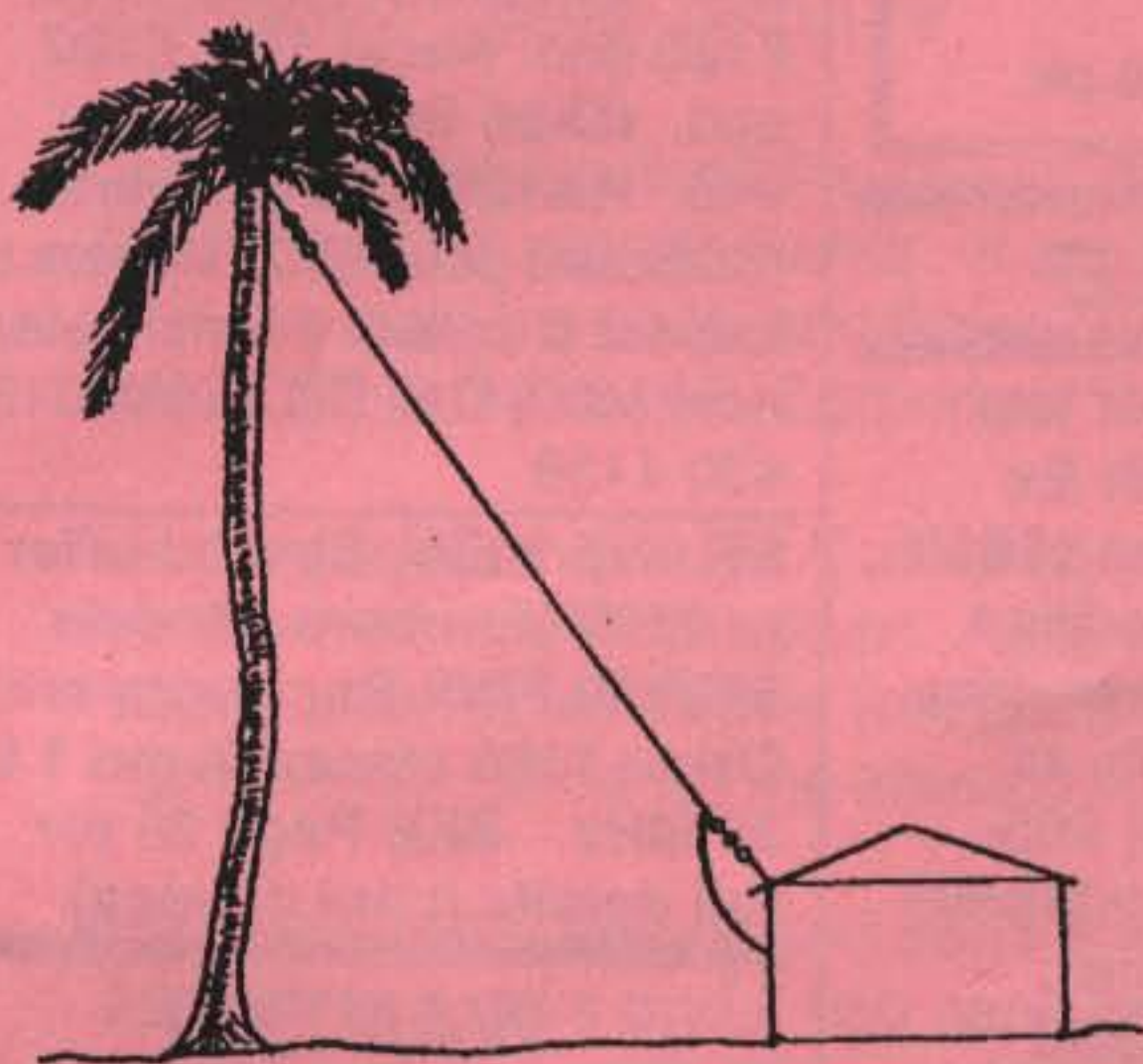


Lighthouse

Founded 1990

The Magazine of the
Eddystone User Group

Issue 73, June 2002



G6SL/P

SPECIAL EVENT

WEEKEND

**In Response to Requests from
Overseas Members this will now
be a 5-band event.**

2m – 15m – 20m – 40m – 80m

Sat-Sun 6th – 7th July

FULL DETAILS ON BACK PAGE

G6SL is the callsign allocated to Stratton & Co c.1933 for their early VHF experimental transmissions. It was re-issued to the Eddystone Amateur Radio Club in 1946 and is now held by our Patron, Chris Pettitt GØEYO

EDDYSTONE USER GROUP

A non-profit-making
group for Eddystone
Radio Enthusiasts
Founded in 1990 by
Ted Moore
Issue 73. June 2002

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FOR SALE

HRO-MX – choice of two £150 each (buy both Ex Govt FSK Eddystone 1650/6 unmodified £180. Modified with USB/LSB/AM, memories, spkr, £425. Or DIY kits as required (SSB or AM) £65-140. Carriage/collect/delivery at cost. Phone or e-mail: Geoff Steedman M0BGS (QTHR) 0113 269527 (Leeds) 100664.3417@CompuServe.com

Eddystone 680X, GWO, £80, buyer to inspect and collect. Contact Charles 01892 541 046 (Tunbridge Wells)

Eddystone EC10 Mk II, faulty beyond repair but OK for spares, offers, Eric G3TJC, 01274 582 781 (West Yorkshire). **EDDYSTONE 990S**- Grade D but in perfect working order £185.

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BRAND NEW, Special offer to EUG Members. Models 6200 VLF/HF Receivers and Orion 7000 transceivers 1.6-30 MHz. SEE Page 24 for full details (Last chance)

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EDDYSTONE 670C or 670C/1 (alias MIMCO 2232B). Must be in excellent cosmetic condition but need not work. Call Graeme G3GGL on 01299-403-372 or e-mail g3ggl@euphony.net

Chris's Column

I write this on the weekend of the Queens Jubilee, having spent a very wet day at the local community association putting on a Jubilee Station GQ4WAC. We built it in the rain, we operated it in the rain and we pulled it down in the rain. Then the sun came out. I think the entertainment provided by the BBC from the Palace was very good (still a bit of an old rocker at heart) and I think it shows the BBC at its best.

Researching the early years of Eddystone Radio, one constantly touches on the early years of the BBC. There has been some debate in the Lighthouse about when Stratton started radio production. I think the evidence is that they started making components for what must have been a huge demand from amateur experimenters in the early twenties when broadcasting was in its early infancy in this country, the US having several years lead on us. The BBC started in 1922 and Stratton started making parts in 1923. Its first radio was probably not produced until 1925 or 26.

Another part of Eddystone history which caught my interest was the Y intercept stations. At the recent NEC Vintage Fair, some books on the Y service caught my eye and a chat with the bookseller, elicited the fact that someone had written a history of Beaumanor Park as a War Office Y Group Intercept Station during the war. After training at Bletchley Park in the early 1960's, I was posted to Beaumanor Park for my first (and last) tour of operation).

In researching the receivers used in the Y intercept service, my curiosity as to why most of the receivers were American was satisfied by a statement in the book on Beaumanor* Joan Nicholls states that "Before the war, short wave receivers were not available in this country. The staff at Fort Bridgewood built their own. There was only one firm, whose Managing Director was a short wave enthusiast and had a radio business as a side line producing a few sets." (surely a reference to Stratton).

She goes on to state "In America there were over 80,000 short wave amateurs in 1937 with Interstate and world wide contacts. This created a demand for good quality receivers and led to our acquiring National and HRO receivers through lend lease. The first HRO's arrived (at Beaumanor) in February 1941 followed by the (Hallicrafters) SX28 and AR88."

Certainly at Bletchley in 1963 we were training on HRO's and AR88's. However I don't think this is the end of the story. I

believe that Eddystone sets also played a part in the Y intercept stations. We have good evidence of them having been used in the Radio Security Service (RSS), which was tasked to look for German Agents in the homeland.

Previous issues of the Newsletter (41 & 42) relate the story of Bob King, G3ASE, who used an Eddystone All World Two and tells of other voluntary interceptors who had been given Eddystone 358's. Another member, also a VI operator tells of using a Kilodyne 4, before being allocated an HRO.

The HRO was given the designation R106 by the military and I believe the R100 was the Signal Research Establishment Intercept receiver referred to in Joan Nicholl's book as the Chatham receiver. This receiver was apparently very difficult to operate and was not popular with the Y groups.

Strangely enough it was replaced by the R101 which was an Eddystone set type LPC466 (and looked very similar to an All World Eight- see below).

Well that is all from me this issue. I hope to work many of you on air with G6SL/P over the weekend 6/7th July.

My best 73

Chris Pettitt - GOEYO

Patron (g0eyo@blueyonder.co.uk)

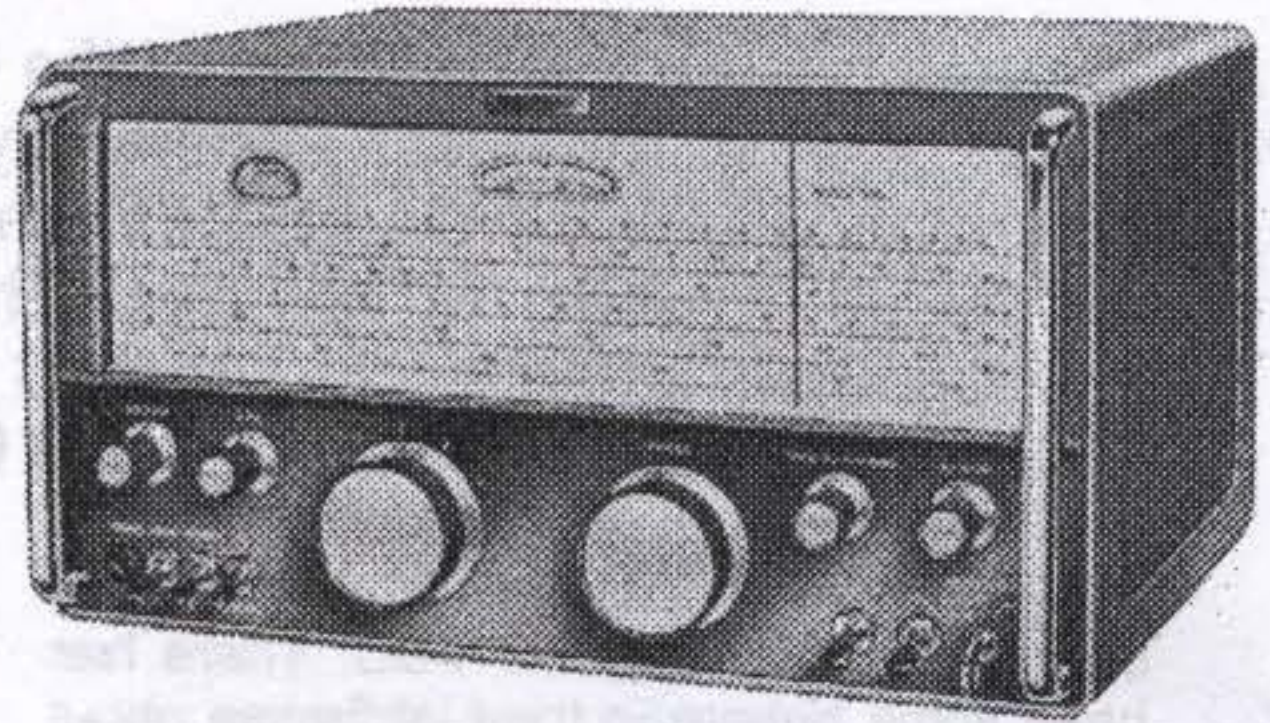
*England Needs You; The Story of Beaumanor by Joan Nicholls, available from Waterstones



British Army Type R101 (1939) derived from the Eddystone LPC, itself the communication version of the All World 8

The Oddest Fault You'll Ever Find

Although this fault was found on an S.940, it could have been on any post-war valve HF/MF Eddystone Receiver



Last month a sick Eddystone S.940 was brought to me by a member who had recently acquired it. He was not 'technical', but had heard a 'rattling noise' in the coil box and there found a 3.3k resistor flying loose! This he gave me. It was a good-sized (inch-long) black moulded item, with the hall-mark of the Bath Tub in the form of neatly-formed ends. Very curious.

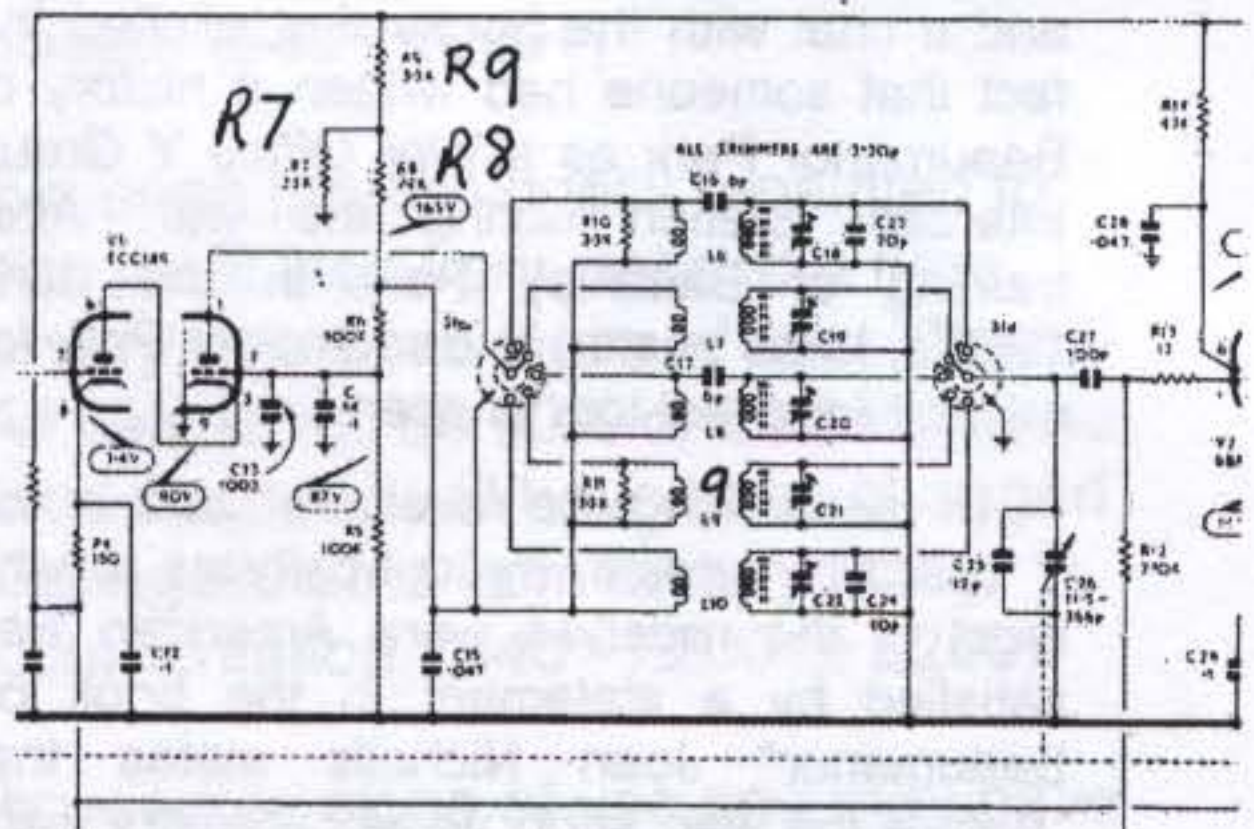
"The set is rather deaf", said the owner, and continued on his journey. Using my 'BBC Radio Five Alive' test signal (50kW, Droitwich, ten miles away) it was indeed rather deaf. The station was quite audible but the S-meter wasn't twitching.

A routine voltage check was carried out as per the manual. Everything was fine. Audio was injected into the P.U. terminals. Blew your head off. 450kc/s was clipped onto the mixer tuner. Romping through.

Now to focus on the coilpack, where voltage checks HADN'T been carried out (for obvious reasons). The first, very visible fault was that R9 (3.3k) was missing from its place. As neatly as if it had been unsoldered!

In fact I began to wonder if I was the victim of a practical joke. But nobody would go to the trouble of 'fixing' a set and then leaving it with me. Would they?? The unbelievable must have happened. R9 had got hot enough to

unsolder itself! What about R7 (33k shunt)? It had gone up to 44k. Nothing exciting there. What about R8 (2.2k). It looked a bit grey round the gills and when poked with a test prod crumbled to dust. So what about the test point on the circuit labelled 165v? Needless to say there was zero volts, but more importantly it was showing 350Ω to earth. Where on earth was this from?



To cut a very long story short (about two hours!) it was found that the earthing wire (18 swg bare) from the bottom of L9 secondary was resting against the pile-wound (HT-carrying) primary of the same coil. (This is an MF range).

A badly assembled coil-former had taken 36 years for the insulation to break down and cause havoc! The 350Ω was part coil resistance and part contact resistance. What happened once could happen again. Beware!

GRAEME -- G3GGL

Ted's MailBox

A Review of Mail and Happenings
By Ted Moore, Founder of EUG

Another One Gone

There cannot be that many British Manufacturing Companies left, especially in the Midlands. The demise of Eddystone Ltd was, I suppose, a foregone conclusion. It is sad though, such a long history and then Adieu.

(Note from Graeme – we are still awaiting a press statement from the new owners of Eddystone saying what has happened.)

In my mind this is all the more reason for us EUGers to preserve and conserve the heritage of Strattons and Eddystone by keeping on with our collecting and with our Group for those who do want to preserve their collections of Eddystone receivers.

One More for Me

A recent trip to Peterborough and I bought yet another for my collection. This was an EC10 which while nice enough outside needs much done inside.

My first surprise was the mains psu, not a type 924 but a 924a. And not in grey as per the set but in black.

Now this 924a can be configured for either positive earth or negative earth, the one I got had been configured for negative earth.

Strange this as the EC10 is t'other way round being an all Germanium set. EB35s too are all

positive earth but they might use a 924a if the 924 was not available. The 40a has the same psu but it is in that 'orrible creamy/fawn colour as with the receiver.



The EC10 was Eddystone's biggest ever production run, about 10,000+ sets

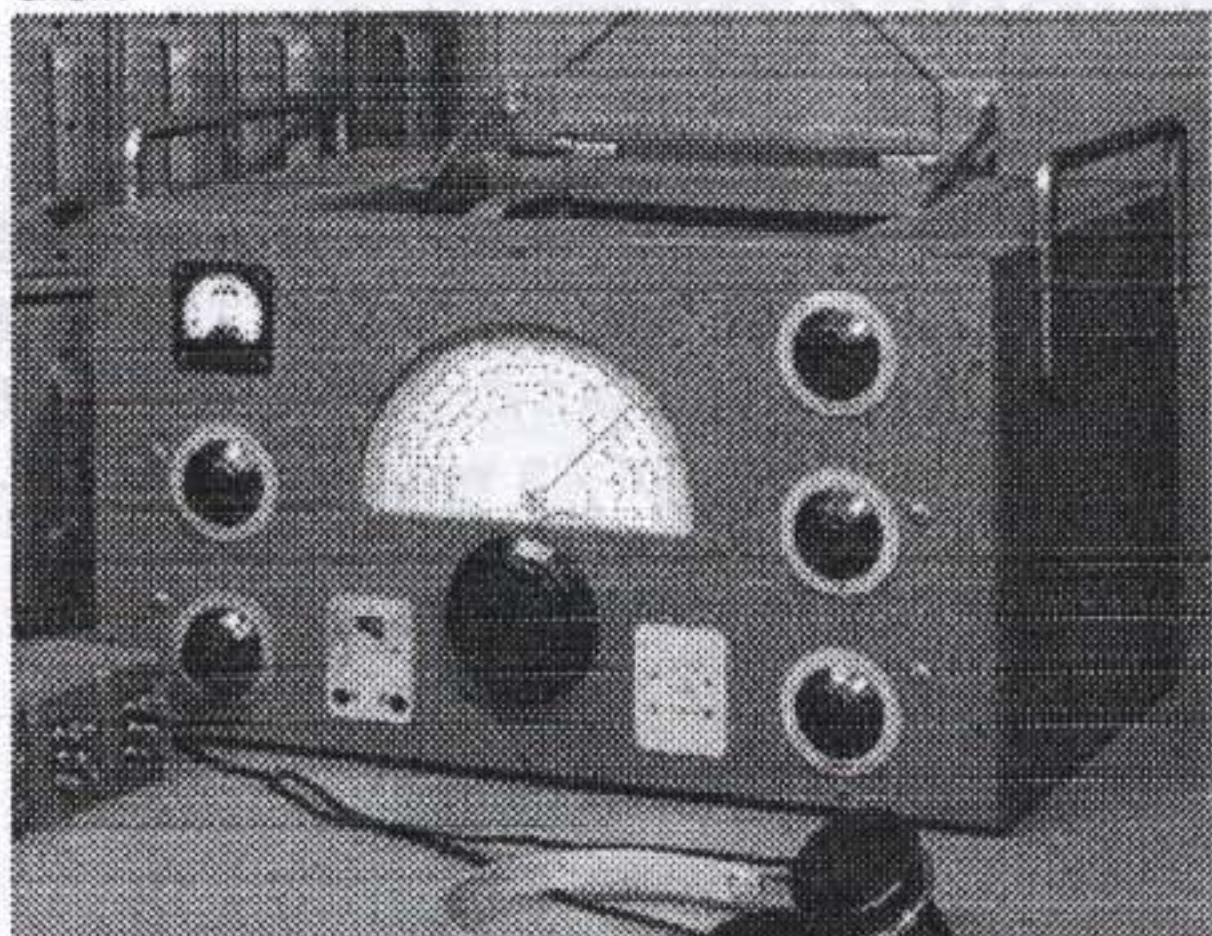
But wait, there is one model, in black too, which is definitely negative earth and could use this psu as it was set up. 'GGL guessed it too. The model in question is the EB35 III - a very rare bird indeed.

The outcome of this must await my further contacts with the vendor of this EC10, he has promised me an EB35 next time around BUT ???

Beverley

No, not the famous sisters, not the RAF Transport plane of that name. My correspondent from Humberside tells me that his father worked during WWII at a Wireless Station near Beverley in what is now Humberside, which dealt with triangulation of downed

pilots so that Air-Sea Rescue could be sent out to the spot to look for those yellow dinghies. Archie tells me that his father often mentioned using Eddystone receivers for this job but that his only recollection of the set was the half-moon dial.



Since this could have been either the 358 or the 400 we are not much closer. Surely there must be some official archive material somewhere which can be tapped for gen on this matter of the S.400 ?

Growing Whiskers in Old Age

A funny one this, on an EC10 brought in for repair, lucky I had mine to compare with it. Signal volume controllable as normal by the AF gain control but a bit down, the noise level on the audio output was horrendous, really terrible and some clipping of the audio too, whilst mostly of the 'white noise' variety there were quite a few of those pings of what we were accustomed to on valve circuits - I used to call it 'shot noise'.

Naturally I tried all of the usual culprits, most of the passive items like Cs & Rs but was then reduced to inculcating the trannies. Now we all know that the fastest fuse on four legs i.e. the 0C171 variety get noisy and lose

output due to leakage via those whiskers, as they mature. The cure is usually to chop the earth leg leaving the 'tin can' floating. How about the three-legged AF variety though ? There just isn't a leg to chop in this case.

In preparation for swapping the pesky output trannies for some new ones I began to unbolt them from the common, chassis mounted heat-sink, and was struck by the fact that via this heat-sink and the close-fitting copper heat sinks on each device the 'tin can' was effectively earthed, just as well as if it had a fourth leg.

Leaving the close-fitting individual copper heat sinks on the trannies but bending them clear of each other and of the main heat sink I powered up and tried again. Noise level considerably reduced and very much as on my EC10. So one concludes that this variety too grows whiskers as it matures.

Anyway I used mica washers to insulate each tranny from the other and the two from the chassis-mounted heat sink. As before, a good audio signal and little noise. I guess that I ought to have considered this as a possibility before even getting down to the job - I shall next time.

Modern PNPs as Substitutes

If any EUGer has already done so, or is in a position to try this out then I guess that we would all be very interested in knowing how much modification is necessary for us to use the BC or 2N series of transistor as replacements for the older OC series. I can see the need for changes in the bias resistors in both the base and possibly the emitter circuits and since the supply of new (old stock) OC171s etc must be about to dry up we shall need

to do something soon. Any offers ?

(Note from Graeme: this rang a bell with me. In 'Lighthouse' #63 (Oct 2000), on page 8 is 'The EC 10 Report'. In it Chris, VK3JEG suggests using a silicon PNP type 2N2907 in the RF stage.

To accommodate the new 'material' he says replace R1 (68k) with 33k and R3 470R with 220R. He suggests a similar change for the IF stages.

I intended to try this for myself but. culpa mea, I never got round to it. It's back on the list!)

Elvaston Castle Rally

By the time that you are reading this it will all be over but I am hoping to be there and shall be happy to meet any EUGers who attend. Apart my EUG badge I hope to have a sticker of some kind on me to ID myself to you. My car too will have 'Eddystones do it on Air' stickers in the back screen. (Minus the apostrophe in Eddystone's which really is superfluous!).

Isn't life a bind ?

It is ! After repairing my latest valve job was listening to the lovely jazz coming out of the 10" DC energised speaker when there was a pop and fizzle from the smoothing electrolytic, another casualty.

This 1939/40 radiogram had been in my workshop for two weeks and had been powered up a fair number of times during the repair which consisted of replacing several resistors and condenser decouplers. It had been on bench test for two full days. On the third day I was preparing to sign it off and phone up the owner to collect it, then the dual 8 + 8 muffs electrolytic gave up the ghost. All evidence points to this having been the original item from new

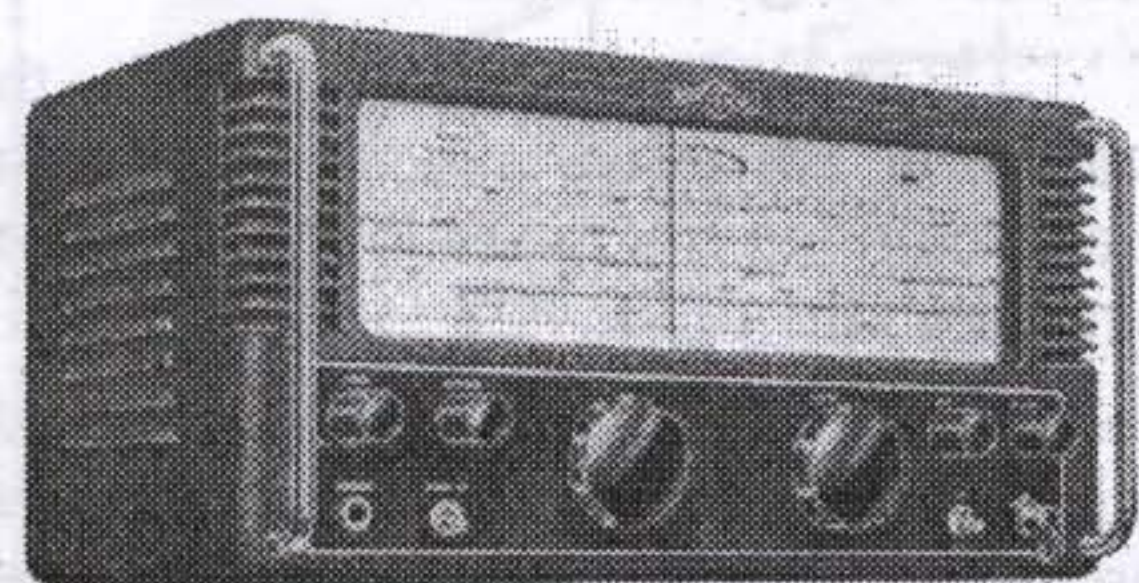
and so I cannot complain really, excepting that I had checked the darned thing out for leakage during my initial tests. It showed up AOK too on bench test.

Given the hard life that this item leads with mains generated HT of 275 volts being applied each time the set is switched on then I suppose it had lasted far more than its normal life expectancy, just lucky that I had a suitable replacement. Ah well, back for another soak test.

Definitely Dodgy !

The number of times that I get appliances in with the 13 amp mains plugs wrongly wired is incalculable. This 840A was one. He isn't an EUGer so I have to excuse him.

The set came in for a 'check-up' as it was not as lively as it used to be - so the owner said.



The 840A was Stratton's most popular economy model of the 1950s

Well both the rectifier and the frequency changer were down when an emission test was done. HT was down about 20 volts and further tests showed both leaky decoupler condensers and some high value - out of tolerance - resistors. The worst by far being the anode load for the triode AF amplifier stage.

Nothing unusual in any of the

above and replacements soon cured the deafness to my satisfaction. I always check the mains plug on any appliance which I repair since it is common practice - but very wrong - to discover that the plug has a 13 amp fuse in it when all that's needed is a one or a three amp fuse. Consider a set such as the 840A, a thirteen-amp fuse will do nothing to protect the set which has a power rating of some 60 watts. Same goes for a bedside table lamp which will never have more than a 60 or 75 watt bulb in it.

In this case not only was there a thirteen-amp fuse but the brown and blue, live and neutral were transposed in the plug, the earth lead had simply been chopped off short where the cable clamp held the lead. Putting these things right I then stuck a label on the plug top saying that a 3 amp fuse had been fitted. One more happy customer.

Heater Regeneration

Can anybody else recall the manner in which we used to extend the life of cathode ray tubes in the old days, circa the late 1950s ???

Well we used to put a slightly above normal heater voltage on the tube heater without having working voltages on the other electrodes. I seem to recall 20%/25% over rating being the figure used, over a period of some hours, the theory being that this would boil more activated material to the surface of the cathode material, thus allowing an extended life for what was a very expensive item in those days (the CRT).

Can anybody come up with any more info on this matter as I heard of a local chap who is claiming to be using WWII vintage 807s which have been treated in this way. I have an ancient

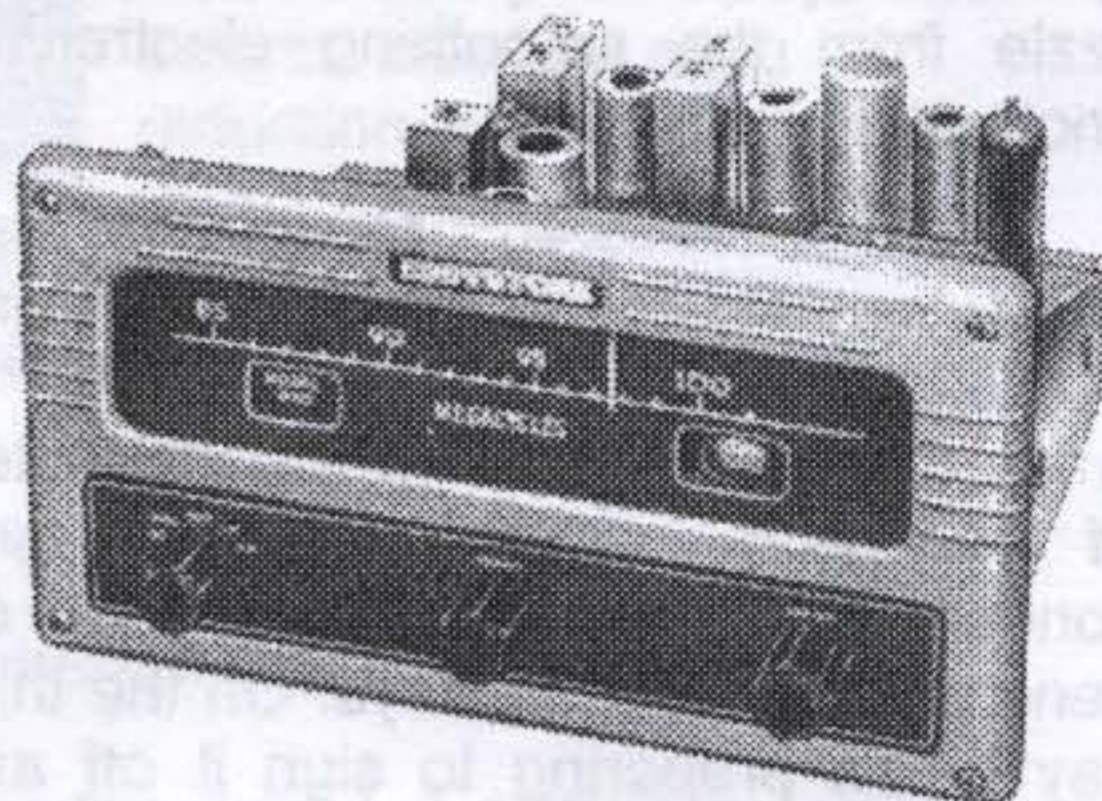
P.A system using four 807s all of which are below par as regards emission.

(Another note from Graeme: I remember this happened to our family Bush TV22 and I fitted a little transformer in the heater chain which upped the CRT heater by about 20%. It also isolated the Kathode from the heater chain when H/K went leaky! This was a permanent fix; not a 'treatment'.)

The 820 Tuner

To many EUGers this is still an unknown. How many were made and sold I cannot say but they do appear fairly regularly on the stalls at the various rallies, in the small ads, and in the workshops. *(Note from Graeme: research carried out last year when the factory was clearing out showed that 1,000 type 820s were manufactured from 1955 to 1958.)*

This one had been built quite professionally into a french-polished cabinet with a Collaro record player unit, a home built amplifier copied evidently from one of those Mullard schematics of the era and what turned out to be a double cone speaker made by Philips for use in their commercial radiograms marketed under the name of STELLA.



The model 820 was Stratton's one & only HI-FI tuner

Quite a good set-up too, the speaker especially is very nice to listen to and appears well matched to the Mullard type amp. Well here we have Mullard, Philips and Stella which were all eventually one organisation and so the odd man out was the 820 by Eddystone.

It was completely dead and needed a new rectifier valve before anything else could be done, then it was found that whilst the VHF worked okay the MW switched circuitry was duff.

This took a bit of looking for but eventually I discovered a very dry joint on the range switch. It looked like a perfectly good soldered joint but putting a meter across it on ohms gave out a reading of infinity. How so ?

Just a dab from the soldering iron bit wetted with a touch of fresh solder and the joint became a 'goody' once more. For good measure all of the joints on the range switch tags were similarly treated.

The fixed stations already set were tuned in properly and the tuner was trimmed on VHF for good measure. Nothing more was needed but the whole HiFi 1950s era Unit was kept on soak test all day just for the pleasure of listening to the lovely quality. I do not believe that semiconductors can ever produce the same sound as a good valve amplifier.

A Complaint !

I had done this repair job recently for an old seagoing character who lives in this area. Captain Smythe likes to talk of his days at sea and his 670 often figures in his conversation. The number of places this set has visited whilst on board the Blue Funnel Line ship make good listening.

When it came in to my workshop there was nothing radically wrong with the set it just needed a couple of 'bottles' in the mixer and IF plus some tender loving care. I did notice straight off that there was no link on the rear panel for connecting the bottom end of the aerial coils to chassis and fitted one for my tests. I have a few of these two pin plugs which simply need a link soldered across the different sized pins to make them into the required link.

The mains voltage adjuster had been set for 200 volts when I got the set and this was also reset to 230 volts, my workshop seems to average about 235 at any time of the day anyway.

The UCH41 and the UAF42 were bought by post and fitted and as this was being done the owner was visiting me for another of our chats - well when two oldies get together there is bound to be a fair bit of nostalgia.



The model 670 achieved fame as 'The Seafarers Receiver'

Then I, or we, noticed some overloading and distortion from the set on really strong signals. Back went the old bottles and it was gone. In went the new ones and there it was again. The cause turned out to be a very leaky paper type condenser in the screen circuit of V3 the IF amplifier. In the event there was just about 10 volts on the

screen grid pin of V3 but this was not showing up on the older, low emission UAF42. The feed resistor - a 47 kilohm - was checked out but it registered just on 50 kilohm and so was well within the specified tolerances. Anyway the set was once more displayed working for its owner who expressed satisfaction but wanted to know why the link was fitted in the back on the aerial panel.

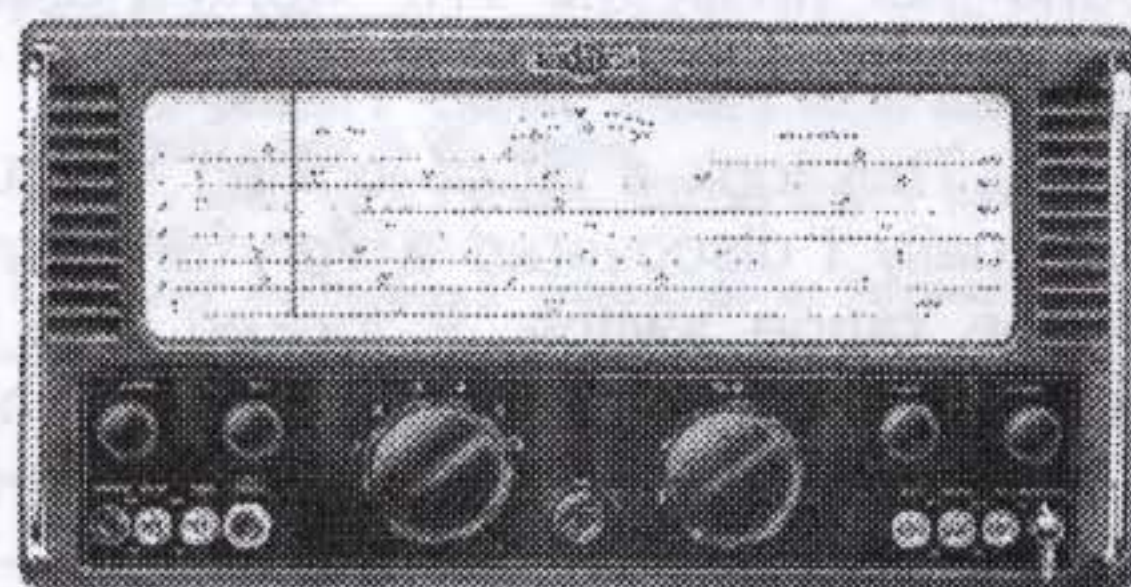
I explained its use and he said that he had never used one before since retiring so why was it necessary? I showed him the difference it made on weak signals and he was happy enough at that. In the course of our conversation it came out that whilst on board ship his aerial had always been fed from a twin lead doublet aerial installed for the Captain's benefit by a loyal Radio Officer. During the course of this same conversation it transpired that when he first bought the 670 there were still some ships at sea using spark type equipment and that when one was close enough to his ship and transmitting - the spark signal would block out much of the medium wave band. In those days they used the band between 300 and 500 Kc/s he would be getting a powerful harmonic.

An 888 Repair

Not a frequent visitor this model, the 888A being far more common. The main complaint here was that the calibrator was no longer producing pips. It was a matter of replacing the 22k screen resistor with a new one as the original had gone up to something like ten times that value. Back came the calibration pips and checking with my signal generator everything appeared to be within spec.

Listening on the 10 metres band though showed that the level of those pips was

way down. This necessitated some trimming of the coil in the calibrator unit. This is NOT, as some think, an inductance for trimming the crystal frequency but a coil to even out the level of the oscillator harmonic output over the full spread of the receiver tuning range. It works too as without losing much on the top band the ten metres level was brought up to an acceptable level.



The 888 of 1956 was Stratton's first post-war hamband-only receiver. It was based on the 750 double-superhet but lacked a product detector and was superseded by the 888A the following year.

The very low 85 Kc/s second IF gives this model a very acceptable degree of selectivity on 21 Mc/s and it can still cope with today's crowded band conditions.

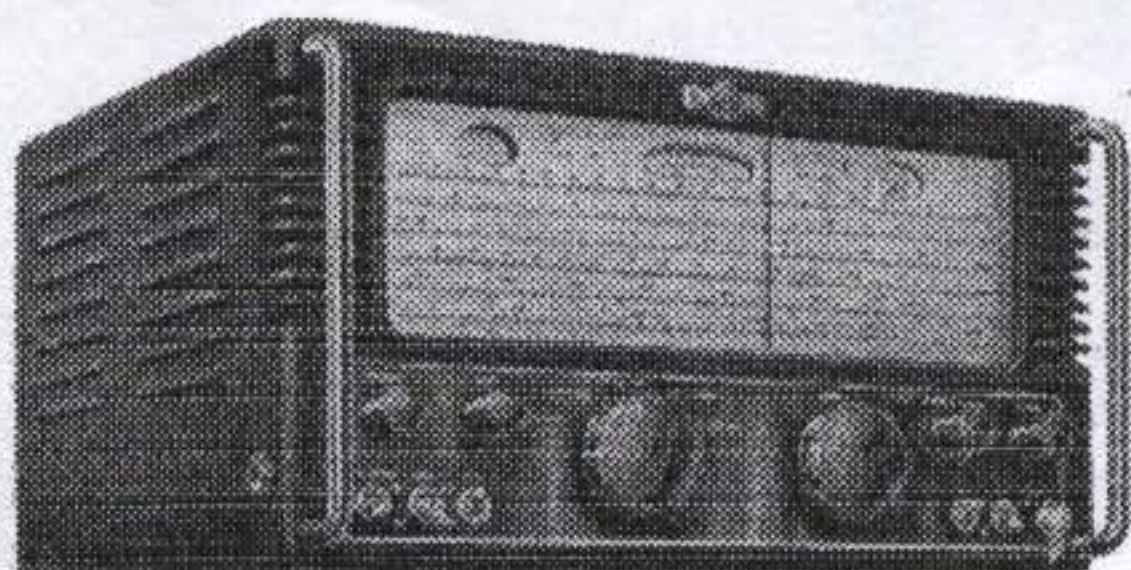
One last task before sending the set home was to check it out for stability, done by tuning in a fixed signal and then setting the BFO to zero beat. After a couple of hours it was still near enough on zero beat so it was sent off.

Hum on a 680X

This was a strange one but I have had something similar on other Eddystone models in the distant past.

The hum was not there so much on first warm up but within minutes it

had become quite noticeable, enough to be modulating the audio output signal.



The 680X was Stratton's top-of-the-line set in the 1950s.

The usual checks were made but the power supply appeared to be clear enough, the hum was coming in on the output stage sure enough and further checks brought me to the 3 megohm resistor in the anode circuit of one of the push-pull output valves. It goes from the V10 anode back to the previous stage to the anode of V9. This is to provide a degree of negative feedback.

Measured cold after a night powered down this resistor read at about 4.5 megohms, much too high but apparently still enough to work the circuit. When hot it was a different matter as it read somewhere in the 12 to 15 megohms region. It was variable according to the temperature of the resistor body.

Replaced with a new 3 megs resistor the hum was gone and the set was soaked for a couple of hours before being put down for return to its owner.

Paraffin - DON'T USE IT !

This letter from Bob gives us all a warning that commercial paraffin usually contains a fair amount of water. It seems that paraffin absorbs moisture from the air during storage and that there is usually enough to cause leakage when this stuff is used for

cleaning of electrical and electronic items. His rather wry final comment is - "and don't try heating the paraffin to boil off the moisture !"

The HR20

This was simply an 820 tuner unit badged for sale by Marconi and whilst few seem to appear I have at last got one in for repair. Not quite a basket case but a long term job.

All of the bits are there but a couple of valves are missing and all of the coils have been 'got at' by the "Mad Twiddler".

The external condition is pretty good and will benefit from a good clean-up. There seem to be no differences in circuitry from the normal 820 and so my 820 schematic will serve for the repair job. More on this later when I have the time to get it onto the bench.

The 830 Knobs

A plaintive letter from Harry announcing that he has bought a 'quite nice' specimen of 830/7 but that the RF/IF knobs are mismatched. Every single 830 that I have seen has the same thing !



All the model 830-series had an odd pair of concentric knobs for the RF/IF gain controls.

It looks like Eddystone simply could not be bothered ordering in a matching pair for these concentric controls, Shame really because as Harry comments 'otherwise the front panel looks tremendous'. Beats all of those glitzy black boxes with their midget sized knobs and buttons.

Scale Illumination = LEDs

Some of those Super High Brilliance LEDs on the market today can produce as much scale illumination as do the normal filament bulbs. If you have a set such as the EB or EC series then you may consider fitting a couple of these LEDs in place of the usual bulbs. The LEDs take less than 30 mA each and can be wired in series with the necessary dropper resistor, say a 180 ohm when run from a 9 volt battery. Incidentally use of a PP9 will ensure many more hours of listening per penny or pound (depending upon how you calculate your costs).

Diecast Boxes

I was digging through many years of old discarded stuff at the shop recently - well the business has been going for 32 years ! - and came across two genuine Eddystone diecast boxes with matching lids. Both had been used and had several holes in them but they are VERY much in a re-usable state.

At present I have set my meninges the task of deciding what purpose they will best suit, given the position of the existing holes. These are all on the sidewalls of the boxes and look to have been entry and exit holes for cables. The bottoms of each box have four small holes for mounting on a wall or baseboard. The lids are 'hole-less' still.

So far I have in mind some small

item of testgear but have toyed with the idea of an input frequency converter for the EP17R panadaptor which is sitting here unused.

Another idea is a simple QRP MW transmitter with limited range which will allow me to play back my CDs and tapes of Jazz and Big Band on the many broadcast radios which I get in for repair.

END IT

Well another issue done. With all of the gallivanting about the country I am having to find the time to get my share of the Lighthouse done on the word-processor. My deadline is usually the end of the preceding month and it has to be in the post to 'GGL by then - only just made it this time

By the time that you have this issue in your hands I hope to have been to the 'GGL QTH to visit him. Assuming my new 'wheels' don't let me down. Bewdley Here I Come !!! **Ted.**

*Carry on writing to
Ted's Mailbox
c/o 63 Wrose Road
Bradford BD2 1LN.*



And don't forget to send a report or work Chris Pettitt's Special Event Station

G6SL/P

*Stratton & Co's old Callsign
See back page for full details*

EDDYSTONE RECEIVER REPAIRS FOR BEGINNERS – PART 4 CAPACITORS

BY PETER LANKSHEAR. ENGINEER, NZBC, (RETIRED)

The most numerous components in valve-equipped receivers are capacitors which, because of their number and nature, are likely to have the highest incidence of failures. To compound the problem, there is a big variety of types, each with different characteristics.

Any two conductors separated by an insulator, including air or a vacuum, will form a capacitor, and it is the failure of this insulator, known as a dielectric, or the connection to the conductors, that makes a capacitor unserviceable.

It is the nature of the dielectric that categorises capacitors and governs their characteristics. Some types are interchangeable, others are most definitely not. To add to the confusion, during the period when Eddystone receivers were made, there was a revolution in capacitor

manufacturing with the two most common types, paper and mica being largely superseded by modern types with better reliability and performance.

Fortunately, Eddystone manuals frequently include in the parts lists the type and value of capacitor. This helps considerably when deciding what type to use, and if someone has been there before you and used an inappropriate replacement

Here is a summary of the types of capacitor found in Eddystone valved receivers: -

TYPES OF CAPACITORS FOUND IN EDDYSTONE VALVED RECEIVERS		
TYPE	DETAILS	COMMENTS
Paper	The most common type found in receivers built before about 1960.	Superseded by plastic dielectric types. Now rarely used.
Mica	Excellent characteristics. Used in critical locations.	Superseded largely by ceramic and polystyrene types.
Aluminium Electrolytic	High capacitance and leakage resistance. Standard for H.T. filtering and audio bypass.	Modern units are very small and reliable.
Ceramic	Have replaced mica types.	Very efficient and compact, bewildering variety.
Polyester	Alternative to paper capacitors after late 1950's.	Very reliable, compact and efficient.
Polystyrene	Excellent temperature stability.	Used mainly in tuned circuits.

PAPER CAPACITORS

Until about 1960, these were the most common type found in Eddystone receivers with a range of 1.0 mfd or more down to .001mfd and consist of two strips of foil separated by layers of thin paper, impregnated with wax or oil. Instead of foil, some had an extremely thin layer of metal deposited on the paper and were known as metallised capacitors.

This construction saved space and rendered the capacitor self healing in the event of a breakdown, with the metal deposit vapourising around the trouble spot. One synthetic impregnating material used in paper capacitors, PCB, has excellent dielectric characteristics but has been outlawed because it is practically indestructible and can enter the food chain. I have no knowledge of its use in capacitors used by Strattons, but be suspicious of metal cased capacitors that leak a clear viscous impregnant.

A good paper capacitor will have a resistance measurement of several hundred megohms, but as they were extremely difficult to seal against eventual moisture absorption, many are likely to now measure much less, especially those with cardboard cases used by Eddystone prior to 1950.

After this date, metal and plastic cased components were used with varying degrees of success. Generally the metal cased type will be found to have survived reasonably well, but there have been some criticisms of the red moulded plastic cases used around 1960.

In spite of their apparently excellent encapsulation, there are many reports of their failure. Others

to watch for are those with thin grey coloured moulded cases which can develop hairline cracks, which will let in moisture. These were popular at one time as replacements, and if you find any with cracks, don't even bother to test them.

Paper capacitors used for protracted periods on high voltage develop a "memory" and when disconnected can generate appreciable voltages upsetting attempts to measure their insulation resistance. This produces a different reading when the meter leads are reversed.

Strattons used paper capacitors mainly for R.F. bypassing in H.T. lines, screen and R.F. and I.F. cathode bypassing, and for providing the time constant and bypassing of automatic gain control lines.

The amount of leakage that is acceptable depends on the location. A common application was for bypassing cathode bias resistors of only a few hundred ohms. Clearly in this instance, a capacitor with leakage resistance of a megohm is not much of a problem, but the same capacitor in an automatic gain control line could degrade the A.G.C. performance quite seriously.

Another critical location for paper capacitors is the coupling capacitor between audio stages, commonly used in domestic receivers. Leakage here will upset the grid bias of the driven valve and has often been the cause of overloading and short life of the output valve(s).

Fortunately, it was common Eddystone practice to avoid the problem by using instead, .01mfd mica or ceramic audio coupling capacitors

Early in the 1960's Strattons abandoned paper capacitors and changed over to buff coloured plastic coated Philips polyesters. These have proved to be excellent in service and rarely need replacing.

MICA CAPACITORS

Along with paper and glass, mica is one of the "historic" 19th Century dielectrics and was the best available in terms of low leakage, low losses (power factor), stability and long life. They were made with both foil and metallised types, the latter being known as "silvered mica". They were frequently used for tuned circuits and as small R.F. coupling and bypassing capacitors.

By the nature of mica, they have to be built up in a stack, making them easily recognised in having a rectangular form, in Eddystone receivers usually having Bakelite cases and are never tubular. They are sometimes very thin and wax coated.

Mica capacitors are a bit like the little girl in the nursery jingle – when they are good they are very very good, but when they are bad they are a disaster! A faulty paper capacitor can be a bit leaky but a mica capacitor is more likely to develop a dead short.

The reason for this is interesting. Under an electrical stress, metal from the electrodes can actually migrate through apparently solid mica, forming microscopic "trees" or dendrites. When two dendrites meet, they link up and a short circuit results. Another unfortunate habit is developing an intermittent loss of some capacitance, probably due to disconnected foils. This can be very confusing if the capacitor is part of a tuned circuit.

Although they are sometimes still available, mica capacitors are no longer stocked by many suppliers. They can be replaced by polystyrene or suitable ceramic types of adequate voltage rating.

ELECTROLYTIC CAPACITORS

For the past 70 years, electrolytic capacitors, which evolved from electrolytic rectifiers and combine large capacitance with small size, have been an indispensable component in receivers. Before their advent, power supply filtering capacitors were very bulky and expensive and audio cathode bypassing was frequently inadequate.

Their dielectric is a thin coating of aluminium oxide on the positive electrode, created by electrolytic action, and they must of course, be connected with the correct polarity to maintain the dielectric. The earliest electrolytic capacitors were liquid filled, but so far as I am aware, were not used in Eddystone receivers, certainly post War models.

The familiar so-called dry electrolytics still need a liquid, but as in "dry cell" batteries this is in the form of a paste. Manufacturers have had remarkable success in sealing these capacitors against evaporation, especially with chassis mounted types. The writer has several Eddystone receivers still with the original 40 + year old filter capacitors working well. In fact it is quite common to find electrolytics that have outlasted their paper contemporaries. Signs to watch for are increased hum levels or bulging fibre ends. To check out filters is easy, simply bridge the suspect capacitor with a known good one and note if there is a change in the hum level.

As was touched on in a previous article, ideally, electrolytics that have lain idle for a long period should be "reformed". I suspect that this rule is often breached and frequently with no evil consequences. However, for complete peace of mind some sort of reforming should be used.

In EUG Newsletter 55, Simon Robinson (M5POO) described constructing a deluxe reformer that would serve for any likely situation, and is excellent for testing other types of capacitor for leakage.

However, at the other end of the scale, a "quick and dirty" method is to apply H.T. to a capacitor via a 100k ohm resistor. Initially there will be quite a high voltage drop across the resistor, but when it falls to about 50 volts or less and remains steady, it is O.K. to put the capacitor to work.

Do not use electrolytics anywhere but in original locations, and make sure they are connected the correct way round. While there is a vast range of lower voltage capacitors available, high voltage types used in valve equipment can

be difficult to find. The address of a good supplier is given at the end of this article.

TANTALUM CAPACITORS

Tantalum capacitors can be regarded as electrolytics with superior characteristics. They are smaller and have lower leakage than electrolytics, but are available in low voltage ratings only.

To the best of my knowledge they were not used in Eddystone valved receivers and there is no real need for Eddystone restorers to use them.

THE POLY FAMILY

Replace paper types with plastic dielectrics, and provided they are worked within their voltage rating, the chances are that they will outlast you! There are several types of plastic dielectric capacitors all with names starting with Poly.

As with paper capacitors, both foil and metallised construction is used but are smaller than their paper equivalents. Make sure that, in valve circuits, replacement capacitors have an adequate voltage rating.

PLASTIC DIELECTRIC CAPACITORS	
Type & Construction	Characteristics
Polyester, foil and metallised.	General purpose and can be used as an excellent substitute for any paper capacitors found in Eddystone receivers.
Polycarbonate, foil and metallised.	Their capacitance varies less with temperature than does polyesters, but are prone to moisture absorption. Probably not applicable for valve Eddystone receivers.
Polypropylene, metallised.	Low loss used for mains applications and some power supplies. Normally not warranted in receivers.
Polystyrene, foil.	Probably the earliest plastic capacitors. Generally tubular and often encased in clear plastic. Bigger than equivalent polyesters they have excellent temperature characteristics. Chief use is in tuned circuits and were used by Eddystone in later I.F. transformers.

Those with axial leads are to be preferred as, although physically smaller than equivalent paper varieties, they will fit readily in the original wiring and layout. However, radial lead polyesters, intended for printed circuit boards are more commonly available and their small size makes them an easy fit. Their appearance may not be as appropriate as axial lead types.

Modern equipment generally operates with low voltages, and capacitor ratings reflect this, with working voltages of 50v or 100v, but capacitors used for valve circuits, especially if they had any association with the receiver high tension, had ratings upwards of 250 volts.

Fortunately 400vw and 630vw polyesters are still in the catalogues and should be used, especially for H.T. and screen bypasses.

CERAMIC CAPACITORS

There is a greater variety ceramic types than any other species of capacitor. One supplier's site found on the Internet lists over 100 different types! Not only do these have different characteristics, but many have specialist uses.

The two major categories used by later model Eddystone receivers are *general purpose* and *precision*. General Purpose ceramics are not intended for precision applications but are suitable for use as bypass, filter and non-critical coupling elements in high frequency circuits where changes in capacitance caused by temperature variations are not critical.

General Purpose types are sometimes called Hi K and although they make excellent

coupling and bypass capacitors, they are quite unsuitable for tuned circuits. Capacitance tolerance is wide, frequently as much as 20% and they can be in the several forms, including tubes, plates and discs.

Close tolerance Ceramics will often have markings such as NPO-1% and are larger than the equivalent G.P. types. Eddystone used them mainly in tuned circuits. They are normally made in values below a few hundred mmf, but their markings are often minimal and it can be difficult to differentiate them from G.P. types. Unless you are absolutely certain about a ceramic capacitor's specification, use polystyrene replacements in critical locations.

SUPPLIER

A good source of replacement capacitors and other restoration components may not be readily available to EUG members. An excellent stock of many types of reasonably priced components including capacitors and an enormous range of valves is held by Antique Electronic Supply in Tempe, Arizona, USA. They issue a comprehensive catalogue and have a Web Site: www.tubesandmore.com

Their postal address is:

Antique Electronic Supply,
6221 S. Maple Ave.,
Tempe AZ 85283.
U.S.A.

(And they take 'plastic' as well!)

Many thanks, Peter, for a brilliant exposition on the mysteries of our old favourite 'condensers'. We look forward to your next episode!

E.U.G. CROSSWORD NEWS

PUZZLERS' FURY AT TOTAL FAILURE of ENTRIES

By Anne Robinson

E.U.G. Members were nursing their damaged egos last week when it was revealed that not ONE of them had submitted a correct entry to E.U.G. Prize Crossword Number Seven.

Asked to comment on this sad state of affairs E.U.G. Puzzle-Master Colin Crabb, G4HNN, replied that, like ham radio and SWling, serious puzzling is on the decline.

He blamed it on too much time spent watching saucy girls on Channel 5 and playing with PCs.

At this point we usually carry a list of all the correct entries, but this month we shall have to skip it. Not only that but I have to reveal that only FOUR entries were received this month.

We don't propose to name and shame but I will go through the errors.

One of our former winners thinks that the switching transistor in a switch mode power supply is called a 'Clipper'. No, Peter, it's called a 'Chopper'. (11 across.)

Another former winner thinks the famous South Bank concert hall is the 'Royal Opera House' (ROH). Sorry, Gary, but it's

the 'Royal Festival Hall' (RFH). (2 Down.) Not too good on our London Knowledge are we?

A regular winner from way back thinks a well-known ribbon microphone of the 'sixties was a 'Rosco' Sound. 'Fraid not, Jack, it was a 'Reslo' (14 Down).

Yet another good tryer thought a radio society's annual meeting was an 'ARM' . . . not too sure about that one, but it's really an AGM (annual general meeting). (8 across).

But I can't be too chummy with this member as he has a unique Christian name and would instantly be recognised, sorry T**.

Anyway, the committee has made the most careful deliberation and decided that each entry, in view of having made only one error, will receive a copy of the full colour specification sheet of the incredibly rare Eddystone Model 5500 military HF SSB transceiver.

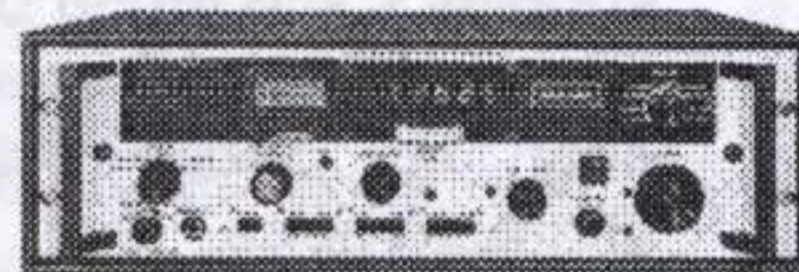
(Actually I'll let you into a little secret. All crossword entries receive a consolation prize for effort, and it's usually the same as the winner's. They just don't get their names listed.)

Puzzle No 7 Answers.

Across: 1, grid return. 8, AGM. 9, rheostat. 10, Volta. 11, chopper. 12, Codar. 15, lorry. 18, Bygones. 19 Radio. 21, nomis POO. 23, CBE. 24, resin user.

Down: 2, RFH. 3, dropper. 4, either. 5, US TV. 6, nailed. 7, emma. 9, Racal. 13, oboists. 14, Reslo. 16, rudder. 17, aye man. 19, rock. 20, ones. 22, Orr.

Now let's see what we have for this month's entrants. It's the spec brochure of 1978 for the Marine main receiver Type 1837/2. A double-spread this time with two nice photos:



Model EC1837/2

Come on, Chaps, get your thinking caps on, as we used to say in Yorkshire. Let's have a few more entries for Colin's especially easy Puzzle Number 8.

I don't want to have to get M/s Robinson back to report on the results in the next issue!

Graeme - G3GGL

E.U.G. PRIZE CROSSWORD No. 8

COMPILED by COLIN CRABB G4HNNH

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

ACROSS

1) Hi stability capacitor often found in Eddystone tuned circuits and filters (6,4)

8) Basic logarithmic unit used in comparison of power levels (3)

9) Diminutive circuit board tester (5,3)

10) Type of VHF polarisation sometimes used in broadcasting (5)

11) Convert rf signals into sound or pictures (7)

12) Gases which have complete outer electron orbits in their atomic structure are said to be — (5)

15) Dramatic radio broadcasts (5)

18) From novices to old timers (3,4)

19) Record navigational system (5)

21) Amiable comment about an expertly restored Eddystone (4,4)

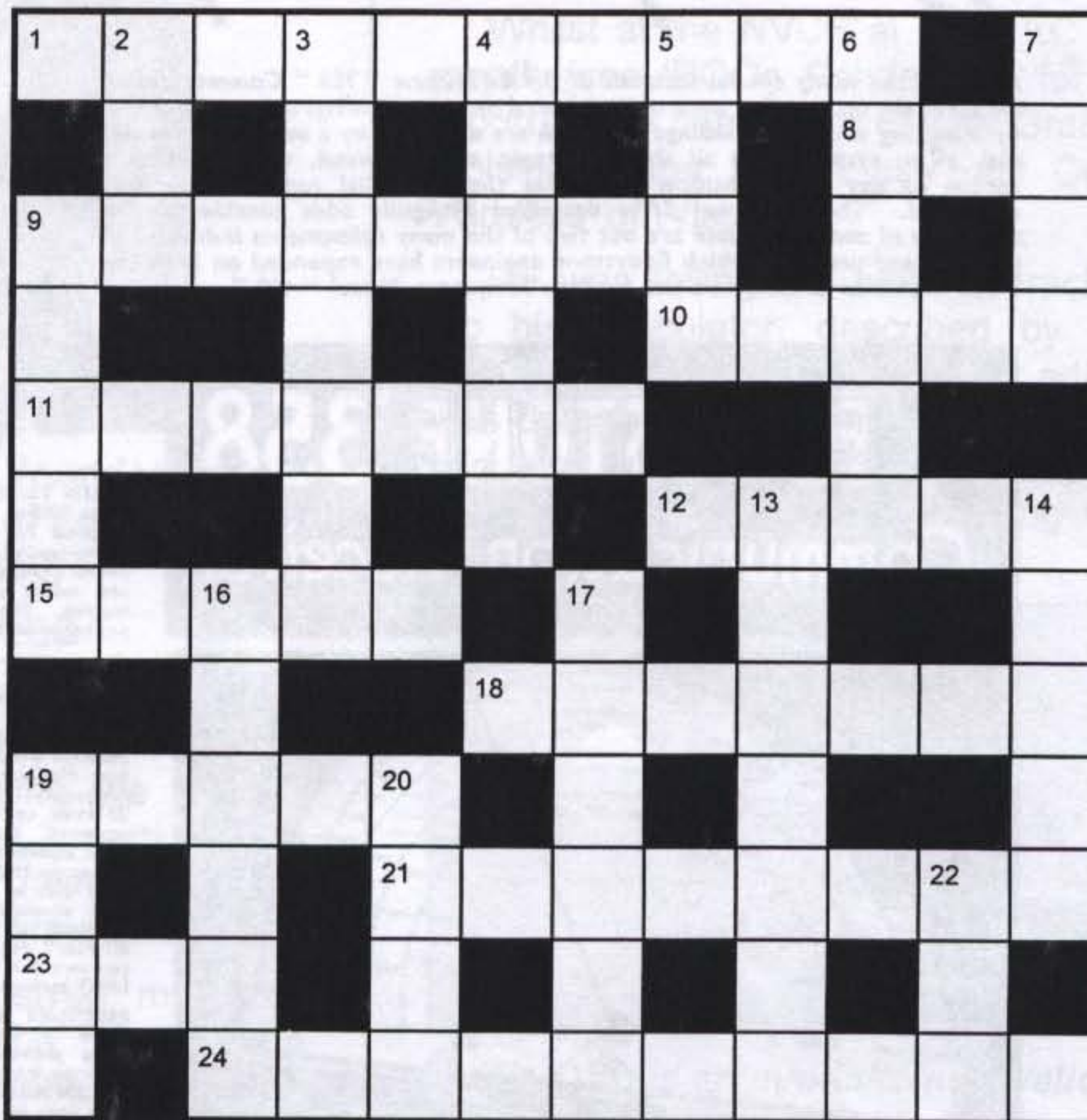
23) US military broadcast system ident. (3) (abb)

24) Mf reception relies on this type of propagation, especially during daylight hours (6,4)

DOWN

2) Word used by a German speaker to refer to himself (3)

3) 1930's BBC dept. responsi-



ble for 'Music Hall', feature programmes and dance music (7)

4) Detach, for example, the antenna (6)

5) Atoms or molecules which possess a net electrical charge due to loss or gain of Valence electrons (4)

6) Rub down the chassis perhaps (6)

7) Essential requirement for each broadcast defined by 15 across (4)

9) Follows the frequency changer in a superhet, IF — (5)

13) Slightly second-hand (4,3)

14) A quality exhibited by all Lighthouse readers! (5)

16) Reference to 'flashover' in the pa stage of a transmitter (6)

17) Two bob bit (6)

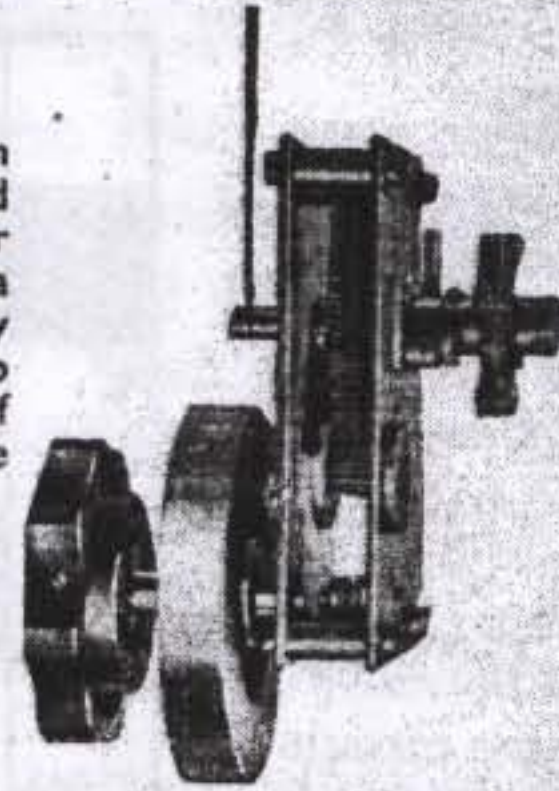
19) Description of an inoperative Eddystone (4)

20) The Lancaster Bomber's Manchester maker (4)

22) One needs to pay extra to receive this type of signal legitimately (3) (abb)

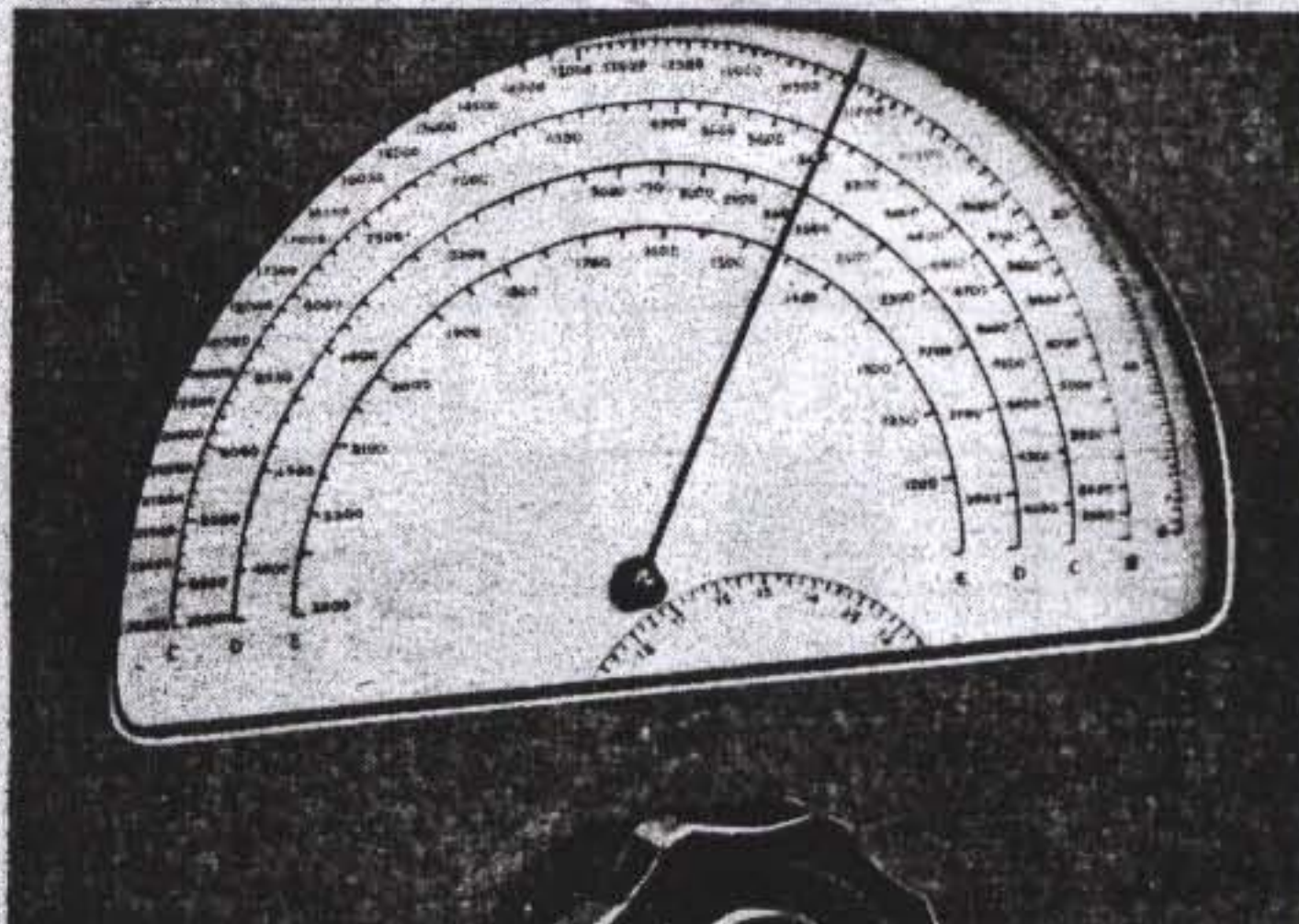
Bandspread superseded

Amongst the many special features of the Eddystone "358" Communication Receiver the main tuning control is of special interest. Bandspread is superseded by a logging scale, the readings on which are amplified by a secondary vernier dial. This system gives all the advantages of bandspread, whilst making a return to any given position simple, as the main dial remains accurately calibrated. The fly wheel drive described alongside adds considerably to simplicity of control. These are but two of the many refinements indicative of the care and precision which Eddystone engineers have expended on both the "358" and its counterpart the Medium Frequency Model "400."



MAIN TUNING CONTROL: What is, in effect, mechanical Bandspread, is supplied by the fly-wheel control and spring-loaded Tufnol Gearing illustrated above. The gearing gives a ratio of 70-1 and makes possible minutely accurate logging. The action of the whole component is unbelievably smooth.

 **EDDYSTONE '358'**
Communication Receiver



EDDYSTONE "358"

SPECIFICATION: The receiver employs one stage of R.F. amplification, frequency changer, two I.F. amplifiers, a separate beat frequency oscillator, octal base Mullard or Osram 6.3 volt valves. Frequency range is continuous from 22 Mcs. to 1.25 Mcs. using four fully screened interchangeable coil units. Five additional coil units extend the range to 31 Mcs. and 90 Kcs. Illuminated dial is accurately calibrated with four standard coils. Additional coils supplied with separate graph. To SIMPLIFY MAINTENANCE a meter and test switch is fitted. SEPARATE POWER UNIT assures freedom from drift.

MEDIUM FREQUENCY MODEL "400": Similar to the "358" but it is provided with four coils only covering frequency range from 130 Kcs. to 2,200 Kcs. Optimum gain is secured with very high signal to noise ratio.

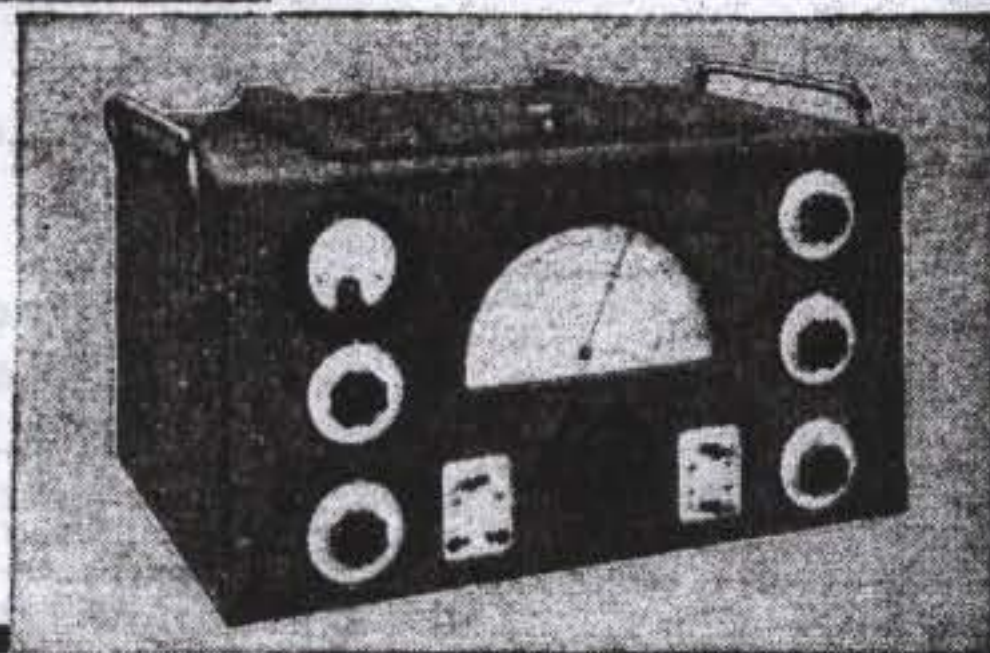
Both models are available with Bandpass Crystal Filter Units.

SUPPLIED TO PRIORITY ORDER ONLY

WEBB'S RADIO

14, SOHO STREET, LONDON, W.1.

*phon: GERard 2089. Hours of Business 9 a.m. to 5 p.m., Sats. to 12 noon.



The Eddystone 358 Family was advertised openly throughout W.W.2 in spite of the fact that all production was earmarked for government use. Unlike most wartime government radios, it was a private venture. The specification was essentially laid down by Stratton's design laboratory. Note that until 1945 the source was always given as Webbs Radio (a wholly-owned subsidiary of Stratton & Co)



BEACONS OF RELIABILITY

EDDYSTONE

Radio

PRODUCTS

MANUFACTURED BY

STRATTON & CO., LTD. EDDYSTONE WORKS **BIRMINGHAM.**

TELEPHONE: PRIORITY 2231

LONDON AGENTS:-

WEBB'S RADIO, 14, SOHO STREET, OXFORD STREET, LONDON. W. 1.

TELEPHONE: GERRARD 2089



May, 1945, and the War in Europe draws to a close. Stratton starts to advertise under its own name again.

Further Correspondence from Pat Hawker, G3VA, concerning the history of the unusual Eddystone Model 400B of 1943

Dear Graeme,

With reference to our correspondence on this receiver, you may have noticed that I included a short item on it in the June Technical Topics. In this I repeated the suggestion, originally made as further speculation on the article by Peter Lankshear in *Lighthouse*, Issue 71, that it may have been used in connection with the RAF Air Sea Rescue service. However I did invite readers to confirm this suggestion.

As a result, the RSGB has passed to me a copy of an e-mail they received from Dave Rumens, G4BOO with the following text:

"On reading the Technical Topics column in the June 2002 issue of Radcom mention was made of the Eddystone 400. I believe these receivers were used by the Communication Branch of the Home Office between 1942 and 1952 when they operated their wide area coverage emergency services communications on MF."

In view of the close connection of Eddystone with the VHF Police Radio Services set up in 1939 etc. the suggestion by G4BOO seems a likely explanation. I have no personal knowledge of this MF emergency service but it might be possible to confirm the supply of these receivers to the Home Office from Eddystone archives.

The receipt of this e-mail set me thinking again about the Air/Sea Rescue service. I recalled that I have a copy of a paper "The T1154 and R1155 Radios" presented by Richard M Trim OBE, FIEE at "The History

of Military Communications" at the Fifth Annual Colloquium of the Centre for the History of Defence Electronics (CHiDE) in September 1999. The paper includes a short note: Installation in Marine Craft (T1154N/R1155N) as follows:

"Figure 23 illustrates a typical installation of T1154N and R1155N in marine craft such as air-sea rescue launches and motor torpedo craft. Receivers were provided for both the W/T operator and navigator, the D/F loop aerial being connected to the receiver provided for the navigator. Microphone and telephone headset switching between T1154, R1155, TR1143 and TR1133 were provided by means of Switch Type 495A."

It thus seems evident that 400B was not in fact used by the RAF but by the Home Office.

But again, many thanks for bringing this receiver with its early "product detector" to my notice. In this connection I have also received a phone call from LA8AK who tells me that a somewhat similar frequency changer CW detector was used in the 1930s in a German communications receiver, although he believes the term "product detector" was not used widely until it was used in a QST article in 1950 as an SSB/CW detector.

73,

Pat Hawker, G3VA

Many thanks, Pat, for airing this interesting radio in your RadCom 'Technical Topics' feature. See my 'Ramblings' column for further comment - Graeme, G3GGL

RADIO RAMBLINGS

Gottings from my Notebook



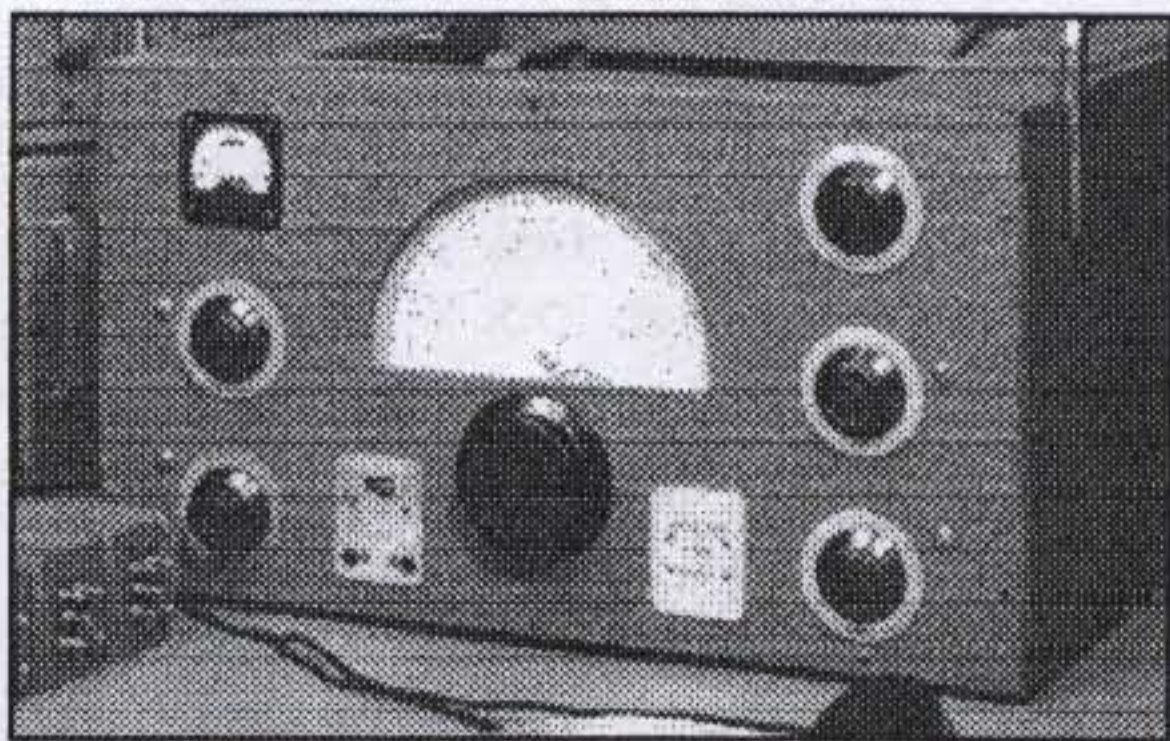
By
*Graeme
Wormald
G3GGL*

BEWDLEY, June 2002.

Greetings to all EUG members and may I start with an apology for running a bit late this month. A combination of circumstances has produced some delay in getting everything together. But not to worry. We've made it at last.

S.400B AGAIN

A very interesting letter from Pat Hawker, G3VA, (*elsewhere in this issue*) who very kindly aired the question of Stratton's 1943 S.440B, (the one with the product detector and 1kc/s "second IF"), in his 'Technical Topics' Column in the RSGB's RadCom magazine.



Eddystone's Air Ministry Special, the S.440B alias R1448. Who used it?

I must admit to having being slightly sceptical about its suggested involvement in Air/Sea Rescue. Whilst in CCF (*Combine Cadet Force*) camp at Cranwell in 1950 our school contingent had a day trip to the RAF Marine Craft Base at Boston, Lincolnshire.

A fully fitted Air/Sea rescue launch was put at our disposal (complete with crew, I must add). As a newly licensed ham I made the closest inspection of the radio shack, as described in Pat's letter,

and saw nothing faintly resembling an Eddystone receiver. All the LF/MF gear was 1154/55 (of great renown). After a trip down The Haven Canal and a 48 knot zoom across The Wash it was burnt into my memory banks!

The Home Office scenario suggested by Dave Rumens, G4BOO, in his e-mail, is quite intriguing. I do recall a large aerial mast radiator in a compound near Garforth in Yorkshire in the late '40s-early '50s. It bore the sign "Home Office - Keep Out". I had no idea what it was but it looks now as if it was part of the MF network so described. I have asked Dave for any further details he may have, but it's too early to expect a reply for this issue. ** (A reply has just arrived as I finish this column. I have added it to the end!!)

I have spoken to Bill Cooke, MWØION, former MD at Eddystone, but he was away on HM service during the war and has no recall of a Home Office MF network, other than the fact that the Home Office were always sniffing around the Bath Tub!

The big thing about Eddystone was that it was so small. That meant that any government communication freak who had a pet project could go to Eddystone and be heard.

Harold Cox, Technical Director, would always listen and offer to do a bespoke job; especially if it meant just a mod to an existing line. Everything was hand-made so it was no problem. This explains a lot of odd Eddystones that crop up.

But it doesn't explain why the 400B was called the Air Ministry Type R1448

(unless it was a ruse to fool the enemy!). I think this is one that's going to run; next stop RAF Museum?

EDDYSTONE RIG FOR SPECIAL EVENT?

You will all have seen the announcement of Chris Pettitt's G6SL/P special event weekend. Well he tells me that he is moving heaven and earth to get the use of one of the last Eddystone Orion 7000 HF SSB Transceivers made in Birmingham (or anywhere else for that matter!)

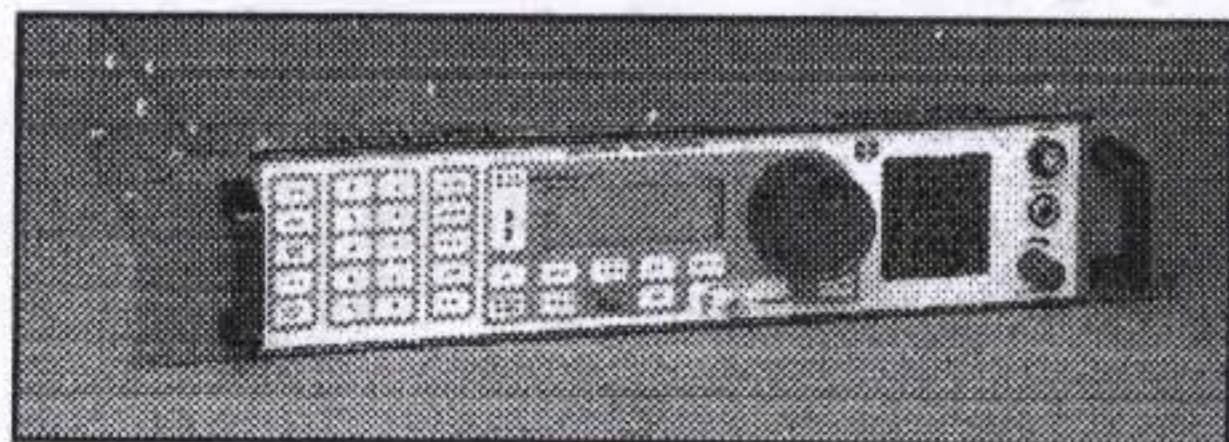
SPECIAL OFFER TO MEMBERS

Just after our last issue was despatched I had an e-mail from Les Crompton, sales manager at the 'dying' Eddystone radio division offering the last dozen 7000 transceivers and 6200 communication receivers to members at 5% discount! Complete with certificates of authenticity; no kidding! Anybody wishing to look into this should contact Les direct at Eddystone Transmitter Division, SBS, Hastings, telephone 01424 445588.

Les told me last month that they had 12 x 6200s and 11 x 7000s in stock.

"We would offer a certificate to any interested party stating that these were the last range of Eddystone Receiver/Transceivers produced at the Birmingham factory.

"The 6200s we would offer at the Commercial price of £2,750, less an EUG discount of 5%. Total price - £2,610 + VAT for UK sales (17.5%)



Eddystone's last communication receiver, model 6200. Coverage 10kHz to 30MHz in 10Hz increments, AM/CW/SSB. Knob tune, direct entry, or 99 memory scan, etc., etc. rack mousing, Desk cabinet option.

"The 7,000s we would offer at the Commercial price of £1,250 less an EUG discount of 5%. Total price - £1,125 + VAT for UK sales.

"Post and packaging at cost. Payment can be taken by credit card as well as the standard methods of payment."

I understand that there is no chance of starting up the production of these sets again. Broadcast transmitters are the only likely products.

Don't forget, if you're interested in this historic offer, call Les Crompton direct on 01424 445588.



Eddystone 7000 Orion, 100 Watt ssb TxRx, 1.6-30mc/s, introduced 1995

One of the early buyers was Simon 'POO', who proudly appeared on the last EUG 'first Sunday' net using it. And very fine it sounded, too.

We did an interesting experiment with the power level and the speech processor. The result? 10 watts with the processor was more readable than 100 watts without it! The best speech processor I've ever heard. Listen out for M5POO working G6SL/P.

By the way, did you know that 'SL' stands for Stratton Laughton? He was the eldest son of George Laughton who started Stratton's in 1911. Young Stratton suggested to his dad that they go into the radio business when the hairpin market collapsed in 1923/4.

The original date of the callsign's issue is uncertain but is believed to be the early 'thirties when Stratton's got into the VHF business and started testing transmitters. In those days there

was no difference between commercial callsigns and ham callsigns.



Stratton Laughton, founder and Managing Director of Eddystone Radio (1960)

AT LAST IT IS REVEALED

We've always known that the Stratton S.440 Tx and S.450 Rx were used by the Navy during the war as duplex radio-telephones, in particular on D-Day. But we've never had an independent written confirmation.

This morning I received my June edition of 'Transmission Lines', the newsletter of the Friends of CHiDE (Centre for the History of Defence Electronics – see their excellent website <http://histru.bournemouth.ac.uk>). The lead feature is an account of the experiments to assess the mutual RF interference likely to be generated on D-Day, the invasion of Normandy.

These took place over ten days in December 1943 on a heavily guarded site near White Waltham in Berkshire and were known as 'Exercise Feeler'. Describing a huge raft of equipment the final sentence is: - "The Royal Navy's hardware included the TCS transmitter and B28 receiver at HF as well as VHF equipment, **known as Stratton**, operating between 85 and 95MHz."

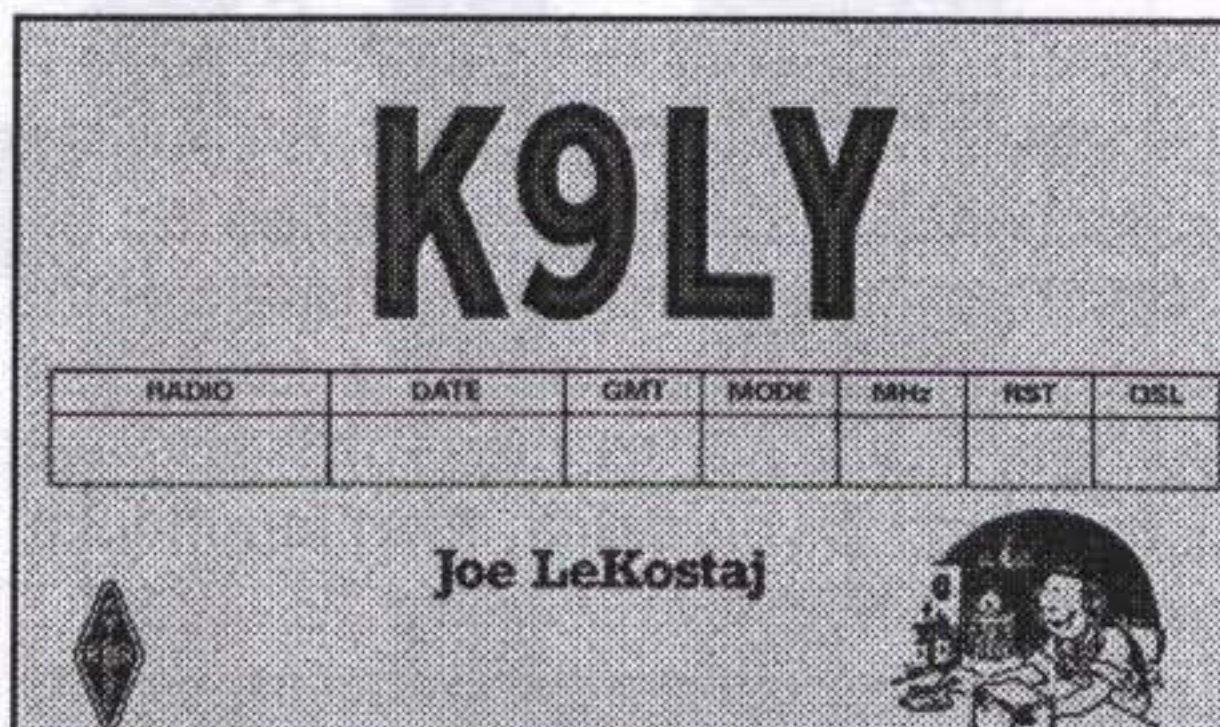
The italics are mine, of course. We have seen the report of the British Army's use of this kit (known as the

W.S.57) in Louis Muelstee's excellent 'Wireless for the Warrior' Volume One, but never an independent report of the Navy's use.

JOE'S SWEEP GENERATOR

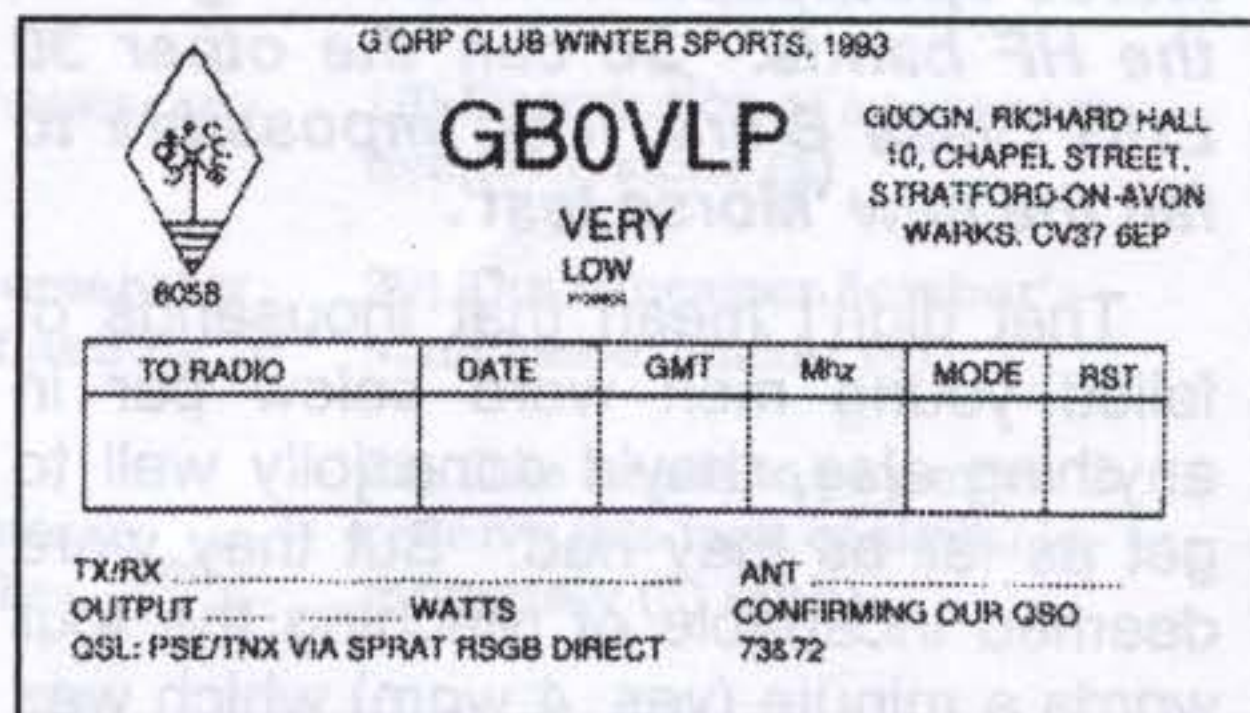
Whilst at the NVCF at the NEC last month (see 'POOs Ponderings' for full report) I was chatting to EUGer Graham Golsing, better known as 'East Coast Wireless' of Wisbech.

He was telling me what a cracking job his Wobulator, described by Joe Lekostaj, K9LY, in our February edition was doing. We exchanged notes and I told him that Chris, G3XFE (our EUG net controller) had got one going with copy-book results.



Joe's QSL is an eye-catching yellow, red & black!

At that point, Dave Simmons, our EUG spares supplier, butted in and said he had a small stock of the hard-to-find function generator, XR2206. So if anybody's having a go at this first-class aid to servicing check out Dave's details on Page 2.



Richard Hall's Special Event Station of yesteryear. I like the diminishing subtitle!

Whilst speaking of the NEC we met EUGer Richard Hall, GØOGN, who left us a copy of his QRP Winter Sports Special Event QSL of 1993. We have several members of the G-QRP Club among our ranks, including myself

THE NEW FOUNDATION LICENCE

Since the new foundation licence was introduced in January I believe that something like 3,000, yes, three thousand, new M3 licences have been issued. I also believe that many existing Class 'B' licensees are unaware of their true potential.

There is a lot of rubbish said about Morse code on both sides of the fence, and I don't propose to go into that, but the fact remains that some folk have an aptitude for Morse and some don't.

When I went before an aircrew selection board on being called up for National Service in 1950, one of the many aptitude tests was one for Morse. All aircrew had to pass it, not just signallers. If you didn't, then tough luck, you never flew.).

Ron Drew
Clattering Ford, Roadhead,
Carlisle, Cumbria, CA6 6NT
clattering.ford@oupjohny.net

M3URU/G8URU

The Station is situated in the beautiful Parish of Bewcastle famous for its 7th Century Cross with its Runic inscriptions. (IO85OB, NY37)

Confirming QSO with	Date (Z)	UTC	Freq / ZXMMode	Per Out	Report
B266L	23-24-2004	12:35	7.050 / J3E	100	5-9

73. Ron The QSL Per

AFTER ALMOST 30 Years without Morse aptitude, Ron has now got on the HF bands. So can the other 30 EUG Class B'ers. It is impossible to fail the new 'Morse test'.

That didn't mean that thousands of failed young men were below par in anything else, they'd done jolly well to get as far as they had. But they were deemed incapable of reaching the four words a minute (yes, 4 wpm) which was mandatory for all grades of aircrew

except, of course, signallers (for which the speed was 18 wpm).

Come on, chaps, you can do it!

MORSE WITHOUT TEARS

I suppose this is where I have to own up to the 'fiasco' of my own Morse Test .

I took the RAE and passed it when still at school aged 17. It was about the only exam I did pass! So what about the Morse? Well I was an enthusiastic member of the CCF (Combined Cadet Force) and they had a special badge for 8 wpm which I had held for about a year, in common with several others.

But we were all stuck at the classic 8 wpm barrier. It didn't matter how much we played about, the speed was static. No electronic tutors in those days and the Candler system on 78 rpm records was incredibly expensive in term of pocket money.

When the RAE pass slip arrived in August 1949 I was spurred into desperation. I discovered that if I sent to myself (the worst thing you can do!) faster and faster, my receiving speed followed at about 50% (My guess). I didn't know any hams to practice with!

So after a couple of months' hectic buzzing I applied for the ticket and was summoned to the Head Post Office in Leeds one Saturday morning.

In retrospect my reception was little short of amazing . . .

I was ushered into a small back room where, after ten minutes of nerve-racking wait, there appeared the oldest man I'd ever seen. He greeted me cheerfully enough, said he was going to find his buzzer, and disappeared down some cellar steps.

He returned a few minutes later with a museum-piece (even for those days) of a key and buzzer and blew on it and dusted it. I couldn't believe that I was the first person in the City of Leeds to take a Morse test since 1939, but it looked like it.

After a lot of fiddling with battery terminals and adjusting backstops he managed to get some croaky notes out of it. "OK", he said, reading from a sheet of paper, "We'll do the groups first." In those days you had to start with two minutes of five-figure groups with not more than two errors. I made four. "I'll allow that for the poor buzzer note", said Methuselah

Then came the two minutes of Plain Language. It was usual for testers to use a news report from that day's paper to make sure you didn't guess.

My old chap started to croak away and after the first eight letters I was left behind. My heart sank and I stared at the alien word in front of me.

"MARYHADA"

Then Eureka! I started to write slowly, trying to keep in step with the buzzing noise.

"MARY HAD A LITTLE LAMB ITS FLEECE WAS WHITE AS SNOW AND EVERYWHERE THAT MARY WENT THE LAMB WAS SURE TO GO"

"Let me see," said the tester. "Splendid," he said, "you've passed with flying colours."

Never was a pink slip carried home with such pride. My father, whose opinion of my general capabilities was low, had passed the RAE in 1946 and took until 1953 to pass his 12 wpm test. Morse ruined the first seven years of his ham radio hobby. (No Class 'B' in those days.)

For better or for worse I had to start using my shaky Morse as soon as the callsign arrived. But there was lots of 10wpm shaky Morse on 40 metres, as everybody had to work Morse-only for the first 12 months. 40 metres was the favourite band for all new boys; it was 300kc/s broad, got out well all round Europe when the sun-spot was low, and a 66-foot dipole would go in most gardens.

Did I really learn Morse? Well, ten months after I went on the air I was called up for National Service (I think I've said that before!). All volunteers for aircrew Signaller had to do a proper test at 18 wpm to be accepted for training (believe it or not!). I was the only one of 300 volunteers who was offered Signaller training. I was also offered pilot training. No contest! But it goes to show that it does pick up.

Long live Morse for those who use it (and VERY satisfying it is too), but let's not panic about diluting what is a very shrinking hobby. Oh, yes. And don't deride that ten watt limit for the "new M-threes"; I didn't use more than ten watts for the first thirty years of my ham life. It doesn't make THAT much difference!

EDDYSTONE REPAIRS IN THE USA

I've had an e-mail from non-EUGer Mike Zuccaro in California offering his help to Eddystone owners across the Big Pond. This is what he says: -

"Perhaps I can be of some use to Eddystone owners here in the States.

"In the early 80's I worked for the Marconi company in Park Ridge, N.J. I was a service technician and repaired many models of Marconi RF test gear, and we were the servicing facility for Eddystone. I had occasion to work on both tube and SS Eddystone gear there, and I still have a few manuals.

"I can work on any of the Eddystone models. If you like you can list my email and phone number : 858-271-8294. I'm in San Diego California and my e-mail is Mjzuccaro@aol.com

"I have thousand of radio tubes and have no problem with solid state sets. With most of my work I do it by the hour - typically \$35/hour, but in the case of a long project I will discount that a bit. Take a look at my homepage (a bit long) hometown/aol.com/mjzuccaro/myhomepage/business.html (phewww) "

THE STANLEY GIBBONS REPORT

Two members picked up on the New Zealand Eddystone Lighthouse stamp. Bryan Marsh in Auckland sent me a page from the 1962 S-G catalogue which showed that our specimen was from a 1947 issue.

Ron Pearce from Suffolk went one further and sent me a copy of a folder (via a friend in Oz) giving the story of the New Zealand Government Life Insurance Office, the only such organisation in the world to issue its own postage stamps, for its own use only. They are printed specially for them and bought from the Post Office. The Lighthouse device was adopted as their symbol in 1869 and started being used on the stamps in 1891.

Well, blow me! That beats Stratton's use of one!

Ron goes on to tell us: "I recently gave a talk to my Probus club on the joys of radio. Entitled "From Cat's Whisker to Satellite". One of my visual/audio aids was my 840A. The hour-long talk went down very well with the members. They were very interested in the 840A and the World Space receivers."

Well done, Ron, it's a gospel worth spreading.

Back to Bryan in NZ. He reports on a silent key sale where three Eddystones were sold. A 730/6 (very rare in UK) for \$125 (£40), a 670A for \$40 (£12), and an 840A for \$70 (£20). He tells us that these are about normal prices down under.

Doesn't it make you feel just a teeny-weeny bit envious? We'd pay at least triple that here in Britain . . .

Q.R.G. RIDES AGAIN

Of course you will all remember the first two editions of Quick Reference Guide; a handbook to assist identification of the more popular (and

one or two not-so-popular) Eddystone receivers.

The first one was issued in 1998 and an updated one in 2000. This latter covered the period from the end of the War until the late '70s.

Well, a month ago the last copy was sent to our (then) latest recruit – as we always do. Even before then I was aware that the problem would soon need to be addressed, especially as some members had pre-empted my thoughts and suggested the spectrum be extended.

The result of all this celebration has produced the decision to make the next edition cover ALL Eddystone radios, from 1925, when the Trade Mark was first registered, until 2002, when the last set was sold. And not only that, but to have a discrete picture of every model and give a potted history of the Company, especially for new members.

So far I've got to page 26 and reached 1953. Goodness knows when I shall finish, my *Intel Inside* is running red-hot with scanning pictures, which vary from studio publicity shots to second generation photocopies of magazine adverts!

I only hope I'll make it before the hot weather arrives (Haa). When I do it will be sent post-haste to you all, with enough in hand to cope with new members for another two years. So all you recently-joined ones please be patient; we're not cheating you out of your rightful privilege. It'll be along.

Please forgive me if I've missed out any reports, this seems to have been a hectic period since the last issue. A super season to you all and we'll be back again in August,

VY 73

Graeme **G3GGL**

The HOME OFFICE M.F. NETWORK and the EDDYSTONE MODEL 400

09 June 2002 14:55 Hi Graeme,

The Home Office MF station you refer to near Garforth was the - "Home Office Regional Wireless Station Kippax" The site is now owned by NTL and used as a central repair workshop. My background is that I served in the Home Office Communication Branch, later known as the Home Office Directorate of Telecommunication, from 1967 to 1992. During the government cut backs in the 1990's this excellent outfit was closed down. I believe about a quarter of the staff had a radio amateur background and in fact two of the pre-war founder members were H.B.Old G2VQ and O.B.Kellett G5KL. The MF wide area coverage set-up operated from 1942 to 1952 and was used for police communications e.g. Wartime - Escaped POWs, Spies landing on the coast, fifth column, etc. The frequency used was between 1.7mc/s and 2.0mc/s. This was an interim system as war put on hold the final development of the VHF set-up. Though there were a number of VHF schemes running during the war the VHF network installation program do not start until 1945 and was completed by 1952 at which stage the old MF set-up was shut down.

The reason for my comment was that in the late 1960's, long after the MF had been replaced by VHF, I came across one of these receivers in the redundant equipment store of the Cranbrook (Kent) station. It was crackle grey in colour and was the 400. It had a coverage of 130 kcls - 2.2 mo/s and having some interest in Eddystones I found it had an IF of 110kc/s. There may also have been a magic eye tuning indicator, though I cannot remember any product detector being present. Though having previously been trained by an Eddystone agent this receiver was totally unknown to me. I asked what it was there for, after all, the whole outfit was VHF/UHF-based by

then. I was told by the old hands that it was left over from the MF days and was one of the main receivers used to receive the mobiles. It still had a large number one stuck on the front panel, which I was told meant that it had been used in position number one in the old operations room. Interestingly both CW and Phone were in use at that time.

Evidently the main MF transmitters were made by Marconi. In most cases these were 1Kw, but I understand that one station, Cheveley, used 5Kw. These had long gone by the time I came into the service. Only the 140 foot MF mast, feeder posts and MF transmitter room remained at Cranbrook. From my own research I found out that the mobile MF receiver was the RP42/1 and the transmitter the TP8. The MF set-up used a lot of marine-based kit. Though some of the very early mobile receivers were modified Philco car radios.

The stations were located as follows - Cranbrook (Kent), Hannington (Hampshire), Shapwick (Somerset), Cheveley (Suffolk), Romsley (West Mids), Stanton on the Wolds (Notts), Billinge (Lans), Kippax (West Yorks), Marley Hill (Newcastle Upon Tyne).

By the way you may like to let Pat know that Hannington in Hampshire was also one of the MF stations. This is now a BBC/ITV main TX site.

For many years I wondered if the 400 was a special as it had not featured in any Eddystone info I have seen over the years. It looks like you have answered my own question that these receivers were special order jobs. Maybe due to their wartime Naval contracts Marconi could not supply the Home Office therefore the receivers were obtained from Eddystone.

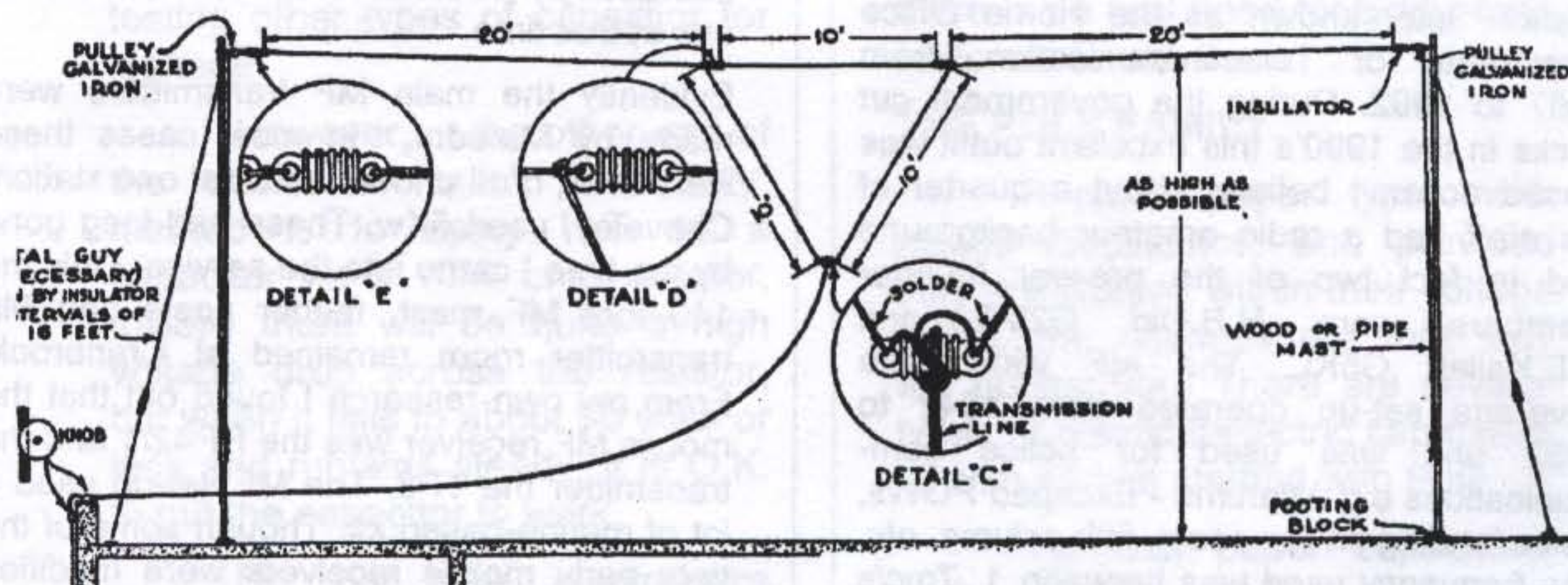
Hope this is of some help

73's Dave G4BOO

"THE V-DOUBLET"

A 'lost' vintage low-noise aerial.

Earlier this year when Jack Read's article: "**Where, oh, where have my signals gone**" (Lighthouse #71, Feb 2002, p.35) first appeared, a flurry of research took place. Peter Lankshear in New Zealand has a fund of technical references and he mailed me some items. One of them caught my eye as being different from anything I had seen in my 56 years of short-wave listening. Here it is.



The device above was illustrated in an American General Electric service sheet dated March 1935. It was also illustrated in a less clear form in an Atwater Kent (USA) advert dated March 1933, so we're talking about 70 years ago.

At first sight both Peter and I misread the drawing as being a delta-match dipole; a single-band aerial still listed in the handbooks but not very much used and incapable of multi-band operation. A close look, however, disabused us of this error.

A delta-match has a through conductor, whereas this one has an isolated centre-section. Mmmm.

I think the best thing now is to present the original *GE* write-up of their version:-

"With the advent of "all-wave" radio receivers, the antenna installation becomes a fundamental rather than an incidental problem. Short waves are used primarily because of their ability to travel great distances with relatively low transmitting power. Upon reaching the receiver, therefore, these waves are in general far weaker and fade much more severely than those from stations in the standard broadcast band (540 to 1500 kilocycles). Obviously the antenna must perform very efficiently in the short-wave spectrum; it must be able to transfer signals to the receiver with negligible loss or reliable results will be practically impossible.

Short-wave broadcasting covers a very wide frequency range, being segregated by international agreement into four

principal narrow bands located approximately at 19, 25, 31 and 49 meters. For any given length, a conventional antenna will favor certain frequencies and tend to reject others. Antennas of the single-wire or doublet type are therefore quite unsatisfactory, for there is no one length which would operate with any degree of uniformity over the required range. The "V-doublet" antenna system, however, serves the purpose admirably.

As its name implies, this system incorporates a doublet, the centre portion of which takes the form of a "V". The factor responsible for the non-uniform sensitivity of a conventional single-wire or doublet antenna is the development of standing waves along its length which results in points of high and low sensitivity at different frequencies. The "V-doublet" reduces these standing waves because the center portion is tapered, which makes the system somewhat aperiodic. The first high-impedance point is thereby extended out to such a high frequency that efficient pick-up is obtained on the antenna proper, and the high impedance point does not have the usual derogation of signal strength experienced with conventional doublets. The result is a doublet of better uniform sensitivity over the short-wave bands.

Signals intercepted by the doublet are fed to the receiver through a balanced, twisted-pair lead-in (hereinafter called the transmission line). A further function of the tapered "V" is to couple efficiently the fairly high impedance antenna to the low impedance transmission line, in which case the taper performs the function of a transformer.

It is also desirable that the doublet be erected as high as conveniently possible so as to place that portion of the system which intercepts the signal at a maximum distance from any source of man-made interference. Interference "picked up" by the transmission line cannot affect the receiver. The doublet, therefore, should be erected well remote from sources of interference such as automobile highways, street-railway lines or motor-driven electrical appliances. In some cases it may be necessary to locate the antenna proper as much as 500 feet distant from the receiver, adding the required length of transmission line to the 100-foot length supplied with the kit. To maintain the correct electrical matching, not less than 100 feet of transmission line should be used in any case. If less than 100 feet is required, the excess amount should be coiled up neatly at the end nearest the receiver. ...

The service Sheet writes lots more about using a special matching transformer to couple the transmission line to the radio. In my opinion this is no more or less than some sort of balun.

I know the pundits will argue until they are blue in the face about the merits and demerits of this system from the ark, but you can bet one thing; it worked for General Electric, who were big in the U.S. broadcasting industry from the '20s onward.

And I'll bet a pound to a penny that if you used flat twin or speaker cable, and put a modest twist in it (say one turn per foot) by stretching it out and winding it with a wheel-brace, it would work well straight into any Eddystone with balanced 400Ω aerial input. For a low impedance co-ax input use a balun at the set. **GRAEME - G3GGL**

WHERE, OH WHERE - THE STORY SO FAR

I find myself at a loss to express my thanks for the amazing response to my plea for help to beat my noise interference problem: I counted no less than nine pages in Lighthouse No. 72 of helpful and constructive comment.

Anway here goes. My thanks first to Peter Lankshear for confirming that my understanding of the basic theory was broadly correct . . .

To Ken Gummer for his suggestions on how to track down the source, more on this in a moment . . .

To Graeme Wormald for his article on interference combatting antennae and feeders, including information on early Eddystone units designed for this purpose . . .

To Peter Lankshear again for his article on Active Aerials, including a circuit schematic.

However it was wise old Graeme who put his finger on it when he pointed out that the matching device in my rubber doughnut base unit was not a matching unit at all! As a result I have been running the feeder completely out of match with results that are hardly surprising.

No wonder as I tuned up the HF band the signal seemed to peak and trough as the antenna found occasional points of resonance. A proper base unit amplifier, with a fixed 75 ohm output to the line, will now be installed. Embarrassment all round!

Next with a battery portable as suggested by Ken I set out to hunt the source of all the noise. A horror story unfolded. I found a computer generated wow-wow-wow noise on all the domestic wiring and on metal objects connected to it, such as boiler, fridge and freezer.

It was possible to follow the under-floor and between-floor wiring, the noise

extending right out to the mains earthing spike in the garden.

Being in a country district we have an overhead electricity supply on poles down the lane with a local earth rod at each consumer. The noise was also all over the telephone lines.

The source was traced to a computer video amplifier and associated switched mode power supply which was putting hash forward into a cable and backwards into the mains.

This is now being worked on. The domestic television also produces the noise of frying bacon, even when switched off in 'standby' mode, whilst one of the fluorescent lights in the garage also has a signature.

Talking to a friend who works at Jodrell Bank and builds the super low noise amplifiers that go at the apex of the big dish, he took the pragmatic view that 'you will spend your whole life chasing noise, and still never win'.

The only guaranteed way to improve the signal to noise ratio is to increase the signal! He is building me an amplifier similar to Peter's and this will go on test shortly.

If it works, and I am sure it will, I will write in with the results and will include the circuit if this is not proprietary.

Many, many thanks to everyone, and watch this space!

Jack Read

THIS MONTH'S "EDDYSTONE
SPECIFIED" DATES FROM THE END
OF WORLD WAR TWO

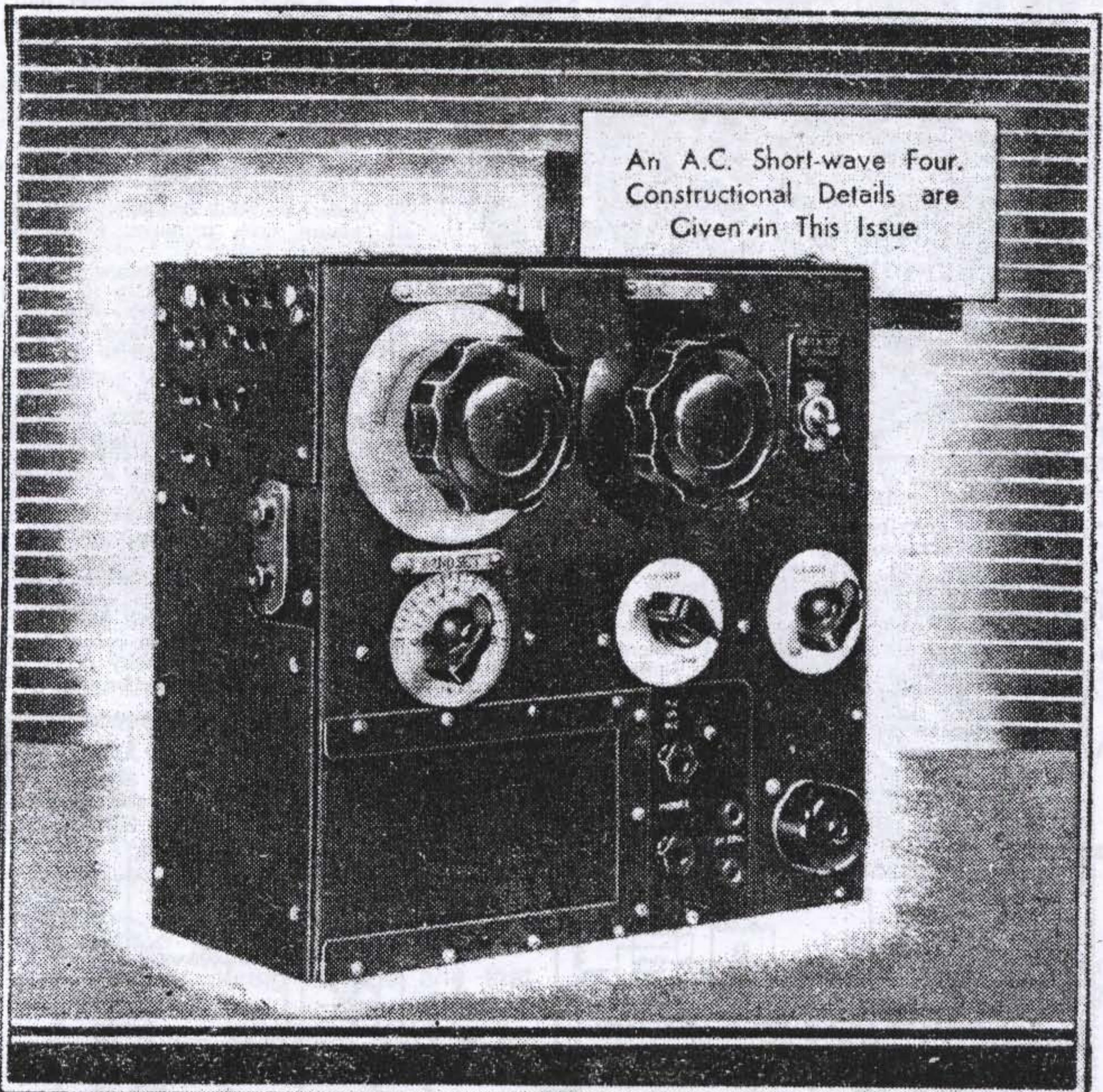
Practical ^{9th} Wireless

Ed
F.J. CAMM

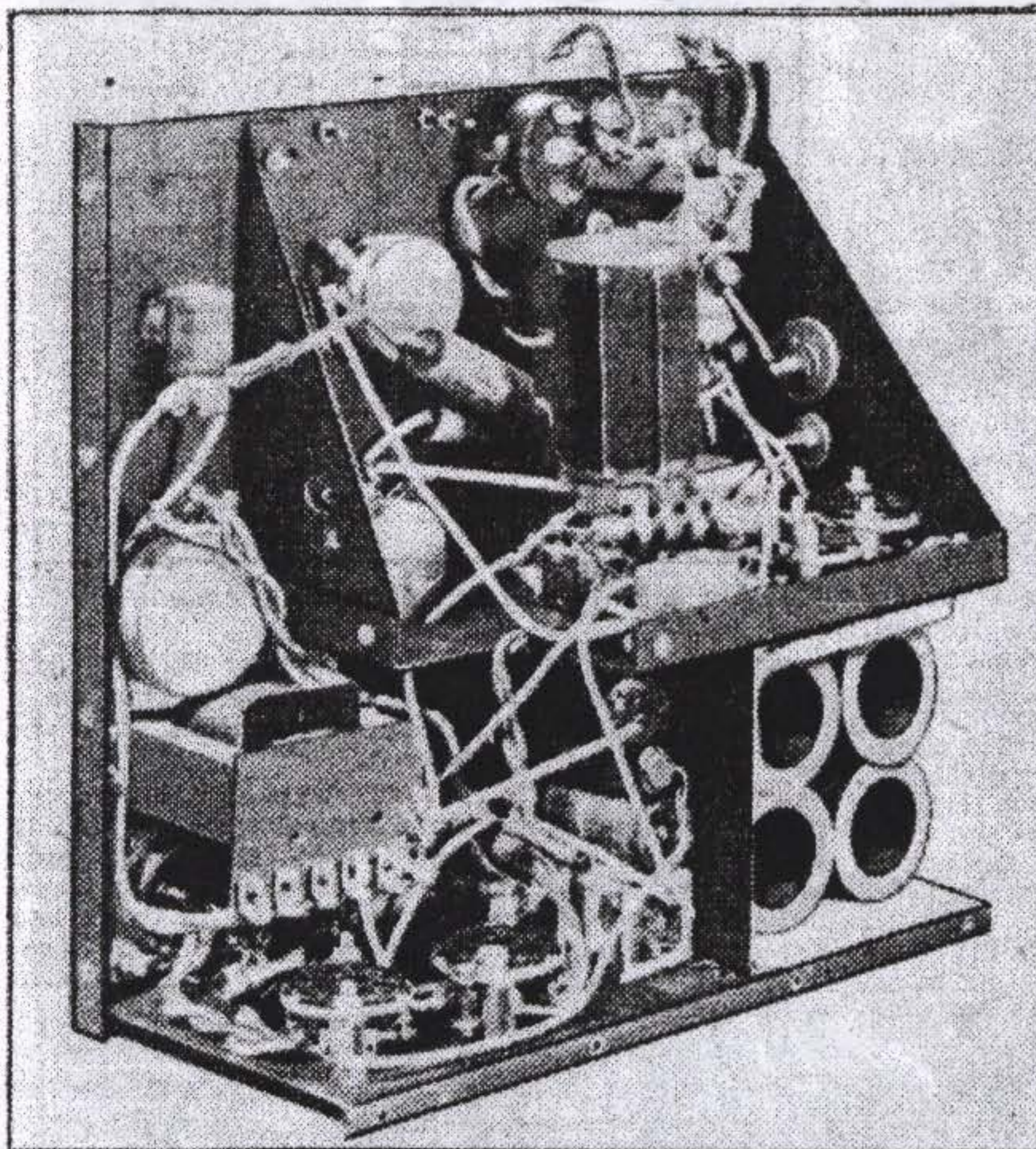
Vol. 21 No. 470

NEW SERIES

AUGUST, 1945



An A.C. Short-wave Four



Rear view of chassis, showing layout of components.

Instructional Details of a Compact and Sturdy Receiver Suitable for Home or Overseas Use

By R. SHATWELL

arrangement is quite useful for announcements, etc., if a microphone is not obtainable. No power supply is included in the set, and it requires 200-250 v. D.C. at 50-60 mA, and 6.3 volts at 3 amps for the heaters. The "P.W." Universal Power Unit will supply this, or a separate simple power unit can be made up.

Circuit

The circuit is straightforward in all respects and the controls cover practically all requirements that are likely to arise without materially affecting tuning, which helps logging considerably. Beginning at the aerial, the aerial coupling condenser is a 35 pF. stamp type trimmer, which is not adjusted after its final setting. The first stage is an untuned variable-mu one, using a 6K7, with its gain controlled by a 20,000 ohm variable resistance in the cathode lead. This is transformer coupled to the detector, which is a 6J7 H.F. pentode, with reaction controlled by a 50,000 ohm potentiometer. This gives really velvet-smooth reaction. So quietly does the detector burst into oscillation that on 'phones, at any rate, if no signal is present and the knob is turned too

THE set here described was designed and built for use while overseas and is, therefore, of sturdy construction and quite powerful, but compact and easily carried about. Provision is made for the L.F. section to be used as a small amplifier for pick-up or microphone, and a 'phone jack is provided for solitary listening. If the 'phones are plugged into the microphone socket and used as a twin microphone, quite good results are obtained over the speech frequency, and this

quickly, the operator is unaware that oscillation has commenced. Selectivity is varied by the H.F. gain control. The detector is resistance capacity coupled to the L.F. stage which uses a 6J5, upon which the L.F. gain control operates. This is also R.C. coupled to the output stage, a 6AG6 being used in this position which, fully loaded, is capable of 3.5 watts undistorted output. The amplification of this stage is very great, and a 50,000 ohm grid stopper is necessary to stop parasitic

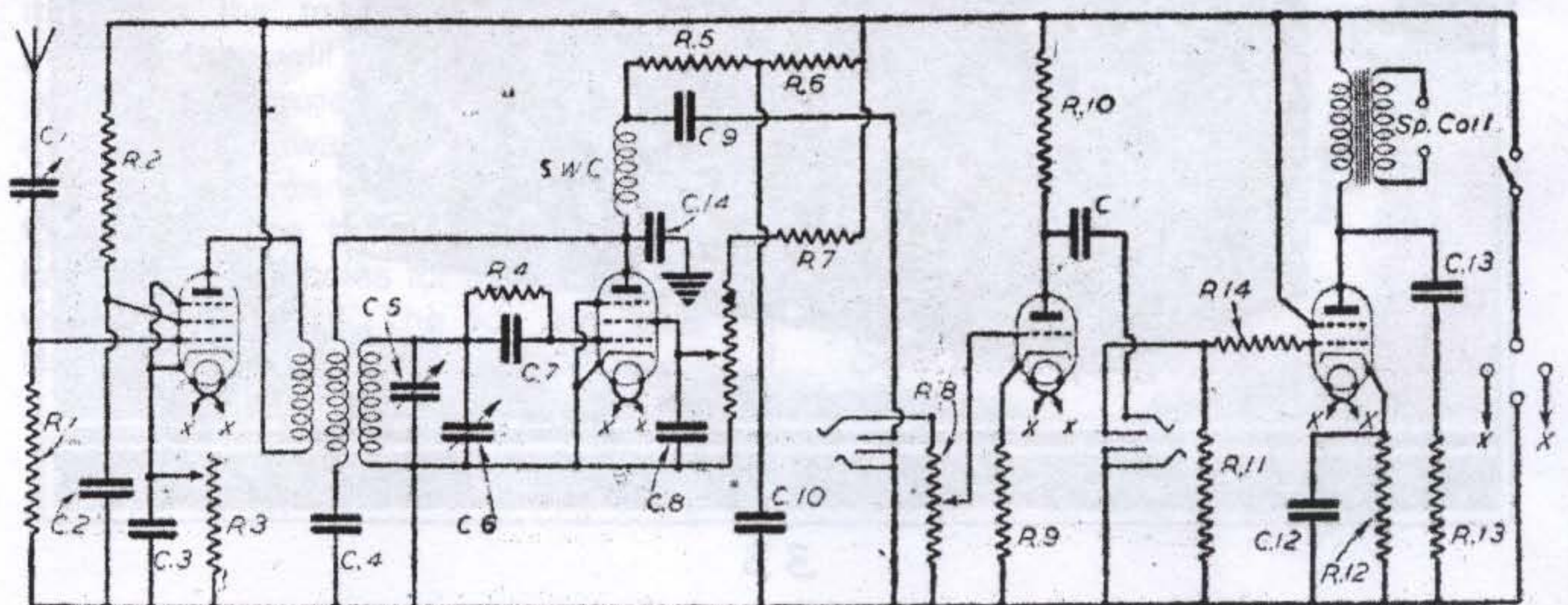


Fig. 1.—Theoretical circuit diagram.

oscillation. The pick-up jack, which automatically cuts out the radio, feeds in parallel with the L.F. gain control which is, therefore, operative on pick-up as well as radio. The 'phone jack is on the output side of the L.F. valve and cuts out the speaker. Fig. 1 is the theoretical circuit of the receiver.

Chassis

The chassis is of somewhat unusual design, which, while giving a neat front panel layout, makes for high efficiency and isolation of stages. All controls, together with power input and speaker, 'phones and pick-up sockets, are on the front panel, which allows the whole set to be completed without connections having to be made and broken when the cover is fitted or removed. Only the aerial and earth connections are on the side of the set, but even there no connections need be disturbed. Damping from the metal case is negligible. Even on the shortest wavelengths tuning is only very slightly disturbed by the removal of the case. If possible the Eddystone tank condenser and bandspread should be used, as these give a very high degree of accuracy in logging stations, the tank or bandset being self-locating in ten .000014 sections, each of which is tuned by the .000014 bandspread. This system is not, of course, an essential, but merely a convenience. If these are used, it will be found that the minimum wave-

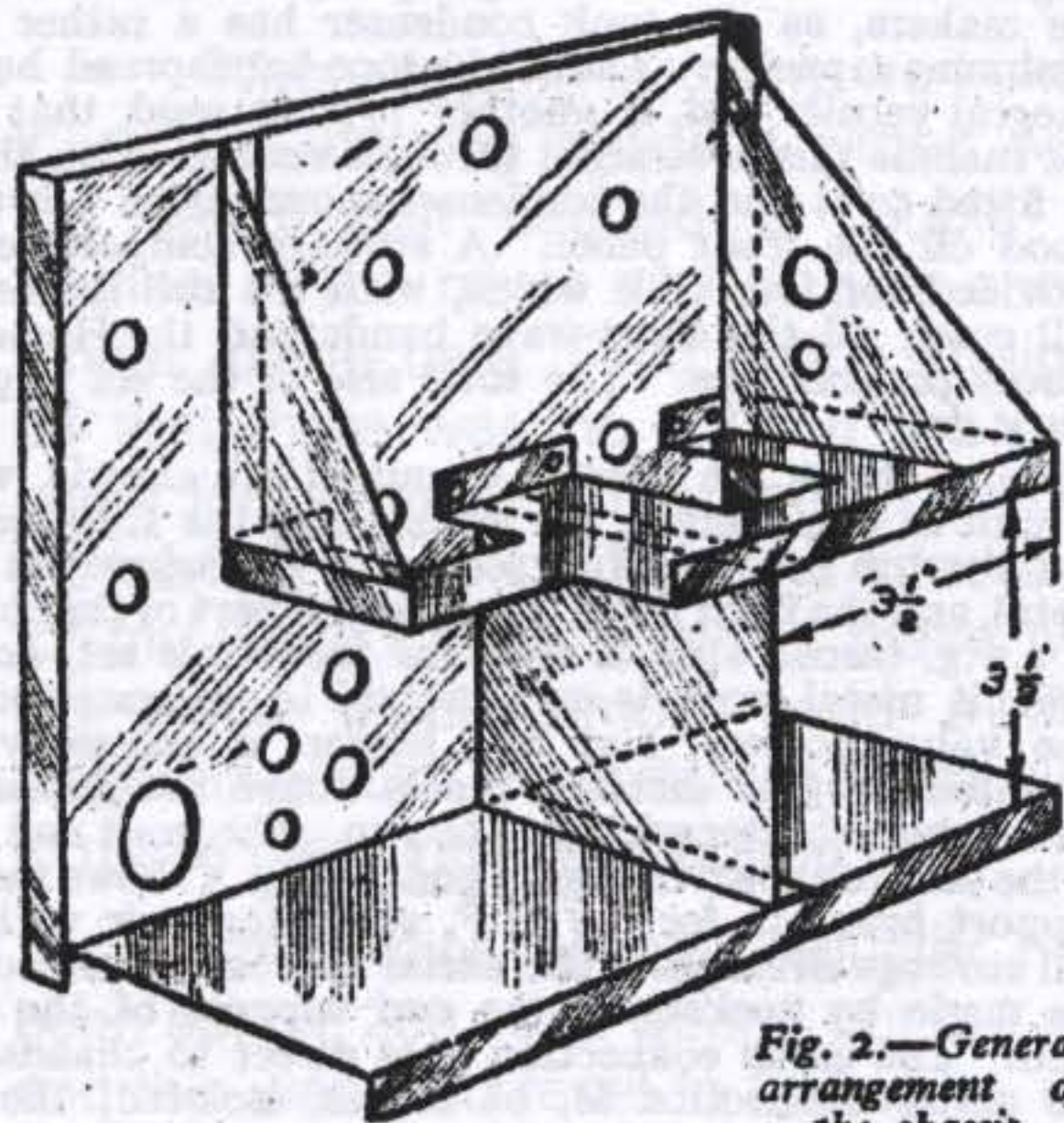


Fig. 2.—General arrangement of the chassis.

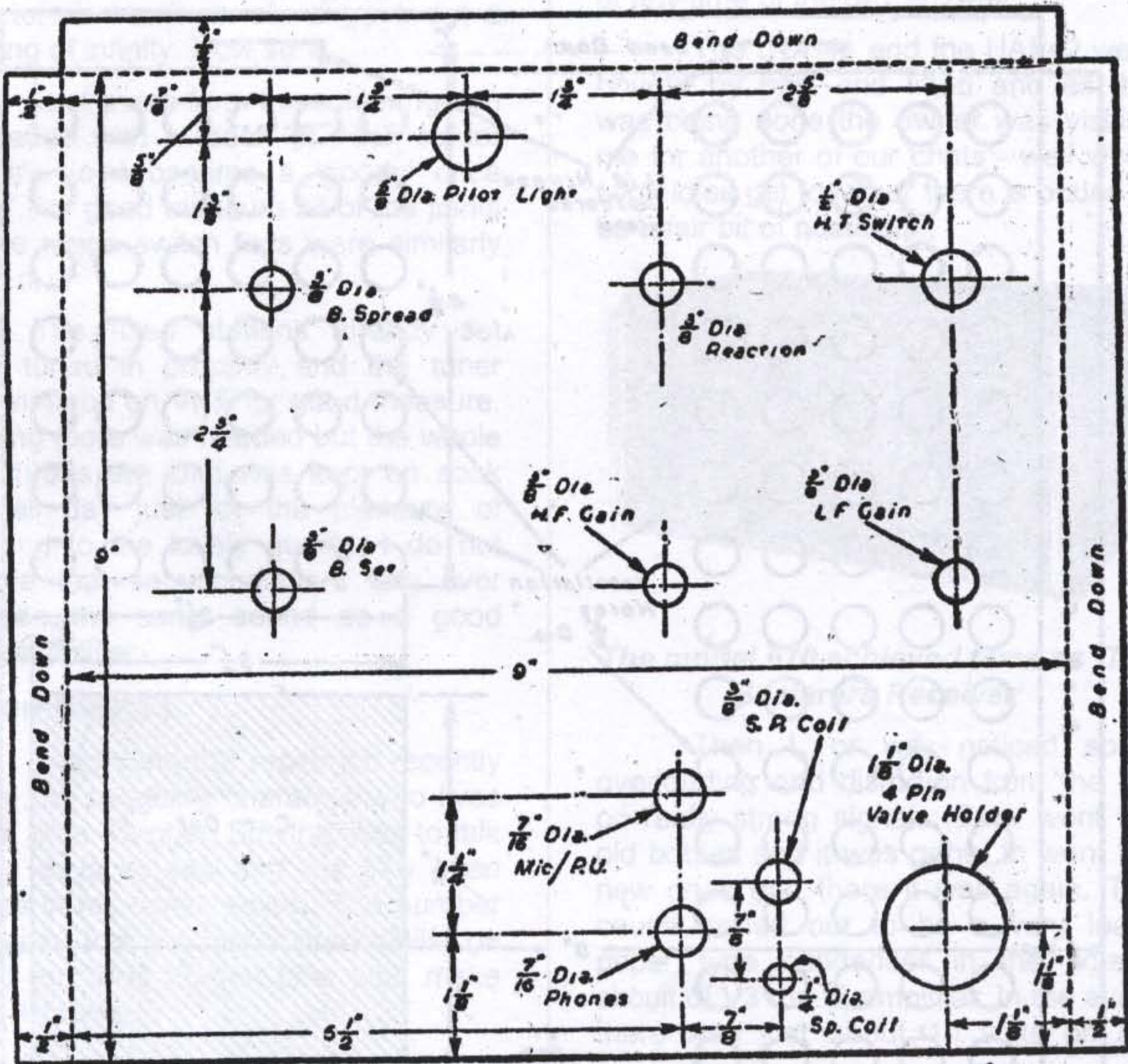


Fig. 3.—The front of the chassis, giving the spacing for the various holes.

length of the coils will be slightly higher than stated by the makers, as the tank condenser has a rather high minimum capacity. The Eddystone bandspread has an integral vernier and, if another type is used, that does not include this, a straight through vernier drive should be fitted to it and the condenser mounted on a bracket stood off the front panel. A stowage compartment is provided for four coils which, with the coil in the set, will cover all the short-wave bands and the Home and Forces programmes. The total size of the set is 9in. X 9in. X 4 1/2in.

Fig. 2 shows the general layout of the chassis, which is built in two shelves, the lower being the L.F. section, and the top one the H.F. section. The whole set is of metal, and the front panel is an integral part of the chassis. 22 s.w.g. tinned steel is used for the whole set, and no difficult metal work is encountered in its construction. The valve holders, and coil holder if necessary, are mounted on 1/4in. distance pieces above the chassis, as this enables shorter wiring to be run. The front and back of the set are shown in Figs. 3 and 4. Fig. 5 shows the two support brackets for the H.F. shelf, together with the coil stowage division. The aerial and earth connections are made by sockets in the end support of the H.F. shelf. The earth connection goes direct to chassis, but the aerial connection is, of course, isolated, the 3/4in. diameter hole being for this purpose. Similarly, one

of the speech coil sockets must be mounted on a piece of insulating material, and an oversize hole is provided in the panel for this reason. If the insulating material is made large enough to mount both sockets, and an

LIST OF COMPONENTS

- | | | |
|---|------------------------|-----------|
| C1—35 pF. stamp type trimmer. | R1—5 ohm. | } 1 watt. |
| C2, C3, C8, C11—.1 mfd. | R2—25 k. | |
| C4, C14—.0001 silver mica. | R3—20 k. variable | |
| C5—.00014 bandset | R4—4 ohms. | |
| C6—.000014 bandspread. | R5—100 k. | |
| C7—.0002 mica fixing type or silver mica. | R6, R13—10 k. | |
| C9, C13—.01 mica. | R7, R14—50 k. | |
| C10—2 mfd. | R8—5 ohm potentiometer | |
| C12—25 mfd. 25 v. | R9—1,000 ohms. | |
| 1—5 mfd. | R10—75 k. | |
| | R11—1 ohm. | |
| | R12—180 ohms 2 watts. | |
- Output transformer; two 'phone jacks; two Raymart knobs, one with 3in. skirt; one Raymart 3in. dial and pointer; On/Off switch; three small pointer knobs; one S.W. choke.
- Valves: 6K7 or KTW63; 6J7 or Z63; 6J5 or L63; 6AG6 or KT61.
- Coils and coilholders: Eddystone or Raymart.

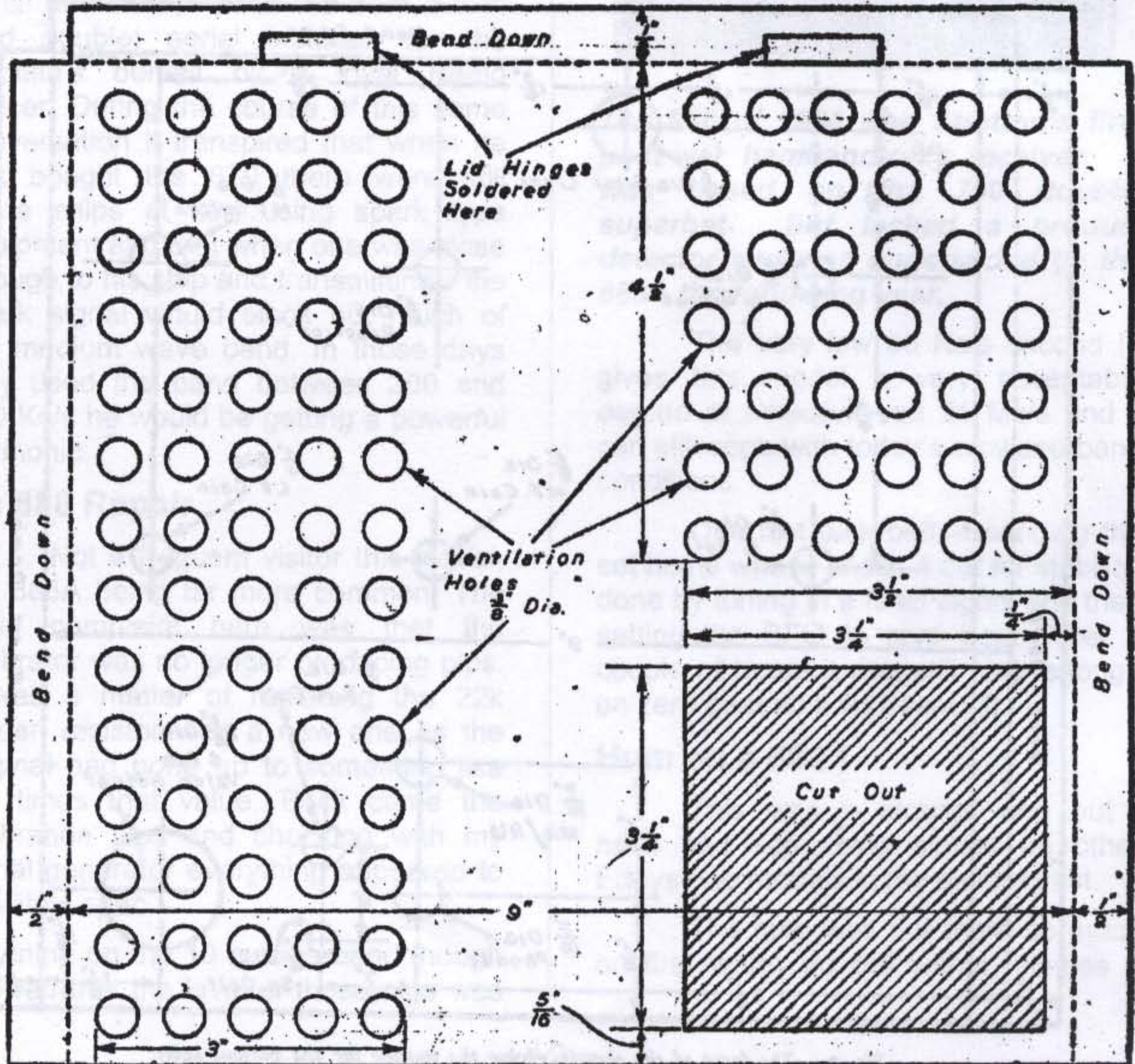


Fig. 4.—Rear view of chassis, showing ventilation holes.

additional piece placed behind the chassis on the isolated one, the earthed socket will anchor it firmly and prevent shouting which, while not serious, will, of course, result in a complete cessation of signals. Alternatively, one of the paxolin L.S. strips with sockets can be used instead of two separate sockets. This also applies to the aerial and earth sockets. The pilot light is fixed so that the glass bulb is outside the front, protected by the cover, which throws the light down over the front of the set, facilitating tuning in the dark, without being too easily damaged.

Chassis Parts

When making the chassis parts it is as well to work to a system that allows errors in workmanship to be corrected as you go. Check the fitting of the bandset into the slot in the H.F. shelf (Fig. 6), and modify the slot if necessary. As each piece is made and bent, check its measurements and, if necessary, modify the next piece to suit, provided, of course, the error is slight. Assemble the front and shelves, with supports and coil partition, and mount all panel components and position the remainder before fitting the back. This done, fit the back and check the overall measurements before making the sides.

It should be noted here that the top, back and sides are permanently bolted together after enamelling, and drop over the set, fixing by self-tapping screws, four down each side, two at the top front edge and four at the back of the bottom shelf. The lid is fixed by two small hinges soldered to it, and to the top tip of the

back. The joggled portion required on the lid and coil storage cover is merely a step in the metal which is quite easily obtained with two strips of metal and a vice. About 18 s.w.g. metal of any kind will do.
(To be concluded)

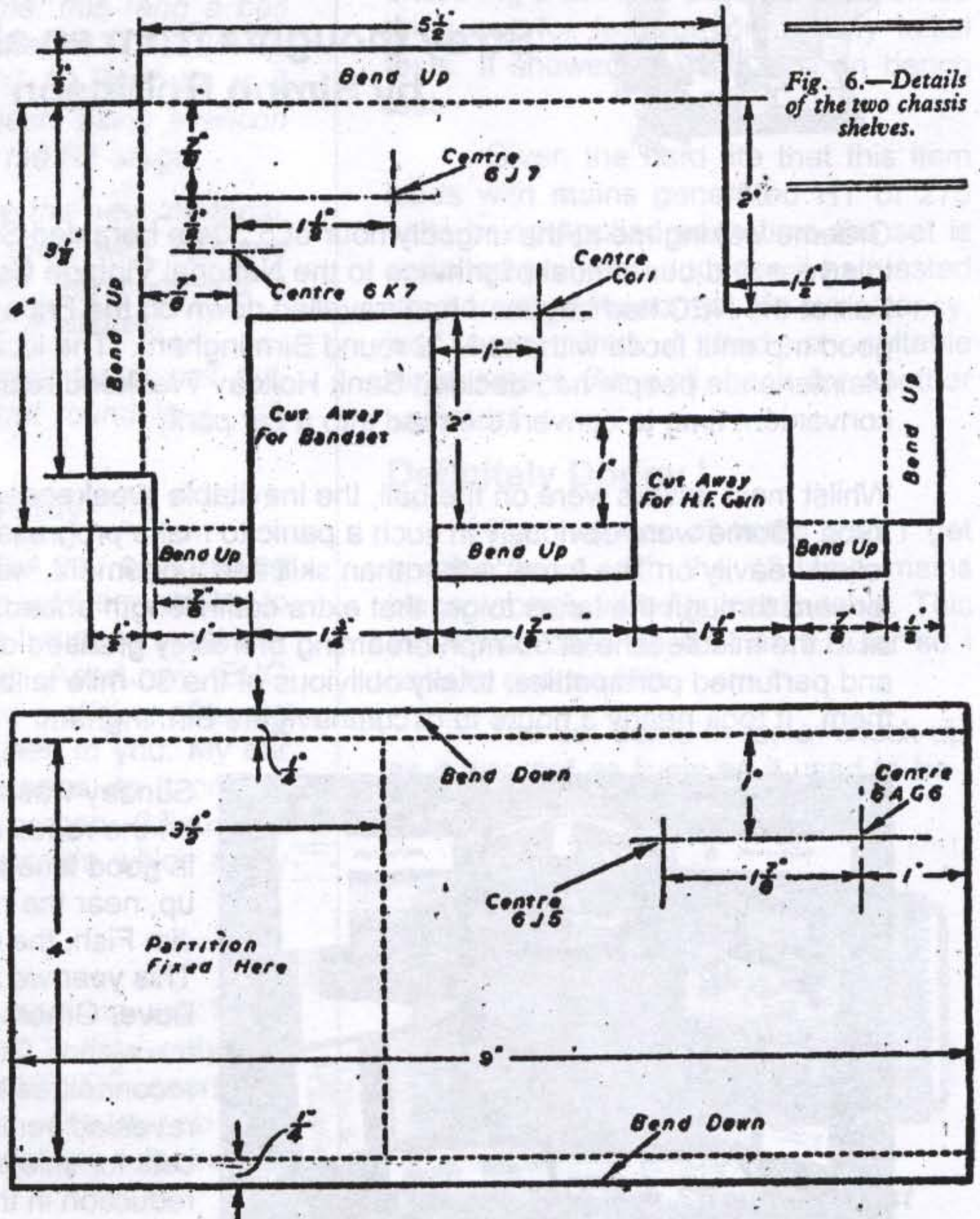


Fig. 6.—Details of the two chassis shelves.

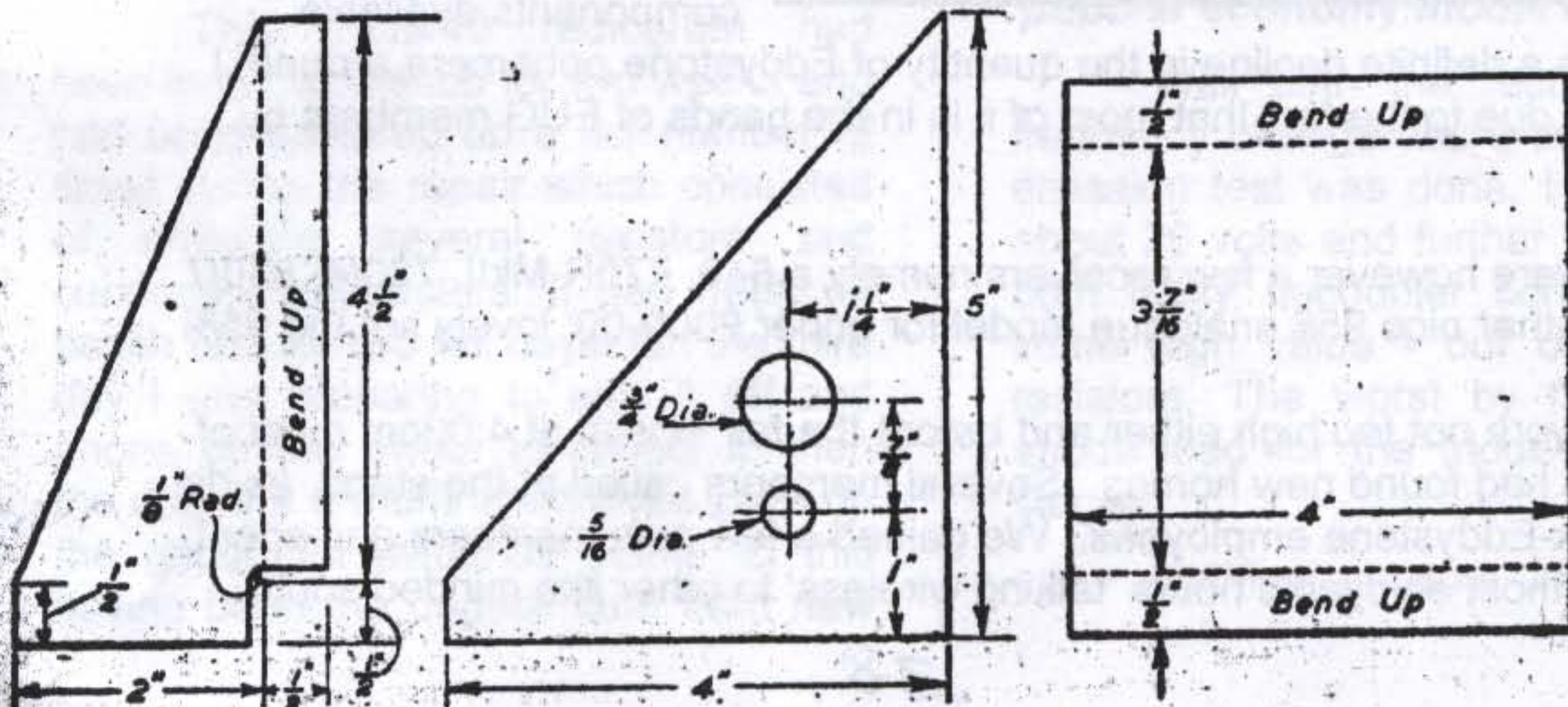


Fig. 5.—The two supporting brackets for the H.F. shelf, and the coil storage partition.

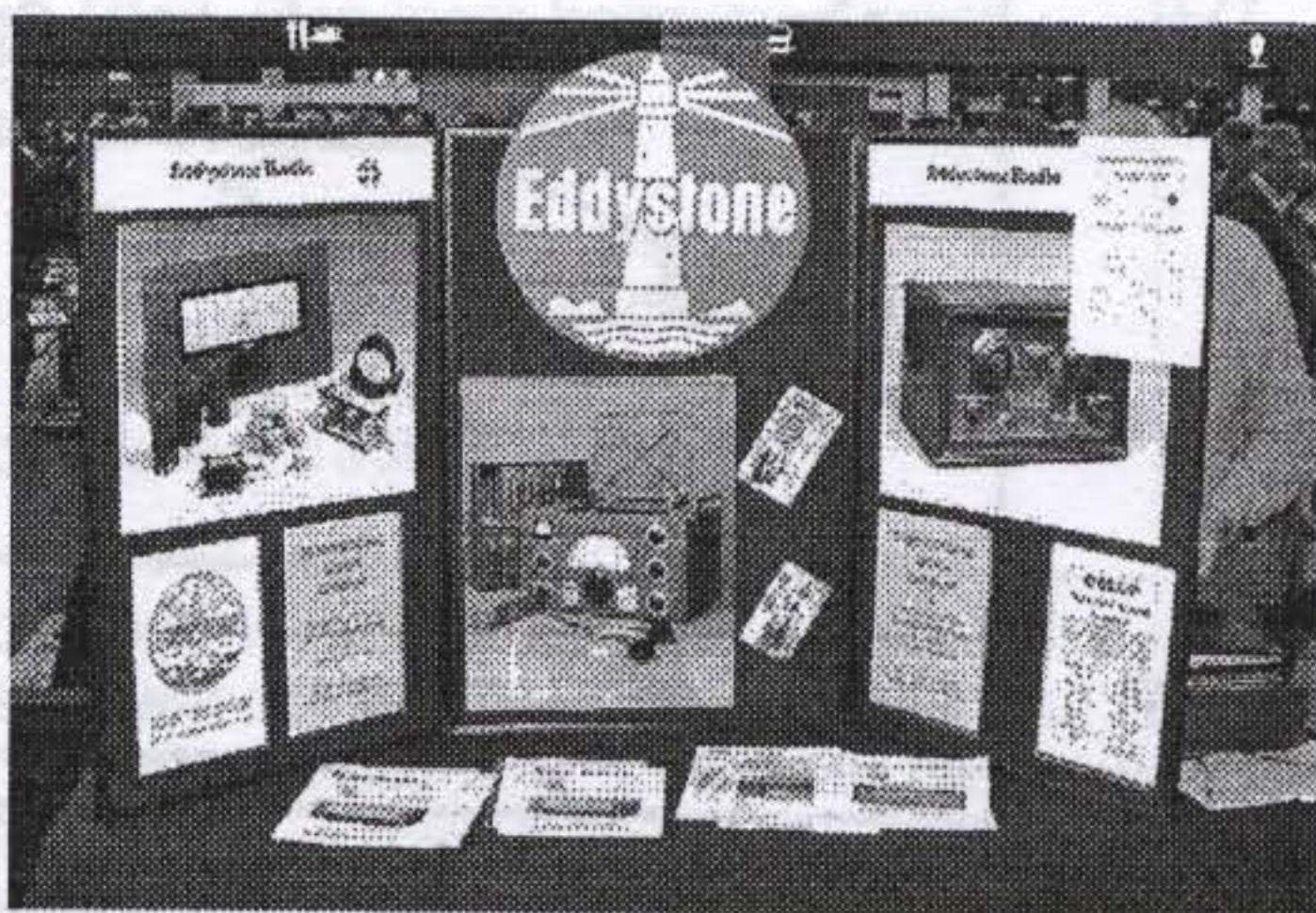


POO'S PONDERINGS

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

Graeme waking me at the ungodly hour of 5:30am heralded Sunday May 5th this year and our annual pilgrimage to the National Vintage Communications Fair at the NEC had begun. I had travelled down on the Friday and had a good trip until faced with the M42 round Birmingham. The local Motorway Maintenance people had decided Bank Holiday Weekend really was the most convenient time to convert the road into a car park.

Whilst most drivers were on the ball, the inevitable 'weekenders' were out in force. Some were obviously in such a panic to make progress they obviously relied heavily on 'the force' rather than skill and judgement, weaving back and forward through the lanes to get that extra coffin length ahead. Others would sit in the middle lane at 50-mph dreaming of freshly greased caravan axles and perfumed portapotties, totally oblivious of the 30-mile tailback behind them. It took nearly 3 hours to circumnavigate Birmingham.



Sunday was free and easy on the roads and we arrived in good time to set our stand up, near the main door and Jim Fish, the valve man. This year we had Chris, Dave, Graeme and I manning the stand. Our brief reconnoitres before the show revealed very few Eddystone sets for sale and a big reduction in the amount of components available.

There is a definite decline in the quantity of Eddystone ephemera around, I suspect due to the fact that most of it is in the hands of EUG members by now.

There were however a few receivers namely a 640, 770R MkII, 730/4, 830/7 and a rather nice 958 analogue model for under £300-00; lovely set the 958!

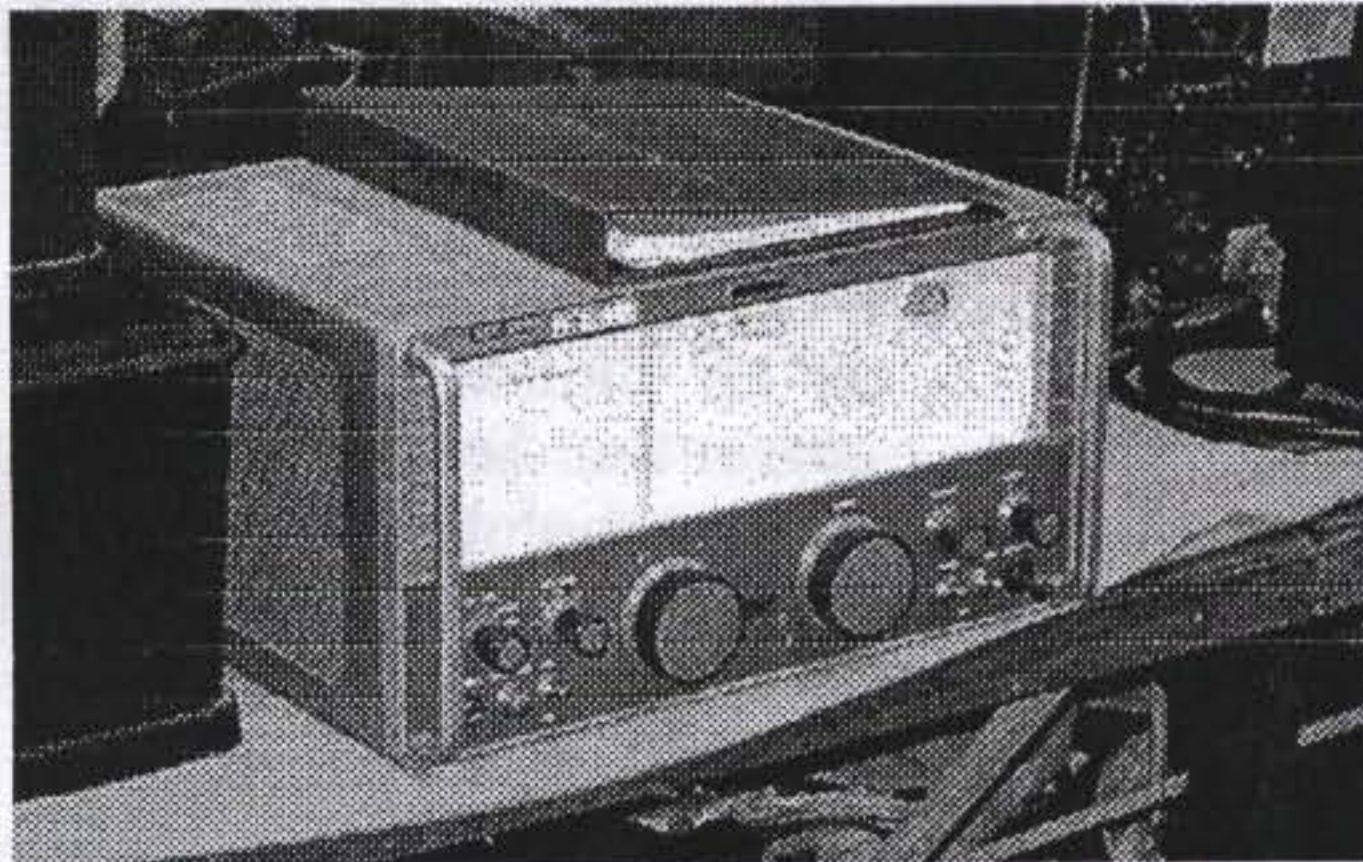
Prices were not too high either and before the fair closed at 4:00pm most of the sets had found new homes. Several members called at the stand, as did a few ex-Eddystone employees. We gained a few new members and spent several most enjoyable hours 'talking wireless' to other like minded souls.

The NVCF pictures this year were kindly taken for us by David Oakden and E-mailed after the show for your delight in this issue of 'Lighthouse'.



The rather lonely looking 640 on the left is a much underestimated model as it uses a higher IF than the 455 kHz so typical of the period.

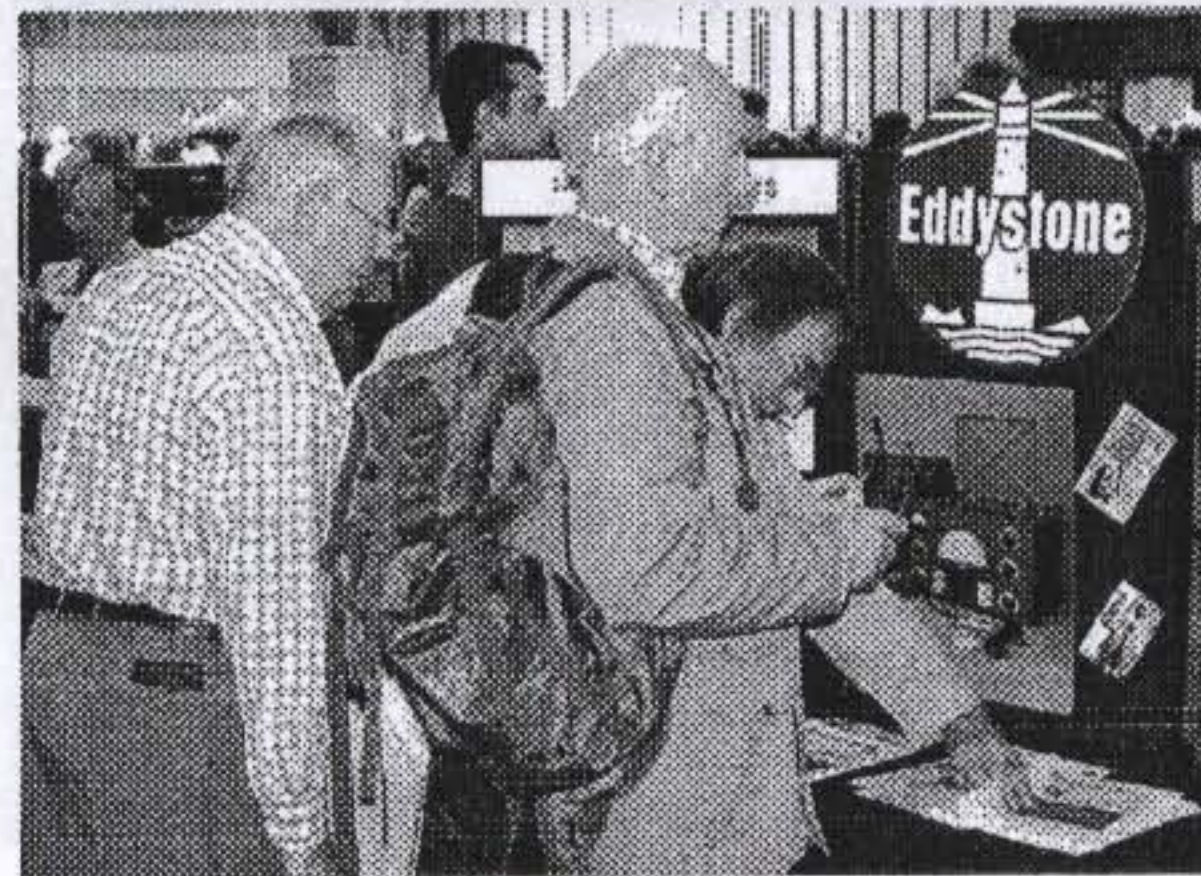
It's an easy set to get started with but beware – many of them suffer from burnt out mains transformers.



If you're looking for something to listen to in the shack, a 770R MkII covers the FM broadcast band plus the VHF amateur bands. It does of course feature infinitely small scanning steps and memories; if you have a pad and pencil to hand!



This 958 was a real bargain and some say it is better than the later digital readout model; less noise with no multiplex hash from the display. Frankly, having compared the two, I can't tell any difference!



"Can I help you?" exclaims Graeme, as two unsuspecting 'customers' browse our wares. We had a few back issues of 'Lighthouse' to whet the appetites of any would-be members.

There were none left at the end of the fair.

We packed up at just after 4pm and many cups of coffee, having had a successful and most enjoyable day out!

Construction Project – NOT!

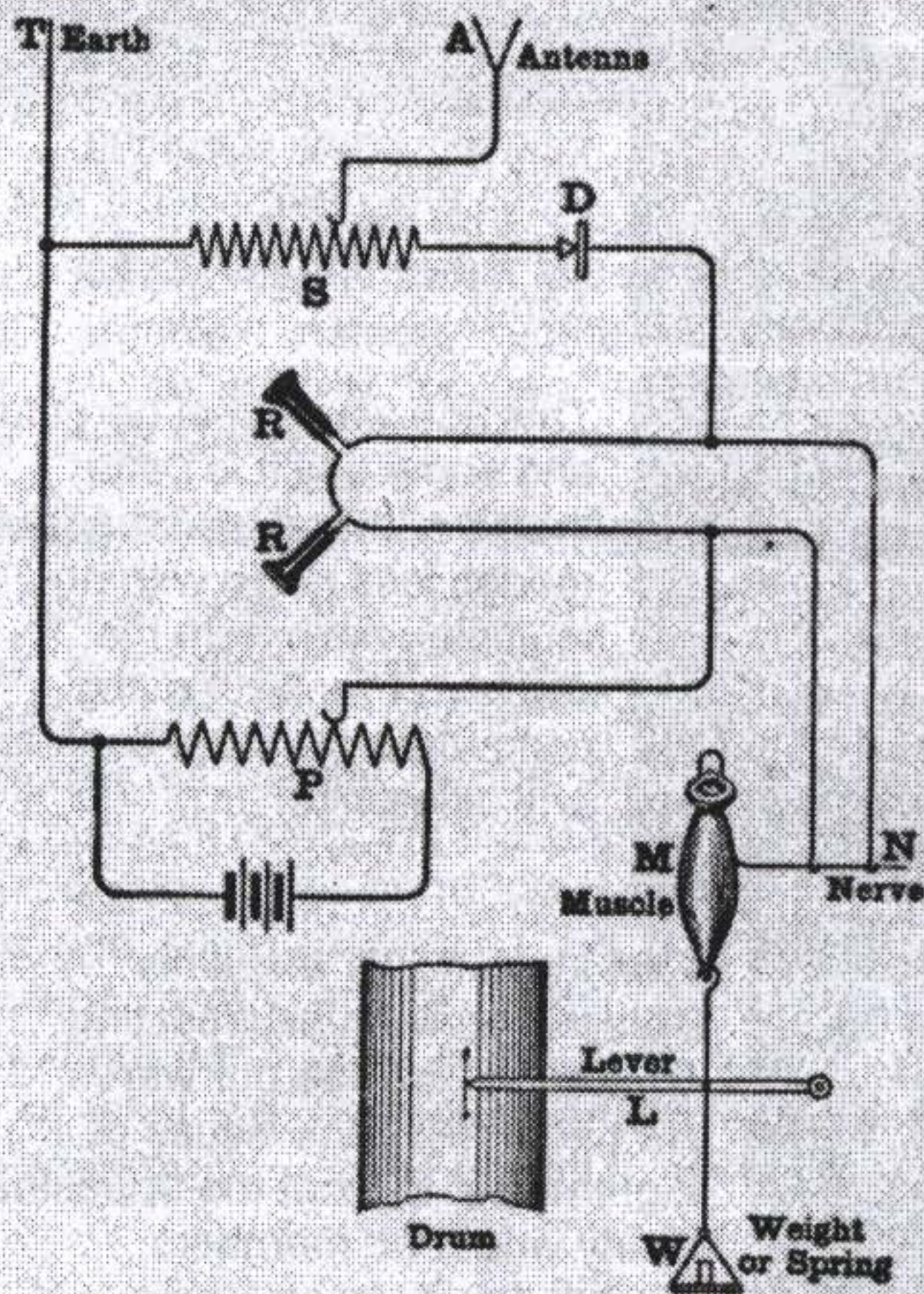
Whilst perusing a recent acquisition I came across the following section dealing with a sensitive method for detecting radio waves. It comes from 'The Principles of Electric Wave Telegraphy and Telephony, 3rd Edition 1916 by J. A. Fleming. Don't try this at home, PLEASE!

16. Physiological Oscillation Detectors.—The nervous system of all animals is affected by electric discharges and currents. The invention of the Leyden jar obtained notoriety chiefly in consequence of the "shocks" it could administer. In fact the effects were described by the early observers with an exuberance of language scarcely justified by our experiences. One experimentalist on taking the discharge of a small Leyden phial declared that not for the whole Kingdom of France would he endure another. Amongst other vertebrates the frog, that old martyr of science, seems to exhibit considerable sensibility when a discharge is passed down his sciatic nerve. Hence from the time of Galvani a frog's leg has been used

as an indicator of electric currents. Accordingly, Dr. Lefeuve of the University of Rennes, in France, has made use of it as a radio-telegraphic receiver. (See *The Electrician*, vol. 71, p. 93, 1913.)

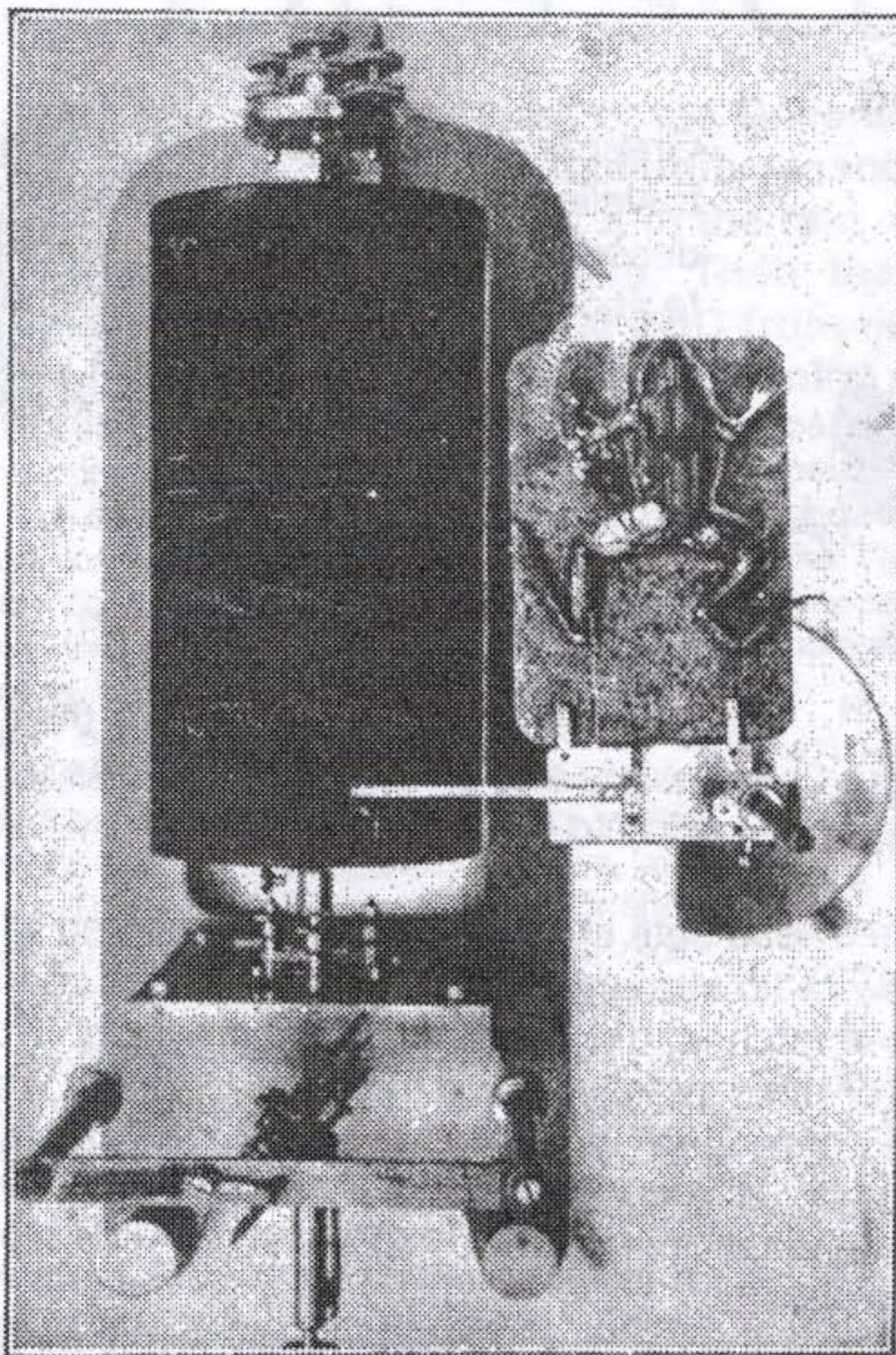
The frog's leg is mounted so that contraction of the muscle moves a lever which makes a mark upon a revolving drum covered with blackened paper. The current received from an antenna is passed through the nerve (see Fig. 49), and the resulting contraction of the leg when a radio-telegraphic signal is received by the antenna makes a mark on the drum. In this manner Professor Lefeuve has recorded signals coming from the Eiffel Tower station in Paris received at Rennes.

Fig. 50 shows the frog arranged as a receiver.



By permission of the Proprietors of "The Electrician."

FIG. 49.—Method of using a Frog's Leg Muscle for the detection of Electric Waves.



By permission of the Proprietors of "The Electricalian."

FIG. 84.—Frog's Leg used as a Radiotelegraphic Receiver.

You can (hopefully) just see the resultant traces on the left of the picture produced using the 'Frogs Leg Detector'. Poor thing!

In the early days of wireless they used all manner of things to both detect and transmit 'Ether Waves'.

A similar device is now available from various mail order houses in the form of a battery powered 'muscle toner' for those too lazy to go for a run.

Yes, I tried one too and sympathise completely with the frog.

Members E-Mail

We recently registered the Internet Domain 'www.eddystone-radio.com' to house the new Eddystone User Group Website. This is taking rather longer than expected due to my poor health and business commitments. It is however close to completion; honest.

How would you like an e-mail address '@eddystone-radio.com'?

For just £25-00 per annum YOU CAN!

No need to change your Internet provider or dial-in access. We will redirect all e-mail to your existing mailbox. So if you were called 'Stan' you could have 'stan@eddystone-radio.com'. Neat eh!

E-mail me at 'simon@nomis.co.uk' for full details; if you can't set up the one line change in your e-mail software I'll help you do it. Bear in mind that simon, graeme, ron, chris, dave and associated callsigns are reserved.

I intend to provide an area for any member with 'Eddystone Mail' to have their own homepage with photos and information about their hobby.

The Myth of MINT CONDITION

...THOSE LITTLE
SCRATCHES &...JUST
CHARACTER MARKS...LIKE THE
WRINKLES YOU SEE ON THE
FACES OF SWEET LITTLE
OLD LADIES



Graeme and I are not alone in having travelled many miles to view sets described as in 'mint' condition, only to find a moth eaten, rusty and non-working piece of junk. Frankly I doubt if one in two hundred sets could be classed as mint.

In an effort to try and avoid embarrassing situations I have created a grading system for members to use when selling their

beloved Eddystone sets. Please use it wisely and all will be happy! As a guide I have *estimated* the value of a good old 640 in each case.

Grade A – MINT CONDITION. These sets should be totally unrestored with the look and feel of a brand new radio straight from the factory. They should show no signs of use, have no scratches, dirt or blemishes of any kind. None of the dial plates, finger plates or other paintwork will have faded in any way. They shall be in perfect working order and up to original specification as they were on leaving the factory. Ideally all original packing and supplied information will be included. See what I mean! (640 - £250+)

Grade B – RESTORED. This set will have been professionally repainted to original or better standards. On the outside it will look very close to a new radio. Internally it will be clean and show very little or no signs of use. There will be no corrosion or damaged parts. All valves will be 90% or better and no components will be faulty. Any components replaced will have been changed in a professional manner and virtually indistinguishable from factory fitting. It will be in perfect working order with all documentation. (640 - £200 to £250)

Grade C – EXCELLENT. This set will show some signs of use and may have a few small scratches. Internally it will be as Grade B and be in perfect working order with all documentation. It will not have been repainted. (640 - £150 to £200)

Grade D – GOOD. A 'good' set will show signs of use and have some scratches and possibly a little fading of dial plates etc... Internally it will have all original main components but may not be operating to full specification. There may be a few MINOR faults e.g. high value resistors or leaky bypass condensers. Broken dial gear, replacement mains transformers, faulty mains transformers, broken or missing crystals etc... are NOT minor faults. The set should power up and receive signals correctly. All documentation should be present with the radio. (640 - £100 to £150)

Grade E – FAIR. A 'fair' set will be as Grade D but may not be in good working order. Again, all major original components will be in place with no

burnt out transformers. There will be signs of wear and tear but all documentation will be present. (640 - £60 to £100)

Grade F – POOR. This set will be as Grade D but may have been repainted non-professionally, the knobs may not be original, and some major parts may be incorrect. The set will be complete and restorable with time. Some corrosion will be present and poor repairs and 'bodges' may have been made. May lack documentation and is unlikely to work. (640 - £30 to £60)

Grade G – BASKET CASE. These sets are 'the pits', probably only useful for spares and little else. They won't work and have most likely been robbed of parts by others. (640 – £free to £30)

I do hope this helps and that others will use it in future.

Capacitor Doctor *UPDATE*

Joe LeKostaj has built the EUG Capacitor Doctor and modified it slightly to better suit his requirements. If anyone would like the amended circuit please either e-mail me at 'simon@nomis.co.uk' or send an SAE to Simon Robinson M5POO, P O Box 66, Corbridge, Northumberland, NE45 5YR.

And finally, I heard of a Collins collector who cleaned his newly acquired treasure in his dish washer! Apparently it came out like new but with all the badge enamel and other fine paint work totally obliterated. If anyone cares to try this method do let me know how you get on.

Have a great summer and don't forget G6SL/P on the air – see the back page for further details and if you can't get on the air send Chris a listeners' report via QSL Manager Graeme – G3GGL (QTHR or details on page 2). Chris has gone to a helluva lot of trouble to activate this historic callsign. It was first used by Stratton & Co in the early 'thirties for experimental VHF work and has always been associated with Eddystone. Chris became the holder of it in the 1980s when it was the active call of the then-thriving Eddystone Amateur Radio Club.

73 de Simon M5POO

**Don't forget to Check in with
G6SL/P Special Event Station or
send a SWL Report. Special
Souvenir QSL. See Back Page for
full Details.**

G6SL/P

SPECIAL EVENT WEEKEND

Held to celebrate the Life of Eddystone Radio in the City of Birmingham. This event is organised and operated by our Patron, Chris Pettitt, GØEYO, M.D. of Eddystone Radio from 1984-1998. A special QSL Card will be sent to all contacts and all SWL reports. EUG Members are especially invited to join in. QSL Manager, Graeme Wormald, G3GGL, QTHR

SCHEDULE – all times GMT (UTC)

(Add one hour for British Summer Time)

ACTIVITY WILL ROTATE IN ½ HOUR SEGMENTS AS FOLLOWS

Saturday 6th July

15.00 – 80m.
15.30 – 40m.
16.00 – 20m.
16.30 – 15m.
17.00 – 80m.
17.30 – 40m.
18.00 – 20m.
18.30 – 15m.
19.00 – 80m.
19.30 – 40m.
20.00 – 20m.
20.30 – 15m.
21.00 Close.

★

★

Sunday 7th July

07.00 – 80m.
07.30 – 40m.
08.00 – 20m.
08.30 – 15m.
09.00 – 80m.
09.30 – 40m.
10.00 – 20m.
10.30 – 15m.
11.00 – 80m.
11.30 – 40m.
12.00 – 20m.
12.30 – 15m.
13.00 – 80m.
13.30 – 40m.
14.00 Close

REMEMBER THESE TIMES ARE GMT (UTC)

Frequencies: 80m. – 3,695-3,710 kHz 40m. -- 7,080-7,090 kHz

SSB, 20m. – 14,150-14,175 kHz 15m. – 21,200-21,250 kHz

Two Metres: Due to contest activity this will be restricted to FM only, on 145.225 MHz. G6SL/P may call at any time during the above hours if activity drops off on the other bands. Leave your 2-metre rig set on channel. Station located 10 miles (16 km) south of Birmingham.