased with rubber-sealed ends Dubilier .047 mfd caps used for by-passing etc in the RACAL RA17 & 117. These are real shockers. I am currently renovating (slowly) one of these and have had to replace every one of these caps. They all measure about **40K Ω** , rather than the .05 mfd they should do. I'm told that those red Hunts ones are highly suspect too.

Another paper capacitor that those of our readership who have worked on Grundig and other 1950's German radios will have encountered are those shiny dark blue FRAKO and the shiny black WIMA paper caps. Most of these are now much more re-

sistive than capacitive. You would have thought, wouldn't you, that with the improved impregnations and encapsulations that came along after WW 2 that these would have lasted a lot better than they have done.

Some time ago I was given several boxes of ERIE resistors from the 1960's. These are biscuit-coloured epoxy-dipped components with a silver stripe on them (+/- 10%). Most of these have increased their value by about 50% over their marked value. Some years ago I fixed up a Murphy stereogram from the early 1960's, full of these resistors, and every one had gone O/C!

Luckily Strattons didn't use these things, but the Morganite ones that they did use are bad enough. The trouble with these is that not only do they increase markedly in value over time even when they are unused, but they also become very noisy, electrically. The best carbon composition resistors that I have found are the shiny varnished Allen-Bradley ones that were used by Hammarlund and Collins in their receivers.

Interestingly, I have a carton of 16 mfd 450V can-type clamp-mounted electro's, made by Plessey, I think in 1947, so the date stamp on them says. They are marked "BEC" which, I gather were made by Plessey. Sometimes, these have dried out but many of them, with some re-forming, can be used.

Regarding the EC10, (P.8) suggestions re replacement of OC171 RF transistors. Some time ago I fixed up an EC10 for someone else and noticed that the OC171 RF amplifier had been replaced by an RCA 2N370. I looked up my RCA and Mullard data books, and they are almost the same electrically. Also the Newmarket NKT674 looks physically just like the OC171 but I don't have any data on Newmarket transistors. The 2N2907 substitute looks promising though, as this is still a common device.

Sounds like you did quite well at the NEC. I've never seen, or heard of, any 820 FM tuners in NZ, but there are a few 740's around. I've seen three of them in the last couple of years, one of them is mine. Cost me \$100 (NZ), the case had been re-sprayed in very dark brown hammergeaze and came with an

Eddystone speaker and S-meter. The original power tranny had died on this one and it had been replaced by one from a Pye PE80 chassis, a huge thing, and a pair of Siemens contact cooled selenium rectifiers.

I found in my junk-box an Admiralty Pattern power tranny 290/290V at 50mA conservatively rated (*all Admiralty trannies are rated at half true rating – see 'Radio Bygones' No 29, P.7 – Graeme*), and a couple of 6.3V fil windings. The power supply chassis was rusty so was rubbed down to bare metal and re-sprayed. The original EL42 had been replaced by an EL86!

The rectifier and output valve-sockets were replaced by the correct McMurdo ones. The original filter (smoothing) capacitors were, and are, still OK luckily. The EB41 was missing and a new one was fitted. The set goes really well right up to 30Mc/s. The replacement power tranny barely gets warm after several hours use and the EL42 output stage has more than adequate volume for normal listening. However, above the 41m. band its image rejection is poor. I've found out-of-band images of strong SW stations in the 31m. band, on the 8mc/s band. Also I find it is quite easy to resolve SSB on this set, much easier than on my 940.

I recently fitted up another one for someone else. The problem: no audio, caused by the resistor feeding the anode of the EAF42 pentode having gone O/C. Fixing this and replacing a couple of dial lights, made it just as good a performer as my 940.

This set is more original than mine, still finished in its original black crackle and still with its original power transformer. I've got a couple of TRIO 9R59's, also economy receivers, and the 740's certainly outperforms them by miles.

680 control knobs (issue 62, P.7); my S680/2 has a chrome-plated brass selectivity and the only 680/2A that I've seen has the chromed brass selectivity knob also – plus a steel cover on the top of the tuning gang, whereas this cover is not present on my 680/2.

ROSS PATON

VY73

HAPPY NEW YEAR

