

Lighthouse

FOUNDED 1990

ISSUE 69, OCTOBER 2001

The Magazine of the
Eddystone User Group



The Eddystone 'TWIN', 1926

All is Revealed!

EDDYSTONE USER GROUP

A non-profit-making
group for Eddystone
Radio Enthusiasts
Founded in 1990 by
Ted Moore

Issue 69. October 2001

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Lighthouse

Issue 69

October 2001

Welcome to another issue of the "Lighthouse". These are not happy times. The events in New York and Washington last week have thrust the world into further instability. Stock markets are collapsing, and depending upon the level of retribution exacted by the Americans and their allies, international trade may be affected.

Many millions of viewers will have seen the antennas on top of the World Trade Centre drop vertically as the buildings collapsed. The broadcast industry in the US has rallied round to provide emergency facilities in New York so that stations can get back on air.

At the International Broadcast Convention in Amsterdam last week, a number of stands remained empty as their American hosts remained in the US either because they could not travel or because their efforts were being directed towards restoring services in New York. The whole show was more sombre and restrained than in previous years and numbers attending were down as those who could travel took the decision not to. The show opened at noon on Friday with 3 minutes silence.

Such shows are meant to identify the way in which broadcast technology will go in the future. I did not see much which was new although there is a proposal called "digital radio monde" DRM to put digital modulation on MW and SW broadcasts in the future to provide a more robust signal than at present. Hope it does not go the same way as digital audio broadcasting (DAB - or "dead and buried" as I heard it referred to).

For technology to be "successful" it has to be market rather than technology driven. I saw a DAB receiver about the size of a small mobile phone which was forecast to be on the market in the next twelve months.

I shan't hold my breadth! As a typical business man I find that I want one small black box which can be my Personal Organiser (i.e. diary, contact list, calculator, memo pad, 'to do' list, etc.), mobile phone, and e-mail platform, radio, music player, gps, digital camera and possibly TV.

One good thing I found out at the show, was that Eddystone are doing rather well at the moment with orders for their FM transmitters coming in from Africa and the near East.

Graeme is featuring the ISB version of the 1650 receiver. ISB stands for independent side band and these receivers were used by civil aviation authorities. The receiver could receive upper and lower sidebands simultaneously and independently. I believe that they used to take voice traffic on one sideband and data traffic on the other. Perhaps other group members can add to this meagre explanation.

I thought you might like to see a photo taken at Stan Carney's Eddystone bash this summer. This one shows your editor Graeme (standing) talking to Bill Cooke and his wife.

My best 73's

Chris Pettitt - G0EYO

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

Eddystone Radio Veterans' Garden Party, July 2001



Photo: Chris Pettitt, GØEYO

Graeme, G3GGL, demands another drink from Bill Cooke, GØION, (former Chief Engineer and MD of Eddystone Radio). Mrs Vera Cooke, with a Guinness in one hand and a Foster's in the other, keeps a watchful eye on the lady surreptitiously trying to tickle Bill's left leg.

On Sunday, 29th July, EUG was privileged to attend the annual "Bash" or Garden Party hosted each year by Stan Carney. Stan is a former managing engineer at Eddystone Radio, having started his career with Stratton's in the early 1950's.

Members will recall his involvement in the "EC10 Story" of previous editions of 'Lighthouse'. He was instrumental in cracking the early production problems of printed boards (remember that Eddystone had never used pcb's in valve sets (thank goodness!)).

He managed to get the production up to the magic figure of 100 receivers per week. This may sound small beer in the world of mass production but in the hand-

crafted atmosphere of Eddystone it counted as a big deal!

Your editor Graeme, G3GGL, reported along with Jesse, EUG's supervising clerk and accountant, to Stan's spacious house in West Heath where he proudly displayed his (working) original Eddystone Twin of 1926, complete with branded Eddystone horn loudspeaker (VERY rare).

It was found by his wife in a skip many years ago and secretly restored as a surprise present! It features on the front cover of this issue.

Stan was the builder of the mighty Stratton 700 "Queen Mary" receiver which will be featured in a forthcoming edition.

Many thanks, Stan, for your hospitality.

One Enthusiast's Introduction to Radio (or, Long Live Old Technology)

By Phil Harris, G4SPZ

As a very new member of the Eddystone User Group, I saw the request for contributions to 'Lighthouse'. Reading the articles and anecdotes over the last three issues has persuaded me to jot down my own personal recollections, which, although my coil is a relatively short one with a mere 48 turns, manages to span the valve, transistor and IC eras!

As a child I remember being fascinated by the concept of being able to speak to someone whom you could not see. Experiments with tin cans and string, hosepipes for speaking tubes and 'baby-alarm' type intercoms increased that fascination, although I imagine did little to raise the enthusiasm of my long-suffering family.

Aged four or five I recall listening to an old wireless set which belonged to my grandparents. I remember being intrigued by the set itself - the polished wood case, the dimly-illuminated dial, the mellow tone and, above all, the smell of hot valves, warm dust and whatever else goes into making old sets smell so evocative. When I was seven I contracted measles, and to cheer me up, my father brought me that same old wireless, and set it up in my bedroom!

At about the age of eight or nine, I was bought my first transistor radio which has survived, much tweaked, to this day and on which I listened for many hours to pop music radio as a teenager. At night, for furtive listening to Radio Luxembourg, I used ex-Army headphones, and frequently awoke in the early hours in intense pain from these 19-set headphones which gripped the head like a vice!

My first constructional project was a one-transistor regenerative receiver. I don't remember the dates or recall the origin of the circuit, but it worked. Over the years (it was probably only months, but seemed like years!) I modified the circuit, changing component values and tinkering to try to improve its performance. A later development involved component changes which brought the coverage to "somewhere on the short waves", although I never quite knew where. I subsequently built a crystal set which used a small diode valve and which was, as I recall, extremely sensitive.

Some time later I built a one-valve short-wave set called the "B.O.P. Ether-Ranger" from a circuit in a friend's copy of Boy's Own Paper. This used a single EF80, again in a regenerative circuit, and was built on a home-made thin steel open chassis. This set exhibited real selectivity and plenty of gain, and with three Denco green plug-in coils, its coverage extended from the medium wave band to goodness-knows where - I hadn't a clue! However I can remember using a long-wire aerial one evening to copy 110 broadcast stations from one end of the tuning capacitor to the other.

Later still, I was given an old single-valve audio amplifier based on an ECL80, which I dismantled and re-assembled on the same open chassis as the Ether-Ranger. This

contraption could now drive a loud-speaker, and the set had pride of place in my bedroom – listening late at night, in the dark, with the valves glowing, simply reaffirmed for me that radio was a hobby without equal.

My parents owned a large Sobell radiogram with a slide-rule tuning scale and what the handbook called 'flywheel tuning' – a large, heavy die-cast flywheel on the rear of the tuning knob shaft, which enabled the user to tune the whole length of the dial with a single spin.

At around fourteen I was keen on pop music, and these were the last days of the pirate stations. ('No man shall ever forget the date – August the fourteenth, nineteen hundred and sixty-seven'.) But before most of them closed down, I was able, on this receiver, with an aerial constructed of enamelled copper wire stripped from old transformers, regularly to hear nine pirate stations from all around the coast.

This was to leave me with a lasting interest in medium wave broadcast DX-ing - I once heard WABC, New York on 770kc/s at night, using nothing more than my transistor radio!

The late 1960's saw a period when I acquired a working 19-set. I remember the elation I felt when I managed to couple some half-decent quality audio from my parents' Sobell to the mic input to the 19-set. I am not prepared to divulge the eventual purpose of these experiments, save to say that at all times they were conducted into a non-radiating dummy load...

My radio interests went on hold for a while as marriage, career and children took over. I still maintained an interest in electronics, however, and for some years I dabbled in repairing television sets. Many of these were valve sets, and came to me as non-working and at no cost! I

developed some useful fault-finding techniques which are still valuable today, and applicable to Eddystone valve receivers too... but more of that later.

I had always had an urge to obtain a ham licence but the Morse put me off. However, on holiday in Cornwall one summer, I met a Dutchman who occupied the adjacent pitch on the caravan site, and he introduced me to the delights of 2-metres and repeaters. I was hooked! Shortly afterwards, in 1981, a new colleague came to work with me. He had been a CB operator for a couple of years and, disenchanted by the foul language but keen on the DX, persuaded me and two other colleagues to join him on the RAE course at the local Technical College.

That year, the College ran three full RAE classes, a far cry from today when few Colleges even offer a single course. The entire G6--- series of callsigns was issued in less than two years. *(This compares with 25 years for the original post-war G3xxx sequence. - Graeme)*

I was allocated G6MSR in August, and the following March passed the Morse Test and became G4SPZ. Within a couple of years I was teaching the RAE, and Morse Code, at evening classes, making a number of good friends in the process until demand more-or-less petered out by 1992.

Having become reasonably familiar with valve and discrete transistor circuits, I have to admit to being less confident with IC's, particularly in home construction. Somehow, in the back of my mind a little voice keeps telling me that using IC's is in some way cheating... I have used IC's though, as mixers, voltage regulators, audio amplifiers and op-amps in a handful of projects, but I feel more at home with discrete active components.

Which brings me back to Eddystone radio sets... it is fascinating to read of other EUG members' struggles in restoring faulty sets to full working order, particularly when I recognise faults which are common to valve circuits of all descriptions. Resistors going high, bypass capacitors drying up, tired valves and those common mechanical problems with switches and potentiometers are all familiar to me.

Of great interest are the excellent Lighthouse articles on more 'in-depth' repairs, involving building up a new IFT, for example. With such ingenuity, Eddystone radios will be around for years to come.

In the same way as the owner of a 200-year old country cottage is merely a custodian of the building during his lifetime, I suspect that some Eddystone sets will fall into the same category. I have read of sets which were much prized by their original owners, then remained undiscovered for perhaps a generation before being given a second lease of life in the hands of a caring enthusiast. But how long can this continue?

How many youngsters (unlike me!) have heard of valves, let alone worked with them and studied the physics and practical circuits? I meet young people who haven't even heard of Windows 3.1! It is of some concern to me that an understanding of technologies like valve receivers, once universal and widely understood, is likely to become the preserve of a dedicated band of skilled, experienced enthusiasts - albeit an ever-decreasing band, as none of us are getting any younger!

There is also a disturbing attitude which I notice in younger people, particularly teenagers (of which I have three of my own) that out-of-date technology is not just old-fashioned, it is worthless. Last year's model of mobile phone, for instance, may

contain more fast computer processing power than the Hubble Space Telescope but, because it's last year's model, it is seen as useless and worthless, and anyone who uses one is regarded as "sad". Personal computers retailing at over £1,000 new can be found on the rally circuit three years later at give-away prices. Perhaps this attitude has arisen as a result of the short life-span of many of today's high-tech products.

Perhaps the answer is to re-educate people away from the cheap, throw-away approach to technology. Technologies are born, developed, refined, reach a peak... and do not die! However, as they become older, they become scarcer, rarer, and hence sought after, highly prized, and valuable. Which brings me neatly back to the Eddystone receiver that prompted me to join EUG in the first place. The model 870A, a small broadcast receiver apparently made in quantity for use in cabins on ocean liners, but now becoming rare as most of them were simply scrapped when the liners were refitted.

One could say that ocean liners are an outdated technology in themselves, having largely been replaced by aircraft for long-distance travel. If that is true, then the Eddystone 870A could be the equivalent of the Compaq Aero sub-notebook computer on which I am typing this - developed in the early 1990's as a computer small enough to be used by an individual passenger on an aeroplane, now already several generations obsolete. It attracts a large group of devotees with its own website and Internet mailing lists, and an international support network. It is also virtually worthless (I have been given three) running at a mere 33MHz. My Eddystone was free too. Yet both still perform their original functions admirably.

Long live old technology !

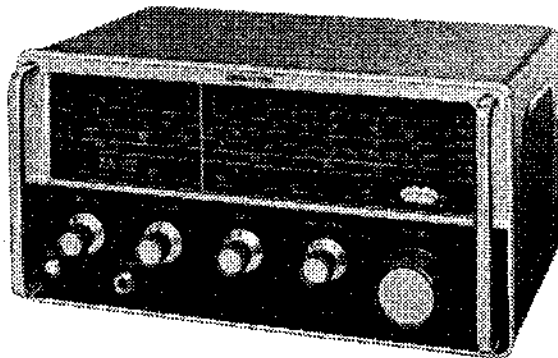
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Ted's MailBox Returns!

Hello again, sorry for the hiatus, my not having either typewriter or word processor for a couple of weeks meant that it was the first ever issue without any input from me. You all coped admirably.

I am back again and having my word processor it is to be hoped that I shall be able to send my stuff to Graeme as "Copy-Ready", this might lessen his work load if it does come off. *(Ted, I decided to rescan to get the pictures in, no offence! — Graeme)*

Whether some EUGers are slow readers or whether they just like to mull things over before writing to us I cannot be sure. I recently received a letter a propos an item which featured in the Issue #63 of October 2000. This was my final offering on page 52 about loss of FM on the very popular EB35 set.



Eddystone EB35

John has two versions of this model, the EB35 II. The first is a very early production set and the other is a much later (two years later ?) version with a different VHF tuner module.

Loss of FM reception has happened twice within four to five years on the later version whereas the very early set which he has owned for more than twenty years has never faltered, both are used frequently on either battery or mains depending upon the location.

On each occasion it has been necessary to remove the FM module by unsoldering it from the main chassis, here at least a 45 watt iron is needed to free the earthing braid. A few simple tests have revealed that the oscillator tranny had gone open circuit base

to emitter.

Getting fed up having to locate the correct tranny each time John finally fitted a BC212 as I have often recommended. Now I know this tranny is not designed for VHF oscillator use, but it does work okay. It was meant for high speed switching in digital circuitry but it copes well for our needs.

Two years on, the EB35 which has been so modded is soldiering on well, the tranny cost but 18 pence but no price can be put on the labour costs, nor on the frayed temper resulting from the horrendous job of removing and replacing the VHF module.

In the same letter John comments upon how handy his copy of Graeme's QRG has proven. Despite being carried around from Rally to Rally in a polythene 'display' folder it is beginning to show tattered edges and John has asked permission to make himself a photocopy. I said Yes without consulting Graeme but I am sure the author of QRG will be only too happy to know how useful his work of art is proving to EUGers. This is not the first letter received commenting as to the usefulness of the Q.R.G.

The 820 Tuner

More examples of this AM/FM tuner unit continue to surface, and sometimes from unexpected places. A letter from Barry tells me of his visit to a recent church bazaar where amongst many of those usual items to be found at such sales he discovered a very homemade looking Hi-Fi unit of the swinging sixties era.

A homebrew audio amplifier (mono of course) in a home-made wooden cabinet with a Collaro turntable unit on top. But featured in between the two above-mentioned items was this Eddystone 820 tuner unit. He got the lot for the princely sum of £2.50.

The cabinet was ditched in the XYL's wood bin for use as winter kindling, the amplifier which sported a pair of 6J5GTs driving a metal 6J7 as phase splitter for a pair of 6V6GTs, and the Collaro unit went to a very happy neighbour for £2.50. This left the 820 as Barry's prize for exactly nothing, bar

the energy expended in carting it home.

Whilst it is now working well after being cleaned up and having liberal doses of switch cleaner applied, the idea is to re-valve the unit as soon as the XYL releases the necessary funds. An ancient but good Decca amplifier of the sixties era has been laying around the shack for years just waiting for one of these tuners to drive it — who wants stereo anyhow ?

Eddystone Loco

Remember the mentions in past issues of the steam locomotive named after the Eddystone Light ? Well I now have a very nice postcard-size photograph of it sent to me by Don, who combines his interest in old radios with an interest in equally old locos. It does look to be a very fine engine and every bit worthy of carrying such an illustrious name. Thanks Don it is now in my collection of Eddystone ephemera.

Untuned Loops

This reader has obtained a commercial type of untuned loop intended for use with one of those modern multi-function Hi-Fi units. It consists of a loop of some twenty turns of insulated wire wound onto a plastic former in the shape of a rather flattened egg, the whole mounted on a plastic base from which a thin coax lead feeds the signal to a two pin socket on the rear panel of the radio tuner unit.

It does appear to work okay on the original tuner but medium wave signals are pretty weak at both ends of the band whilst they appear to peak around 900 Kilocycles. Apart from the seeming mismatch of feeding the coil with co-ax to what is evidently a circa 300 ohms two-pin socket, the device appears well constructed.

Some experiments showed that by paralleling a 250 pF variable condenser with the untuned coil, having first disposed of the coax lead, the coil could be made to tune the full medium wave band with a bit to spare at each end. This was achieved on test only using the Grid Dip Meter and no connection to a radio.

It was decided to build the tuning condenser into a small plastic box which was then superglued under the base of the loop.

They fitted together well and when spray painted black the box looked as if it "belonged" there.

As the intention was to use the loop for MW Dxing in conjunction with the station 750 it was decided to feed the 750 aerial input with a short length of flat twin as supplied for speaker cable.

At the loop end it was now necessary to fit a small series trimmer between the stator of the tuning condenser and the cable, the other 'leg' of the feed cable went directly to the grounded rotor of the tuning condenser.

To get a good balance of selectivity and sensitivity the 50 pF trimmer is about half way in at circa 25-30 pFs.

Tests now show that compared with the previous ferrite rod assembly the overall sensitivity is down a bit but the 'nulling' effect is much deeper with the new tuned loop. The Hi-Fi unit from which the loop came has long since been skipped but if my memory serves me it was a Sanyo product.

Computer QRM

It seems to be generally accepted these days that the majority of 'hash' or QRM produced by computers is radiated from the mains leads. This may well be so as modern stuff is supposed to be built into fully screened cases. One of the worst offenders is the switched mode power supply unit and these days this psu is itself screened in a metal case, then the whole computer unit is further screened, usually by spraying a conductive metallic coating onto the inside of the plastic case.

Despite all this some hash does always get out. Even now with this W/P operating about three feet from a battery operated Eddystone 1002 the hash is noticeable at any point from 2.0 Mc/s up to about 17 Mc/s.

I have ferrite rings on the W/P mains lead directly where it comes out from the case - but to no avail, the hash is still there. I have even tried fitting a small 0.001 mfd condenser at each end of the mains lead, this does make a significant reduction but the hash is still audible enough to be a nuisance.

Then I made a breakthrough. By manipulating my mains lead so it went horizontally directly, in a straight line from W/P to wall socket it was possible to move

the whip aerial of my 1002 so that pick up was absolutely minimal, no longer audible at all above 4.0 Mc/s and only slightly audible below that. Taking off the whip and connecting a random wire of about 15 feet brought it all back.

No, I cannot operate both units in this way for long, it is inconvenient, but as Jim was telling me, elimination of hash is possible.

Old Soldered Joints

Back in the Forties, and especially during the war years, a lot of soldered joints were made using acid flux and not with resin flux.

By now many of these joints have become corroded to the point where the copper wire is no longer an effective conductor. This was brought home to me recently when I was asked to look at the chassis removed from a very ancient Regentone Radiogram.

This was the then basic four plus rectifier circuit and had two rather large IF transformers. It was comparatively easy to locate the fault, an open circuit secondary winding on the first IFT. This is where the modern miniature soldering irons come in handy as the 16 watt one I have just fitted nicely in among the wiring under the Regentone chassis.

Having removed the duff IFT it was easy to separate the aluminium case from the actual transformer. The state of the soldered joints where the ends of the windings are attached to the pins was horrendous. Greenish slime looking for all the world as though it was an invading alien life-form from deep space. A simple touch was enough to break off the other three connections, so now we had all four wires from the two windings floating free.

A spray of WD40 and some brushing with an old tooth brush cleaned up the four pins on the transformer base. The four pins were now extended by an inch with soldered tinned copper wire on the INSIDE of the formica base.

Snipping off the corroded ends of the two windings, they were all resoldered with resin fluxed solder and the whole was re-assembled.

The transformer was replaced in the chassis and re-connected into circuit. Only

minimal retuning of both primary and secondary trimmers was necessary and the set really does function well. It is amazing just how well those old sets pull in signals using just a few feet of wire and selectivity is good enough to produce mild clipping of sidebands on strong medium wave signals, slight detuning of the second IFT cleared this.

Different 6V6s

A letter from Steven here. He had needed to replace the output valve in his 640 and had decided to do the right thing by fitting a glass bottle in lieu of the WWII type of metal valve that has been in place for all of the twenty odd years that he has owned the receiver. The new 6V6 is now in and working fine but curiosity got the better of Steven and he decided to open up the defunct metal 6V6. The miniaturised glass valve inside the metal can now has him wondering why on earth, if such a small glass tube can do the job, why then did they ever need to manufacture such large glass bottles ?
Ted.

The EB35 MkIII

The comments by Graeme recently in regard to this late version of the EB series took me back a few years.

In about 1986 I was able to buy one of this MkIII version at the late lamented Granby Halls Rally. No PSU came with it but a battery box which did not match the colour scheme of the set. For £40, a lot then for this model, I was getting a nice looking set so no complaints about the colour.

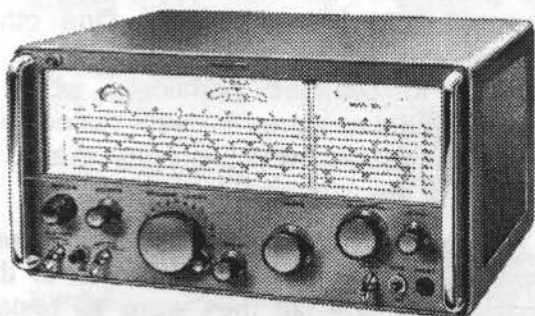
Getting it home though and opening it up was a shock. The PCBs bear no resemblance to the EB35 and EB35 MkII, nor to the EC10. This is a set which uses silicon devices throughout, both trannies and ICs, not a trace of the earlier germanium types here. Hence it has a negatively earthed circuit, not positive as with the others mentioned above. Here I realised too that both the PSU and the Battery box would have to be of different, opposite polarity. A point to watch if you do not want to be replacing all of the active devices !

It is handy to note that the 40A Noise Measuring Receiver is also negative earth circuitry and so PSU and battery box for the 40A can be used with the EB35 MkIII. In fact

the battery box fitted to my EB35 MkIII had come from a 40A. Ted.

Special 830

A non-EUGer has written to me from Holland to ask for information on his 830/5 which was bought several years ago after the scrapping of a badly fire-damaged coaster. Whilst it appears to be a fairly ordinary Eddystone 830 in that it is two tone with light and dark grey but has normal control knobs in place of the chromed levers used on some 830 controls.



Eddystone S.830 Series

There is also the matter of a BNC aerial socket fitted as original spec; on this /5 variant. There is a plate on the rear which identifies this as one of a special order supplied to a Swedish Company - RADIOBYRAN. I have never personally come across one of this variant before but have heard tell of them and know that another 'tell-tale' is that they do not have a mains socket fitted on the rear but have a free socket on the end of a permanently and internally wired mains lead. In all other respects, ranges and circuitry, they remain as per the 830, some do have a built-in keying choke. Ted.

940 & 940HF

Jerry writes in to ask whether there were two different versions of the 940 receiver. He sends in some photo copied ads for that era where the model is sometimes described as the 940 (no suffix) and at other times as the 940HF.

My personal opinion here is that this difference existed only in the sales brochures and adverts, there was just the one version of the set. Can anybody tell me otherwise? Ted.

(I agree with Ted. I think the copywriter missed the gap between '940' and 'HF Receiver'! - Graeme.)

Ubiquitous EF91/6AM6

Not bad going this ! An 888 Amateur Bands-only model has been happily purring away for at least the last three years with two extra EF91/6AM6 bottles plugged into the chassis in lieu of a 6AT6/DH77 and a 6AL5/EB91 in the V6 and V7 positions.

When the set was bought from a Silent-Key sale some three years ago it had been working up until the day it was bought. It was taken home and plugged in and worked okay as a standby receiver, the main station Rx is an EA12. Only recently when a small win on ERNIE was utilised to buy a stock of spare valves was the existence of the alien valves discovered. Strange just how versatile this bottle is.

A Hybrid EC10

Having owned and used the EC10 for a number of years it has been a severe shock to this EUGer to discover that it is not a complete and pedigree EC10.

What went wrong was a lack of signals anywhere up near the HF end of Range 1. Tune up this range and all appeared well until about 17 Mc/s, and then SILENCE ! He described it as sounding as if the whole Broadcasting establishment had gone off the air.

Since this happened after some of this year's worst thunderstorms it was felt that some kind of static discharge may have damaged the RF transistors.

He was right too ! It was soon found that a replacement TR1 cured the loss of HF end signals but then consternation set in.

Whereas the EC10 circuit depicts an IF and AF board configured for a transformer fed loudspeaker, this IF/AF board had a typical 1960s type of transformerless AF output stage. A bit of research and it was found that whereas the RF board and circuit were pure EC10 the IF/AF board and circuitry was that of an EB35.

Even the PCB number tallied with that of a pal's EB35. Differences in the wiring and soldering techniques show that this

transplant was done outside of the factory and by one of the previous owners. Nothing is being done, the set appears to be correctly aligned and works well so it will continue to exist as a hybrid. **Ted.**

The Eddystone Pennies

In the last issue '3GGL brings up the subject of the lighthouse depicted on the old pennies. I do believe that it is the EDDYSTONE LIGHT that appears on the left lower quarter of the 1860 to 1970/71 pennies.

I have read this somewhere but am still trying to recall just where. I also have recollections that as a child my Grandmother would tell me both the name of the lighthouse and the name of the ship depicted on the earlier pennies. Since my maternal Grandmother was born in 1873 and lived until 1968 she would have had good recollections of the latter part of the 19th century. I can remember as a kid that we always looked through the coppers in our change for 'ship pennies'. **Ted.**

In Perfect Working Order

Strange isn't it, how opinions differ? Well in this case Ray had bought a nice looking 750 at his local 'club sale' and knowing the seller he did take the description 'in perfect working order' at face-value.



Eddystone S.750

Yes it looked lovely from the outside, and yes, it did work but tone was a wee bit 'harsh'. Having the set at home for a few days listening on it confirmed Ray's original thought that it sounded funny (peculiar).

With the set opened up and inverted on the table, despite the XYL's predictions that "it will never work again", he began to check out the whole circuit against the one provided in the manual. Sure enough the mad cannibal

had been at work in the region of the detector and first audio stage.

A prewired conglomeration of germanium diodes (three of them), two resistors and a silicon signal diode had been tacked into the signal path following the detector and before the grid of the audio amplifier. What the exact circuit was meant to do was never correctly worked out though an assumption is that it was to 'correct' the tone for comms work, strange people these mad cannibals.

The whole mish-mash was removed and the wiring put back to as per the schematic. This gave back the high quality sound for which the 750 is well known. One other problem was traced to the AVC circuit. A tendency to overload horrifically when a strong signal was tuned in, was traced to a very duff condenser which is marked as C11 a 0.01 μ F of the paper insulated type.

This was swapped for a polypropylene type and since there are a number of this paper type in the set they were all tested. Two more needed replacement and the 750 now got a good 'soak test' over a whole weekend, following which all the voltage points listed were checked out again.

All was okay and so the set was boxed up. Several months later and the set is in daily use for SWLinq. The final accolade came when the original owner called around to listen to it. "Never worked like that for me" he said, "never sounded a bit like this". Ray is quite satisfied that his 750 now is in perfect working order. **Ted.**

Lost & Found - Another 820

Still in daily use for domestic 'muzak' this 820 had succumbed to a need for new valves. Weak signals on FM and distorted audio meant that a search was necessary to locate a full set of new valves. The unit was removed from the home-made aluminium box in which it was housed and after a thorough cleaning with the Hoover and liberal use of the switch cleaner aerosol it was revalved and tested.

Signals appeared to have come back to the original level but the preset tuning on AM seemed a bit 'iffy'. This was traced to a visibly corroded soldered joint on the switch where C25 was joined to the wafer tag. Resoldered and retested the 820 was as good

as new. It has been returned to the domestic 'workroom' where it is once more providing good background music to whomsoever decides to use this room.

The 820 in our case feeds a simple amplifier of unknown but possibly Stateside origin, the valves in this amplifier had been replaced a couple of years ago — they are of the octal variety and these do seem to last forever, from **John**.

Co-ax Aerial Feed

This is the tale of an EUGer who was 'duped' by a supposedly knowledgeable local dealer into buying a thirty metre length of UHF Tv grade coaxial cable to feed his external long wire to his 740 receiver.

The situation in Bill's garden is such that the only supports for the outside aerial are the chimneystack and a lone tree at the bottom of the garden.

With the aerial fed down from the chimney end it passed right outside the living room window and reception on the 740 was marred by lots of noise from the various computer game toys used almost continuously by the several offspring.

Bill's radio theory is almost nil and seeking a means of reducing the electrical noises to a minimum he consulted the local 'dealer' in Tv and Hi-Fi goodies.

It was explained to Bill that only by taking the aerial feed from the other, the furthest end of his horizontal wire could he hope to get rid of the clicks and beeps. To do this, he was told, he would need the aforesaid 30 metres length of co-ax for a screened downlead. This he needed to bury under the sods of his lawn until it reached a point where it could be run up the wall to the window of the small box room used as a shack.

Some of you will be with us already. With only the inner of the coax connected at the top (to the horizontal aerial wire), and with inner and outer screen connected to aerial and earth at the rear of his 740 what happened ?

The reception was considerably worse than it had been before, signals were way down in the noise now. So Bill called up his pal, an active G3 amateur.

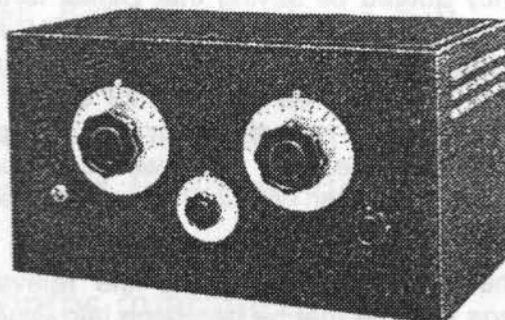
It was explained to Bill that by using the

unmatched co-ax feed he was, in effect, putting a very large capacity across the input circuit of his 740 thus detuning the front end on all bands. Bill was persuaded to purchase one of these much-advertised Aerial Baluns and having done so found that his signals magically re-appeared and there was a blessed reduction in the level of noises-off.

But I have had to tell him that he still has not got a matched signal input to the front end of his 740 since this receiver has a fairly high input impedance of about 400 ohms, whereas his commercial balun provides a 50 ohms impedance. Still, as Bill says, "things are much better than before, even if he was duped into buying the co-ax. **Ted**

The Improved Everyman

I have heard some good excuses for not joining EUG but this must be the best, almost deserves a comment from G3GGL, this does.



Eddystone "Improved Everyman"

George is a collector, he has a very mixed and eclectic collection of radio gear, both civvy/domestic and professional and military. He recently did a swop of one of his two AR77s, not the best one of course, for a decent example of the "Improved Everyman" which he dates to about 1938. (It was published as a self-build model in the *Eddystone Short Wave Manual No.4 of 1938* — copies available from EUG, see *Dave Simmons*, page 2. - *Graeme*.)

This model is a four bottle job and very similar, he says, to the circuits of the preceding Kilodyne models. When it arrived it was obvious that the DIY type mains supply was neither reliable nor suitable. A battery box has now been made and has been fitted with a collection of modern re-chargeable cells, which give both HT and LT. Performance is quite good and the set can

certainly hold its own alongside many modern sets but owning the Improved Everyman is not the impetus needed for George to join EUG.

His fear (so he says) is that if he does so his collecting interests might change and he worries that he would become a 'One Make Addict'. He might then eventually become so addicted that he has to part with many of his other models to build up his Eddystone Collection. (Comments from '3GGL who may know how it feels ?). (*Poor old George, he doesn't realise what he's missing! - Graeme.*) SO NOW WE KNOW IT ALL - EDDYSTONES ARE ADDICTIVE. That makes three addictions for me then, Ice Cream, Chocolate, and Eddystones. **Ted.**

QRT all AM !!!

One of those 'smoothies' from Westminster who talks through his hat was recently quoted as saying that Digital is the future, both Digital Radio and Digital TV. He said that all AM radio will be switched off within a few years as the superior quality of digital reception is realised by the general public. Oh come now ! Do we really pay these Westminster Wallies to spout such garbage?

The EUGer who sent me the relevant cuttings tells me that he has been into Digital Radio Transmitting and Receiving since the 1930s, since after all hand speed morse is Digital in every way.

As to AM being a 'goner' who on earth can believe that, I believe they said the same when FM came in many years back, and it is still going strong. I expect to live to be a hundred, another thirty years, and I fully expect to be able to listen to AM stations in my last hours. **Ted.**

S. 670

Whilst considered by many to be "not a Communications Receiver since it has no BFO", Steve is quite happy with his 670. It has been his only receiver for SWL DXing for many years now as his arthritic joints will not permit him to operate any of the modern receivers with their fiddly little knobs and buttons. I know the feeling as my finger joints also rebel at using the ever smaller knobs and buttons on modern black boxes.



Eddystone 670

"The Seafarers' Set"

The 670, first of a series of three, 670, 670A, & 670C, was a well designed set for universal or AC/DC use. Designed for use by crew members aboard merchant ships they had to operate on both dirty and irregular voltage supplies. This example can still produce good audio output on an AC supply of just 85 volts and it is almost immune to those modern computer 'birdies' so prevalent on our present day mains supplies.

A level of computer noise which is quite annoying on Steve's Trio R600 mounted alongside the 670 is barely noticeable on the 670, this when using the same aerial of some twenty feet of 'bellwire' up in the roof space. The credit for this QRM beating must go to the large Eddystone chokes which have been fitted in the mains side of the fuse holders.

Almost certainly not an original factory fit they have been professionally incorporated in the circuit right at the point where the mains supply comes into the under chassis area. And they DO work as tests with them removed whilst being re-waxed have shewn.

As new the 670 came with UAF41s fitted in V1, V3, V4, V5, and a UCH41 in V2 positions. These valves had only a short life on the market and were soon superseded by the UAF42 and UCH42 types. Whilst all UAF41s had been replaced at some time by the later UAF42s the original UCH41 was still working okay in this set.

It has since been retired with honours but kept as a museum piece. After all, how many EUGers have ever seen a genuine UCH41, (or even heard of it. Ted).

On AC/DC sets like this Steve has always worried about the state of the mains dropper. He still has worries about the one in his 670, not that it doesn't work okay but it does look kind of 'tired and fragile'. He has a replacement part which will fit but he is

hanging on to see just how long the thing will last.

The one design feature he is not enamoured of in the 670 is that the heater chain is a series/parallel concoction. This means that if one of the valve heaters does go open circuit then it is immediately indicated by an over bright heater of the valve which is in parallel. The usual outcome is that when one goes you will need to replace TWO valves — unless you are VERY quick off the mark.

At some point the Thermistor had — as always - developed dry joints at both ends. A later repair job had evidently been done with PCB type low melting point solder. Recently this had to be removed with coax braid dipped in flux and a hot iron.

The solder joints were redone using high melting point solder and all is now well thereabouts. The well-silvered up dial light bulb has been replaced and the 670 had a final clean up with some of the XYL's furniture polish and a duster. **Ted**

More Old Models

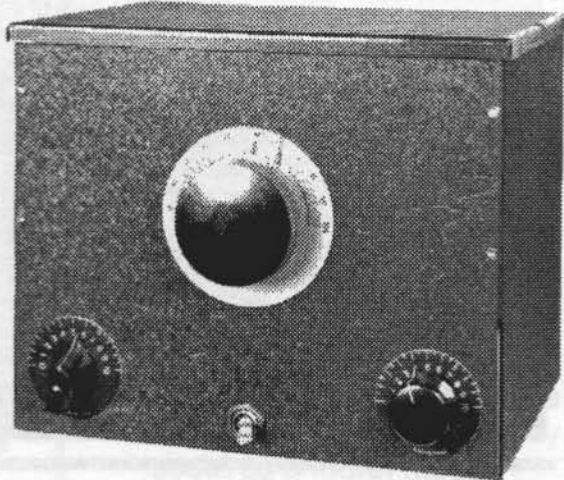
A letter from a French correspondent whom I have known for many years informs me that Alain now owns a good working model All World Two which came complete with a fair bit of documentation from the era when it was new.

Bought for £6-14s-6d from Webbs retail shop it came built and tested and with two coils and valves, headphones, and a one hundred foot roll of stranded copper aerial wire. It seems from the receipt that the aerial was not included in the price but cost an extra two shillings (highway robbery that! Ted.).

Webbs must have done their own testing since the model supplied by them did not use the two valves suggested by Eddystone, the Mullard SP2 regenerative detector pentode and the Mazda P220 audio output pentode valve. The supplied set of two valves were - according to the receipt — a Mazda SP210 pentode for the detector and an Osram KT2 output valve.

At some time later the buyer who worked at the French Embassy in London had purchased three extra coils to supplement the original two. He must have been a very

dedicated SWLer, 'sans-filist' in the vernacular of the period. His early logbooks are mouth watering even when read today, with masses of South American, Cuban, and North American Broadcast stations logged, with only a few amateurs included.



Eddystone "All World Two"

Since he obtained this AW2 Alain has operated it using a two volts Gel type battery for LT and a bank of ten PP9 high capacity batteries to provide the HT. Using these supplies there is good loudspeaker reception of many stations using an in-line output transformer which has a British PO type jack plug at one end and a similar type jack socket at the other end. It appears to be of WD origin but whatever its former use it performs well to run a five inch Celestion speaker.

SSB and CW reception is easy with the present power supplies, good stability and sensitivity with no real drift. At first the set was tried out with a lash up HT consisting of some new and some not so new small PP3s and some drift was experienced but the purchase of the larger PP9s cured this.

Alain says that whilst his XYL believes that he paid 'an arm and a leg' for the AW2 he is happy with the set and now uses it almost daily alongside the HRO Senior which is his main receiver. **THAT'S ALL FOLKS — Ted.**

Send your Letters for TED's MailBox

C/O Jim Murphy

63 Wrose Road

BRADFORD BD2 1LN

EUG

Steam Radio

VICTORIA BRIDGE 1862
TWO MILES NORTH OF BEWDLEY

This Summer, Britain's premier steam preservation line, the Severn Valley Railway, held a "Forties Weekend". In fact, it was so well-attended that it had to be held on two successive weekends, the last in June and the first in July. It was first held in 1994 to celebrate the 50th Anniversary of D-Day and is now a permanent date in the calendar.

The line runs from Kidderminster (20 miles west of Birmingham) to Bridgnorth, Shropshire, a distance of some 16 miles. It passes through some outstandingly beautiful countryside and encompasses no less than six stations, all in period architecture.

During these Weekends the setting is a rather fictional 1940-something. Re-enactment groups ensure a fair share of pyrotechnic combat and the historic town of Bridgnorth (Brügnord) falls under German occupation à la Channel Islands. The passengers dress up in their old (or sometimes new) vintage kit and ham it up to a degree not often found in the English countryside.

EUG made its presence felt by setting up a communications centre on the concourse at Kidderminster SVR station. Although constructed as recently as 1986 it is a faithful replical of one of Brunel's Victorian GWR designs.

Things started off on the preceding Thursday when Graeme and Jesse presented themselves to Malcolm

Broadhurst, the jovial Station Master (Fat Controller?) and formally commandeered the station roof in the name of King George VI. Armed with several hundred feet of aerial wire and nylon cord, a survey of the courtyard took place.

Having determined that a 97 ft (magic figure) end-fed could be accommodated, Jesse tied a rubber ball onto the nylon cord. Several horny-handed sons of the railway were watching this curious ritual.

They were soon vying with each other to see who could throw it highest! One end over the the restaurant roof and the other over the toilets. Having made good the lashings the download was secured in position.

As no appropriate Eddystone *materiel* was used for railway signalling it was decided to cheat by presenting a W.S.62 to the public and hiding a Trio TS-530 under a camouflage net.

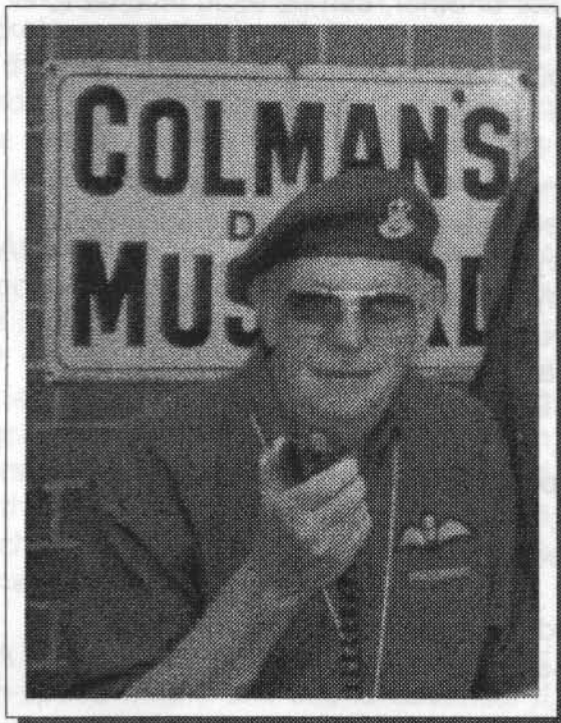
On the first Saturday EUGer Colin Crabb, G4HNN, reported for duty and



(Left)
Prime Minister
Winston
Churchill and
escort stop for a
Press Call at a
local inn.
(The Black Boy
Hotel, Bewdley)



(Left) Graeme,
G3GGL, takes the
mike for the EUG
Sunday net.



(Below) Jesse in the
EUG Jeep prepares to
drive Mr Churchill to
his next destination.

(Above) Ace operator
Colin Crabb, G4HNH,
concentrates on pull-
ing in the DX stations.



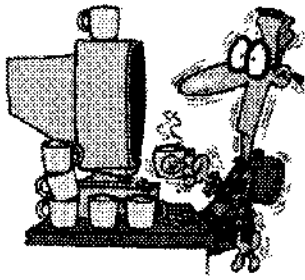
was soon tuned up and calling CQ. Colin, who is a professional musician and therefore a speed king on the key (didn't you know that all musicians are good at Morse?) soon had them rolling in.

The aerial was every bit of 13 ft high and the middle was about 4 ft from a huge (genuine) gas lamp. The only earth was that provided by the electric mains, and that disappeared into the station roof! Throttled back to 5 watts Colin made contact with all points east to Poland and south to Portugal.

The public was at first curious, and then

amazed! As good as a mobile phone but with the novelty of Morse code. More like Bletchley Park than British Rail.

All went well and the next day coincided with the EUG First Sunday 80 metre net. Colin reported in to Chris, G3XFE, the net controller (Watford) and Graeme was called to the mike during a very noisy air-raid. Reports of 5 & 9 each way were exchanged and Chris told Graeme he was just as good as from his home QTH which boasts a 275 ft full-wave loop! Ah well. It just goes to show.



POO'S PONDERINGS

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

I doubt if there is anyone alive who has not been shocked and moved by the recent tragedy in New York. September 11th 2001 will be remembered both for the terrible loss of life in the World Trade Centre, Pentagon, surrounding buildings and in the aircraft, which were deliberately flown to their targets, and the world-wide unity it created. Many thousands of lives have been changed forever, as has the world we live in. The one 'good' thing to come out of the chaos is that most nations of the world are now united in an effort to stamp out terrorism and those who support it for all time.

We should all pray that at the end of it all we are still united and that the money spent on building up vast defences and weapons of mass destruction, whether they be chemical, biological, nuclear or other, can be used instead to improve the lives of those much worse off than ourselves. I don't just mean those out of work or living on the streets, but those starving in remote countries where their governments do little to ease their plight.

The pace of life is accelerating at an exponential rate thanks to improved communications and technology. Many people are stressed to breaking point and we see it as road rage and even 'trolley rage' in the supermarket. When I was much younger, well a little younger anyway, people used to walk on their own two feet. If you met someone you would normally smile and greet one another. Motorists would help each other and wave you out at a junction for example; no two fingered salute.

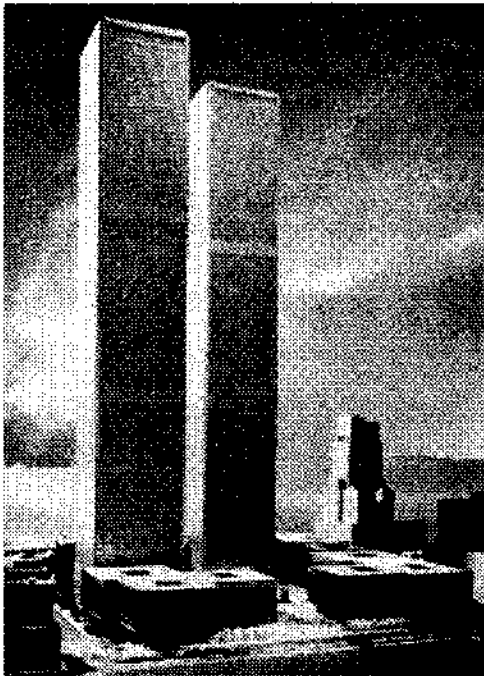
I think it is time that each of us take stock of our lives and made a conscious decision to simply 'be nice' to one another. Human greed and jealousy will eventually destroy our world; we won't need any help from terrorists!

Make some time to send your thoughts and prayers, whatever your religion, to people in need everywhere, including those in New York.

On a lighter note I recently came across an old QST article about the planned construction of The World Trade Centre Twin Towers. You may be interested to know what originally occupied the site.

Radio Row

In the early days of wireless many major cities had streets or areas where radio shops congregated in large numbers. You will either remember or have heard of Lisle Street in London, which was the heart of British wireless and surplus equipment until the 1960's. There is little if anything left of it now.



New York had it's own 'Lisle Street' in the form of Cortlandt Street, otherwise known as 'Radio Row'. The QST article tells of one man's memories of dashing home from school via Radio Row to spend his hard-earned pocket money on some little treasure to be incorporated in the latest project. Radio Row and its surrounding streets were demolished to make way for the new skyscrapers in late 1968. I've included a couple of pictures, the first is Radio Row (Cortlandt Street) in the heyday of wireless and the second is an artist's impression of the finished towers before they were built.

Electrolytics

There has been some debate on the virtues of reforming electrolytic capacitors. Graeme says he has had no more trouble with these than with any other components. Though it would be easy to emulate "The Great Morse Debate" which seems to have been going on since young Sammy Morse wrote the code, I must agree with Graeme – to a point! A leaky bypass capacitor or a high value screen grid resistor normally just causes a harmless fault. Unfortunately a main filter capacitor can go out with a large bang even in a new set – see the article by Bernard Harris in this issue.

The choice is of course yours but I've had them blow up, thankfully with no personal damage, but I'd rather be safe than sorry!

Receiver Information

Last month I offered anyone who asked, details on their receiver(s) from the Eddystone archives. In preparation I tied a large mail sack to my letterbox and increased my computer's storage space to take the load of copious e-mails anticipated. I waited....and waited.....and waited.....then received the grand total of THREE requests. Please don't send any more as the archives are now going to Dave Simmons.

Collecting – is it a disease?

Since the last 'Lighthouse' I have had several enjoyable discussions with other members on the subject. We all seem to be of the opinion that it is indeed a disease, which thankfully only afflicts a few of us. Anyone who knows me will appreciate what I mean here! I have spent many hours (and shekels) obtaining the sets in my collection. They all have a place in my life and disposing of them would be like losing a finger or member of the family. There does come a time in everyone's life when the maintenance of such a hoard becomes a problem. Enjoy your collection, whatever it may be, but don't let it take over your home and life; well not too much, anyway!

Our Photo Library

Over the past few months I have been having the time of my life scanning into my computer hundreds of pictures. They include receivers, projects, staff at work in the bathtub, prototypes, specials, exhibitions and much more. Many will be used on the Website but I intend to make them available to members for a nominal sum on CD. Let me know if you are interested.



73 de Simon M5POO

Finally, I will soon have a model 680/2 i.e. the rare half moon receiver, spare and looking for a good home. It will need restoring but all the major parts are there. Have you anything interesting to swap, as it's not for sale?

I'm sure no one will notice that the radio on the left is in fact the original 680 that caught fire. It never did get in to production for some reason!

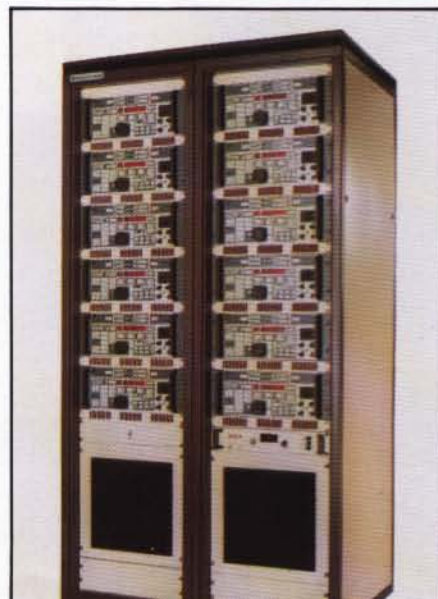
MODEL 1650/10 LF/HF ISB RECEIVER

SERIES 1650



FEATURES

- Sealed membrane front panel.
- Easy to operate.
- Non volatile memory.
- Rugged construction.
- Built-in test equipment (B.I.T.E.).
- Frequency coverage 10kHz to 30MHz.
- Independent sideband operation.
- Memory, scan and sweep facilities.



Frequency Coverage

10kHz to 30MHz in 5Hz steps.

Reception Modes

AM, USB, LSB, CW, ISB.
NBFM or FSK to special order.

Reception Bandwidth

	-6dB	-60dB
Very narrow	300Hz	700Hz
Narrow	1kHz	3.5kHz
Intermediate	3kHz	6kHz
Wide	8kHz	12kHz
SSB	2.4kHz	3.8kHz
Very wide	16kHz	40kHz

Selected independent of mode.

Alternative bandwidths can be provided for specific customer requirements.

RF Selectivity

Wideband 10kHz to 30MHz filter and optional motor tuned multi-range pre-selector.

BFO

100Hz steps over ± 3.9 kHz derived from master oscillator.

Stability

All frequencies derived from standard internal master oscillator with Stability 1 part in 10^7 over temperature range.

Provision for locking to external standard if required (1MHz or 5MHz).

Search Tuning

Frequency selection by tuning knob with any step in range 10Hz to 99.99kHz (in 10Hz increments) or with automatic variable rate with 5Hz resolution.

Frequency can also be directly entered via numeric keyboard with 10Hz resolution.

Stored Channels

Maximum of 99 channel frequencies can be stored with frequency, mode, BFO, AGC, RF sensitivity and remote antenna or pre-amplifier selection.

Channel contents can be interrogated and changed without interruption of the signal received.

Battery back-up is provided to prevent loss of information in the event of a power failure.

Scanning

Any number of the 99 channels can be automatically or manually scanned by selecting the required channels to be in the 'scan table'.

The dwell period on each channel can be set in the range 0.1 to 9.9 seconds (0.1 second increments). A hang period of 0 to 9 seconds (one second increments) can also be selected.

If 'Mute On' is selected, scanning will stop on an occupied channel and will restart when the signal ceases, after waiting for the hang period selected. Scanning can also be halted or stepped on by a rear panel control line. External signal detection equipment (e.g. selective calling decoders) can thus be used to stop the scan on the desired channel.

Adjustment of the scan position is possible using the tuning knob with total manual control (i.e. tuning by stored channel) if a dwell period of 00 is selected.

Sweeping

Automatic tuning at the selected rate (10Hz to 99.99kHz) can be performed, stopping on each step for the

selected dwell period (0.1 to 9.9 seconds). The receiver tunes from the frequency of the selected channel upwards or downwards to the frequency in the next highest channel number. Other settings (mode etc.) are taken from the selected channel. For rates 5kHz to 99.99kHz, if 'Mute On' is selected, sweeping will stop on an occupied step and will restart after the signal ceases, after waiting for the hang period selected. As for scanning, sweeping can also be halted or stepped on by the rear panel control line, and can be controlled using the tuning knob.

BITE (Built In Test Equipment)

In BITE mode, tests can be made using internally fitted test equipment to aid fault finding, general test and maintenance procedures. In all modes, the BITE monitors various parameters and provides immediate indication of a potential fault which can be investigated in BITE mode when convenient.

Antenna Selection

Maximum of 4 remotely switched units (e.g. antennas, masthead amplifiers etc.) can be selected from the front panel.

Remote Control

Various remote control options can be selected via internal DIL switches. Local or remote priority can be selected as can 300 or 1200 Baud asynchronous data rates.

These options allow the use of a variety of standard MODEMs (V21, V22 or V23), multiplexers and line drivers etc (via external RS232C or RS422A Remote Interface Adaptors) thus providing control over half or full duplex, two or four wire links as required.

Muting

Audio muting is derived from carrier level on AM, SSB and CW, and from noise or carrier level on NBFM. Carrier level muting can be adjusted from the front panel and also controls the single pole changeover 'carrier operated relay' on all modes including FM. This relay can be used via rear panel links to control ancillary equipment.

RF Attenuation

Attenuation of 0dB, 10dB, 20dB, or greater than 40dB is available.

Antenna Input

50 ohms impedance.

Overload protection provided for continuous application of 50V e.m.f. at input.

Internal reed relay controlled from associated transmitter interrupts aerial feeder and grounds input circuit during transmission.

IF and AF desensitising is also provided.

I.F. Output High Level

20mV into 50 ohms at 1.4MHz at full AGC.

I.F. Output Low Level

Optional fitting to provide output for Panoramic Display Unit 1161.

Audio Output

External Loudspeaker: 1W maximum into 4 or 8 ohms.

Internal Monitor Loudspeaker: 150mW maximum.

Line: 20mW maximum into 600 ohms (each sideband).

Headphones: 10mW maximum into Low/Medium impedance.

Loudspeaker/Headphones can be switched to monitor either sideband in ISB mode.

Intermediate Frequencies

46.205MHz 1st IF

1.4MHz 2nd IF.

Power Supply

100V/150V and 200V/260V (40Hz-60Hz) single phase.

A.C. consumption approx. 70VA.

Operation from 24V D.C. negative ground is automatically selected in the absence of an A.C. mains supply.

Environmental

Operational temperature: -15°C to $+55^{\circ}\text{C}$

Storage temperature: -40°C to $+70^{\circ}\text{C}$

Relative humidity: 95% at $+40^{\circ}\text{C}$

Bump and Vibration: Meets MPT1204 and CEPT requirements.

Mounting Styles

Rack mounting, including cabling at rear.

Height 178mm (4 'u'). Depth 550mm.

Width 483mm. Weight 24kg.

Cabinet mounting, including feet.

Height 209mm. Depth 543mm.

Width 502mm. Weight 28.5kg.

Cabinet offered as optional extra.

Optional shock mounts are available.

Sensitivity (RF wideband)

AM: -99dBm input 30% modulated at 1kHz, for 12dB Sinad at line output, with 8kHz selectivity.

SSB: -113dBm input with 1kHz audio output, for 12dB Sinad at line output, with 2.4kHz selectivity.

CW: -113dBm input with 1kHz audio output, for 18dB Sinad at line output, with 300Hz selectivity.

NBFM (optional extra): -115dBm with ± 3 kHz deviation and 400Hz modulation, for 12dB Sinad at line output, with 16kHz selectivity.

AGC

Less than 3dB change in output for 100dB increase in input level from threshold.

Choice of three time constants in addition to manual gain to suit mode selected.

Different audio time constants on each sideband are selectable for optimum flexibility in ISB mode.

I.F. Rejection

100dB.

Intermodulation (in-band)

The level of third order intermodulation products produced by two signals in-band will be at least 40dB below the level of either signal.

Intermodulation (out-of-band)

With a wanted signal -83dBm producing standard output, two unwanted signals adjusted to produce a third order intermodulation product at the wanted frequency, must each be of a level greater than -17dBm to produce standard output when neither signal is closer than 30kHz to the wanted frequency.

Cross Modulation

With a wanted signal -53dBm producing standard output, an unwanted signal, of level -13dBm at 20kHz off-tune, modulated 30% at 1kHz, will produce an output at least 30dB below standard output.

Blocking

With a wanted signal -53dBm, output will be affected by less than 3dB with an interfering signal 20kHz off-tune at level -3dBm.

Options

/A with motor driven multi-range RF preselector.

/S with external standard input 1 or 5MHz.

/N with NBFM reception.

/K with FSK reception.

/P with panoramic output.

All combinations are available apart from NBFM and FSK together.

This document gives only a general description of the products or services offered, and shall not form part of any contract. From time to time changes may be made in the products or the conditions of supply.

Eddystone Radio

A MARCONI COMMUNICATION SYSTEMS COMPANY.

Eddystone Radio Limited,

Alvechurch Road, Birmingham B31 3PP, England.



ELECTRONIC REPAIRS TO EDDYSTONE RECEIVERS – 2

BY PETER LANKSHEAR, ENGINEER, NZBC, (RETIRED)

In our last Issue Peter introduced the first of his series of articles intended to assist the less experienced technicians amongst the ranks of EUG members. He continues now with some advice about transformers and tool-kits.

Unless you are certain that your new acquisition is in good working order **RESIST ANY TEMPTATION TO APPLY POWER TO "SEE IF IT WILL GO"**, for if you do so, it may or may not work, but there is a chance that you will do some serious damage to the receiver power supply, or worse still, yourself!

Inevitably there will be an accumulation of rubbish inside the cabinet, although fortunately, the construction of Eddystones does minimise the opportunities for rodents to take up residence. These little horrors have abysmal toilet habits and can corrode a chassis at short order!

With the chassis out of the cabinet, life will be more pleasant if the worst of the dust, dirt and grime is removed. A bit of time spent on this chore is well worth while as it gives you an opportunity to become familiar with the chassis and spot possible trouble spots.

One effective cleaning method is to use a 1" paint brush and a vacuum cleaner. Provided that all traces are removed afterwards, the judicious use of household cleaners and water can be very useful.

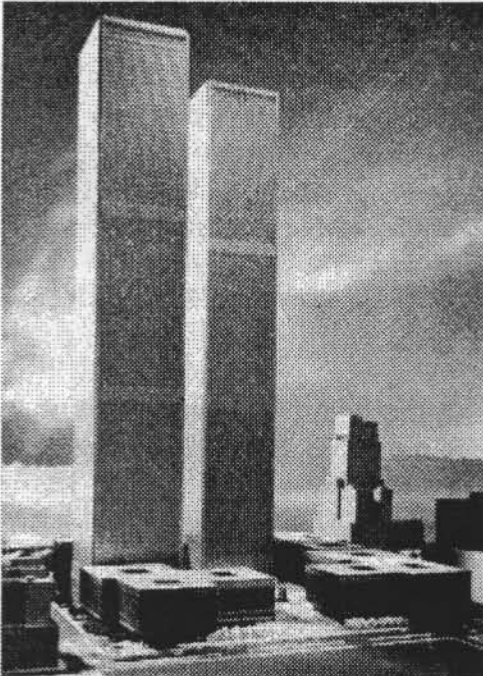
Around about now is a good time to size up the receiver and decide whether

or not an overhaul and reconditioning is a reasonable proposition. Obviously if replacements of missing or damaged components are too expensive or unprocurable, there is little point in proceeding further.

Power transformers are generally the most expensive individual components, are rather prone to damage, and the viability of an overhaul could well depend on the condition of this component. Look out for obvious problems and note especially if there is a puddle of wax on the floor of the cabinet under the power transformer, indicating overheating at some stage.

Transformer failure was often the reason for a receiver's final retirement and a rewind can be costly, so obviously an early check in the overhaul is sensible. (Of course, if a replacement is available there is no problem, but the cost of a rewind has to be weighed against the final value to you of a receiver.) Burnt out transformers have a very distinctive smell, although this may have disappeared over time.

Excessive amounts of wax running down the leads may then be the only sign of trouble. (Naturally, I am referring to A.C. only models – receivers intended for shipboard use and D.C. mains did not have power transformers.)



New York had it's own 'Lisle Street' in the form of Cortlandt Street, otherwise known as 'Radio Row'. The QST article tells of one man's memories of dashing home from school via Radio Row to spend his hard-earned pocket money on some little treasure to be incorporated in the latest project. Radio Row and its surrounding streets were demolished to make way for the new skyscrapers in late 1968. I've included a couple of pictures, the first is Radio Row (Cortlandt Street) in the heyday of wireless and the second is an artist's impression of the finished towers before they were built.

Electrolytics

There has been some debate on the virtues of reforming electrolytic capacitors. Graeme says he has had no more trouble with these than with any other components. Though it would be easy to emulate "The Great Morse Debate" which seems to have been going on since young Sammy Morse wrote the code, I must agree with Graeme – to a point! A leaky bypass capacitor or a high value screen grid resistor normally just causes a harmless fault. Unfortunately a main filter capacitor can go out with a large bang even in a new set – see the article by Bernard Harris in this issue.

The choice is of course yours but I've had them blow up, thankfully with no personal damage, but I'd rather be safe than sorry!

The list that follows is in my experience the minimum and it can be added to as required. Fortunately, relatively few tools are essential, but they should be of good quality and in good condition. This really is important. For example, a badly profiled screwdriver will tend to slide out of the slot and damage a tightly fitting screw. It is important too to use the correct size of screwdriver, and probably the best approach is to obtain a boxed set.

As Eddystone had the wisdom to use the excellent BA range of screws a few standard spanners will be adequate. Whilst a couple of adjustable spanners can be handy, by far the most used will be a set of socket spanners. Although a set consisting of a handle and detachable sockets is practical and inexpensive, by far the best is a set of sockets with fixed handles. Not having to change sockets is time saving, and they are generally slimmer than the "plug in" types.

Absolutely essential are pairs of diagonal cutting and long nosed pliers and it is here that you will soon discover that it pays to buy good quality. Cheap models soon wear and lose their cutting edges. In my experience, heavy linesman pliers are of limited use and probably not worth buying. Likewise slip joint pliers which can be a menace and do more damage than they are worth.

A battery operated drill and a set of high-speed metric drill bits is essential if fabrication or reconstruction is envisaged. Modern cordless drills have rendered the old "egg beater" type well and truly obsolete.

Wire insulation can be quite tenacious and an inexpensive wire stripping tool is very handy to have in the tool box, and for scraping tarnished wire clean and general utility, a knife such as a Stanley

Knife with replaceable blades takes a lot of beating.

The most important tool is a soldering iron, but there are conflicting requirements as to size. An under-rated iron will not produce a reliable joint and the extra time needed to complete the job can result in damage from overheating of components.

Larger irons are just too big to use around the sockets of the small glass based valves, and a simple inexpensive 25 watts or thereabouts iron is quite adequate. However, more heat reserves are really essential for the larger jobs, and something like 50 watts is more appropriate for octal sockets. Whilst they are initially more expensive and probably not warranted for a "one off" restoration job, heat controlled irons are much better, but best of all are soldering stations where you can have a selection of tips and a wide range of heat control.

Two very useful and inexpensive accessories for soldering are desoldering solder wick and a joint unwrapping tool. Soldering wick is essentially a resin filled copper braid and is very effective in absorbing molten solder out of a joint or tag.

Unwrapping tools are essentially small steel spikes with a handle and are very useful for clearing solder out of holes and undoing the crimped joints that manufacturers loved to use when terminating wire leads to tags.

In the next installment Peter will look at items of test equipment and the first steps in restoration.



“The EDDYSTONE Twin”

This famous member of Stratton's Eddystone family is often credited with being the first model of the famous marque. The basis for this belief is that it is mentioned in the *Wireless World* listings of Spring, 1926 as the ONLY Eddystone set represented. Graeme Wormald, G3GGL reports on the latest news . . .

The first thing to try and decide is exactly WHEN young George Stratton Laughton suggested to his dad, George A Laughton, that they use the surplus 'hairpin' capacity to make wireless parts. Due, no doubt, to the destruction of the Eddystone factory in the War, this date is a very movable feast!

Our first source of reference is a book called 'A Century of Achievement - The Laughton Story 1860-1960'. Quoting Stratton Laughton on p.112, it reads:-

"We'd got the plant, we'd got the men and we'd got the money too, so as a result of a change in women's fashions we started in the radio business in 1923. Incidentally, Stratton's were one of the first firms associated with the original British Broadcasting Company."

The book goes on to quote that: "A start was made with component parts for home constructors; then followed the manufacture and marketing of a complete radio receiver" (note the use of the singular).

In 1972 the company celebrated 50 years of Eddystone. But Stratton's Share Certificate in the BBC (value £1) is dated September, 1923 (I've seen it). I think memories have dimmed and that the latter is the true date and that by spring of 1926 their first model, the 'TWIN', had arrived on the scene. Read on . . .

In the spring of 1926 the *Wireless World* listed Stratton & Co. Ltd., of Balmoral Works, Bromsgrove Street, Birmingham, as one of 1,649 members of the BBC manufacturing components or receivers.

But only one product is listed; the 'TWIN', being in an oak cabinet with two valves and a glass front, priced at £15:15s. (or 15 guineas as they would have called it in those days). This compares with Ward & Goldstone's listing of 14 models and AJS' of 8 models.

These were both old-established companies. The former was famous for the manufacture of insulated cables and the latter for motorcycles. They both had lots of factory capacity. So had Stratton's.

W & G were known to be making radios before the BBC was on the air in November 1922. So by 1926 they had been in the game at least 4 years. In this time they had increased their range to 14 models.

Now Stratton's was also an old-established company, with plenty of capacity. It would be logical that they also would enlarge their range rapidly . . .

And now, thanks to the vigilance of EUGer Mike Arnfield, MSACS, we know more about it.

Mike recently acquired a 'Twin' with a difference. It had no battery box like the two models already known. But what is really exciting is that there was most of an Eddystone catalogue with it. (16 pages total, but 4 missing!) As well as the two versions of 'Twin', there are components and two other models listed! (But what about . . . !)

One is a 'junior' version of the 'Twin', called 'Eddystone Two', and the other is a glass-fronted three-valver called 'Eddystone Three'. It is dated September 1926.

This is the first time anybody has admitted the possession of an Eddystone 'twenties catalogue. Mike has put it onto diskette for me in a JPEG format, which my simple mind seems to cope with. I am 'visually enhancing' it for the Lighthouse, starting now with the 'Twin' information. The other sets will be presented in future issues.

PC-owning members wishing to view the original pages in genuine sepia tint may obtain a floppy diskette from me (at the address shown on page 2). Price, including post and packing is £3. (£1 coins on a piece of cornflake packet accepted.) Overseas members send a £5 note and they can have a floppy and a badge as well! ★

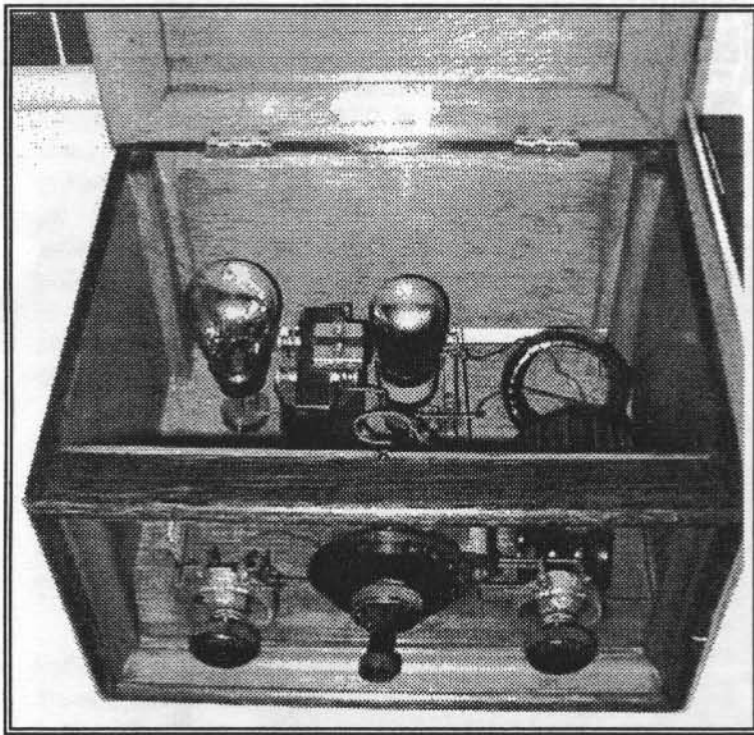
The three Eddystone Twins extant.

Top left: a 1926 'single
decker' as described
overleaf.

Bottom left: a 1926 'double
decker' as described
overleaf.

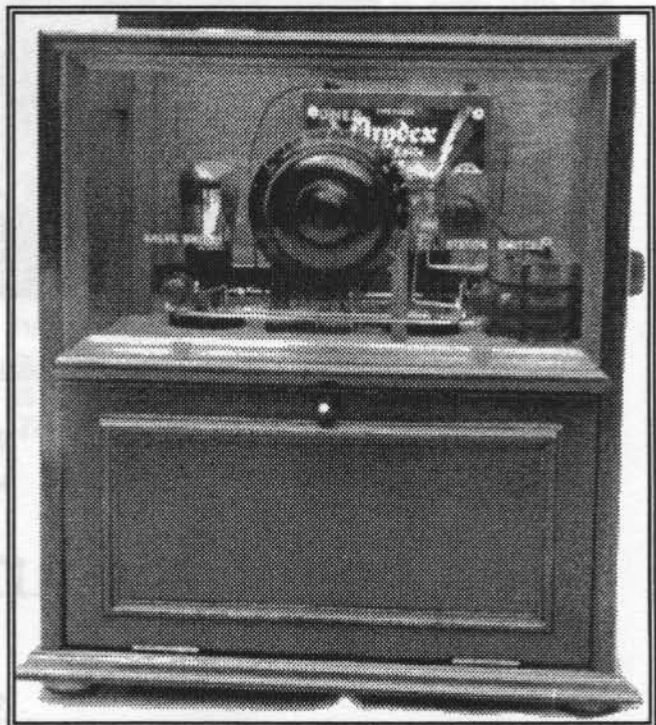
Bottom right: a later type
'double decker', not yet
documented.

(It is believed that a
member has recently
acquired a fourth model)



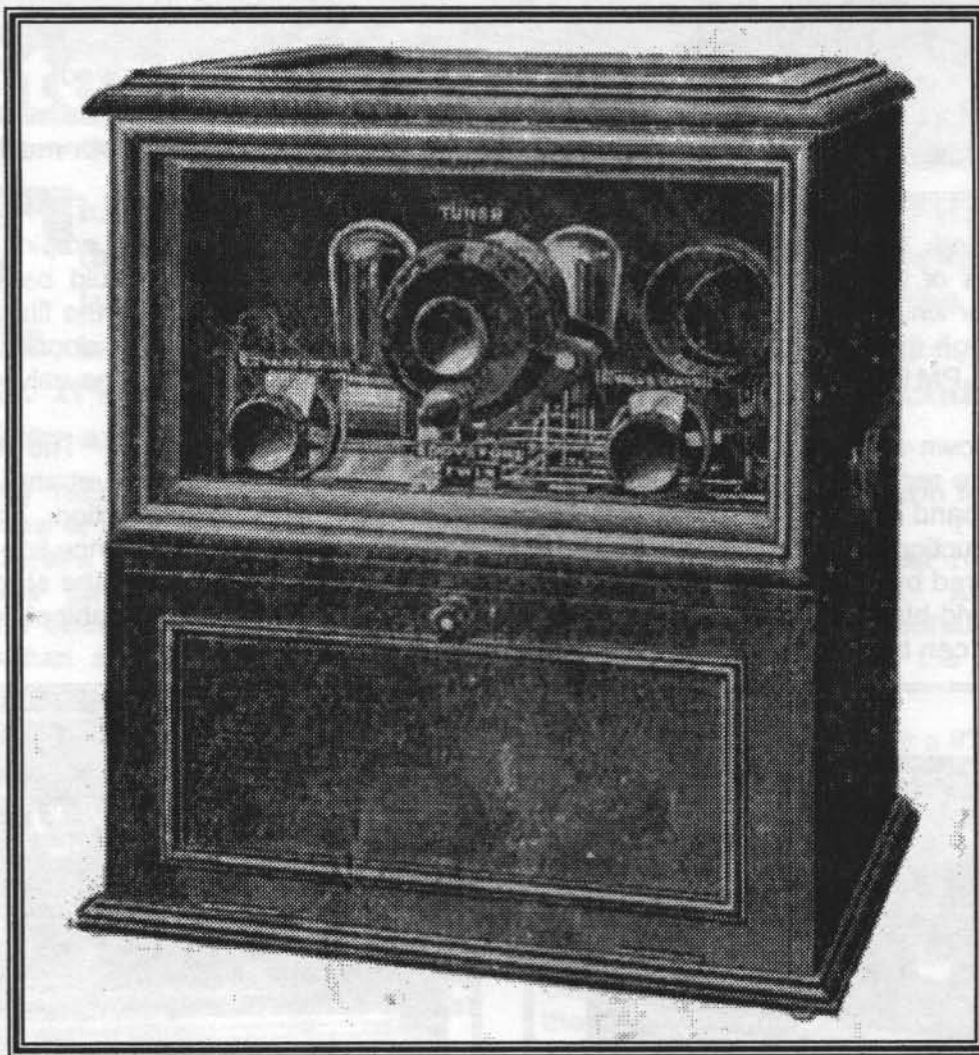
The top and bottom left-hand models use the two-pin plug-in coils employed by most manufacturers of the period, with swinging-coil reaction. In theory they could be used on any wavelength for which coils were fitted. They also had rheostats in series with the filaments of both valves, although they were dull emitters. This was an anachronism and was soon dropped. (The valves were a PM1 Detector and PM2 Output stage – which was still listed in the valve tables in the 1960's).

The set shown on the lower right differs considerably in mechanical detail. The rheostats had gone and were replaced by a 'valve switch' (on-off) and a 'station switch' (waveband). The tuning coil is a dual-band (medium & long waves) fixed unit with 'variometer' style reaction. The tuning dial is a 120:1 reduction drive as used on the short-wave 'Atlantic Two'. The reference line on the glass front is obscured by its greater diameter! (Stratton's had probably used up all the stocks of correct dials.) The grid-bias battery can clearly be seen clipped to the back of the cabinet. (On the left-hand model it can be seen on the left of the cabinet.)





"EDDYSTONE" Twin Valve Receiver



For Loud Speaker and
Long Distance Reception



THE “EDDYSTONE” Twin Receiver is a first-class two-valve receiving set made with the highest quality components. It will give splendid loud speaker reception, and is capable of receiving many stations, while the operation and working of it is extremely simple.

The Cabinet is of Jacobean finish Oak, polished inside and out, mounted on the patent “EDDYSTONE” Absorbos, and can be supplied with or without a bottom cabinet for holding the batteries. All valves and apparatus are enclosed, being dust-proof and breakage free. The plate glass panel, however, allows full visibility. The set is of the latest technical design, and has a geared coil holder, geared condenser, anti-capacity valve-holders, air-mounted fixed condensers and grid lead, grid bias battery and low loss wiring.

Each set carries a 12 months guarantee.

PRICES.

TWIN VALVE RECEIVER AND BATTERY CABINET with Coils and including Marconi Royalty	£9 0 0	TWIN VALVE RECEIVER LESS BATTERY CABINET with Coils and including Marconi Royalty	£8 0 0
RECEIVER AS ABOVE, but complete with all accessories	£14 12 6	RECEIVER AS ABOVE, but complete with all accessories	£13 12 6

The accessories included in the above prices are: —

“EDDYSTONE” Loud Speaker	£2 10 0
Mullard P.M.1 and P.M.2 Valves	1 12 6
99-Volt Hellesen H.T. Battery	1 1 0
2—Volt Exide 40-Amp. L.T. Battery . .	9 0

E.U.C. PRIZE CROSSWORD NEWS

I think I'd better start by making my grovelling apologies. First of all to Collin Crabb G4HNN, that most cerebral of all crossword compilers. And secondly to all our puzzlers who were especially puzzled by last month's offering.

Yes; I not only mis-typed one clue, another was omitted altogether. For those who tried and failed (and still wish to know the problem), number 9 across was missing. This should have read "Avoid power transfer within a circuit". The answer, guessed correctly by our two psychic winning entrants (and one losing), is "Decouple".

The mis-typed item was 5 down, which should have read "Flow-chart type of diagram" instead of "Low-chart . . .". What a difference a word makes! The answer is "Tree".

Well, I've not disposed of many of my 'super Eddystone souvenir plastic carriers' this month, just four each to the following perceptive members:-

PETER BEARDSMORE G4IXY of St Albans, Herts; and

GARY McSWEENEY G14CFQ of Belfast.

Previous champion winner Jack Read, of Nantwich, managed to get the 'missing' answers correctly, but failed on 11 Across. He was convinced it was something to do with current and he'll kick himself when he sees the answer (below). Better luck this month, Jack!

And here are all the answers to puzzle Number 3:

ACROSS : 1 Wobbulator. 8 IEE. 9 Decouple. 10 Expel. 11 Altered. 12 Cream. 15 Event. 18 OT on air. 19 Coils. 21 Portable. 23 Bye. 24 Demodulate. DOWN: 2 Ode. 3 Boolean. 4 Lapsed. 5 Tree. 6 Ripple. 7 Bell. 9 Drake. 13 Randall. 14 Morse. 16 Edited. 17 Stored. 19 CVBS. 20 Spam. 22 Lot.

Which brings me to the prize for the wonder-puzzle you see opposite. Actually, thinking of suitable non-money prizes is a bit of a permanent problem. Any suggestions would be gratefully received (the 'Badges' was a suggestion from a member).

But I have one more bright idea. You will remember the Eddystone Amateur Radio Club which used the old Company callsign G6SL - (Stratton Laughton, the son of George Laughton and the founder of Eddystone). It was first issued long before WW2 and used on many early 5 metre VHF DXpeditions. (Of course we remember!)

The callsign is now held by Chris Pettitt, GØEYO, our Patron and former Managing Director of Eddystone Radio.



Well; whilst sorting through a box of scrap paper from the 'new' Selly Oak factory - destined for the skip (I am an inveterate rubbish-grubber - my last job was with the CIA!), I found a small clutch of brand-new unused G6SL full-colour QSL cards.

They bear the Company name and logo, the Marconi Communications attribution and the 'Bath Tub' QTH, which makes them unique collectors' items.

I'll put my head on the block and say that every correct entry received by the 20th November next will receive one of these matchless souvenirs; just right for mounting, framing and hanging on the shack wall above your favourite vintage Eddystone. Get cracking, folks!

Graeme G3GGL

E.U.G. PRIZE CROSSWORD No.4

COMPILED by COLIN CRABB G4HNN

Photocopy or write out the answers so as not to spoil your copy. Send to Graeme Wormald at 15, Sabrina Drive, Bewdley, Worcestershire DY12 2RJ, England, to arrive not later than 20th November 2001. See previous page for further details.

ACROSS

1. Classic WW2 military comms radio (8,3)

7. Gaseous by-product of electrical arcing (5)

8. Call signs, in short (6)

9. Computer age transport (3)

10. Radio rally soup kitchen utensil (5)

12. Latest "improvement" to your favourite Ed-dystone, commonly (3,3)

15. "Help me!" on the air (3,3)

18. Excellent vhf location in Wales, Cader — (5)

20. Lamps from Lilliput reveal a man's name, in short form (3)

21. CQ Deutschland, initially (4,2)

22. "Those who operate" will disclose a cry of excitement through lateral thinking (5)

23. Definitive feature of a double-wound coil (4,7)

DOWN

1. A panel mon oddly, could indicate the presence of an AC mains supply (4,4)

2. On the cusp of am and pm (4,3)

3. Common emitter current transfer ratio of a particular transistor (3,4)

4. Famous name associated with early audio (6)

5. Analogous description of a bistable oscillator (3-3)

6. Recognised abbreviation for a triode oscillator, where feedback occurs through internal valve capacitance (4)

11. Computer music buff upgrades a peg or two, or three (4,4) (incl. acr.)

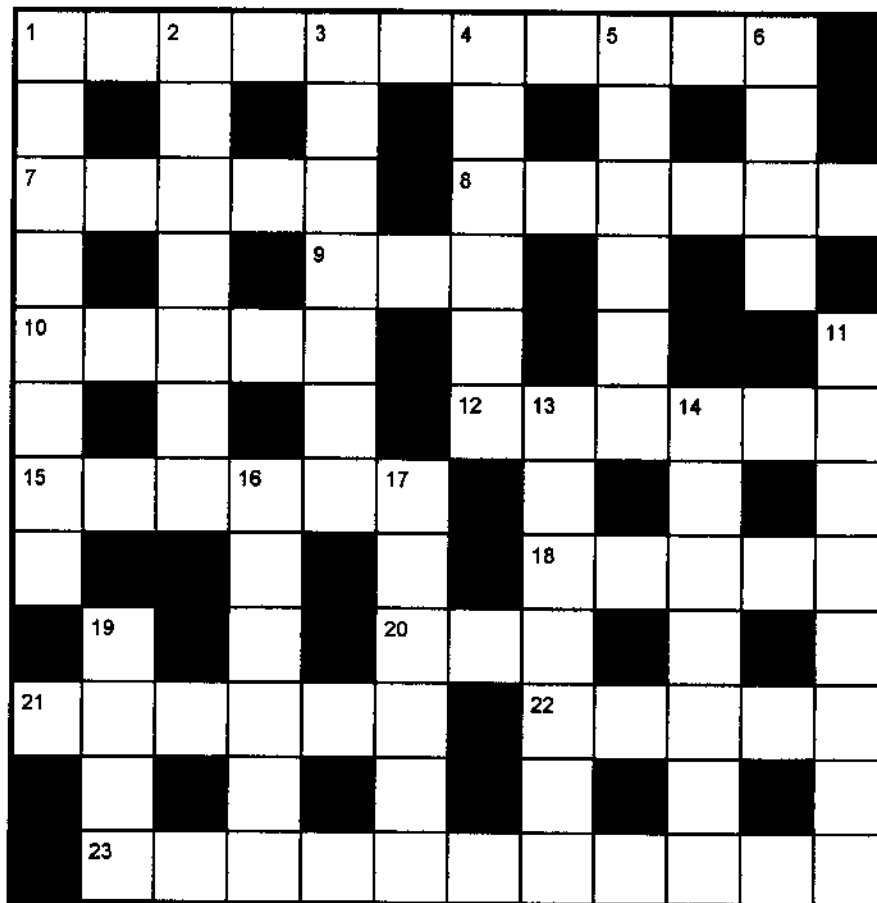
13. Fifties valve manufacturer associated with Mazda (7)

14. This famous radio name was printed on the side of last month's prizel (7)

16. Perennial flower to brighten up the shack (6)

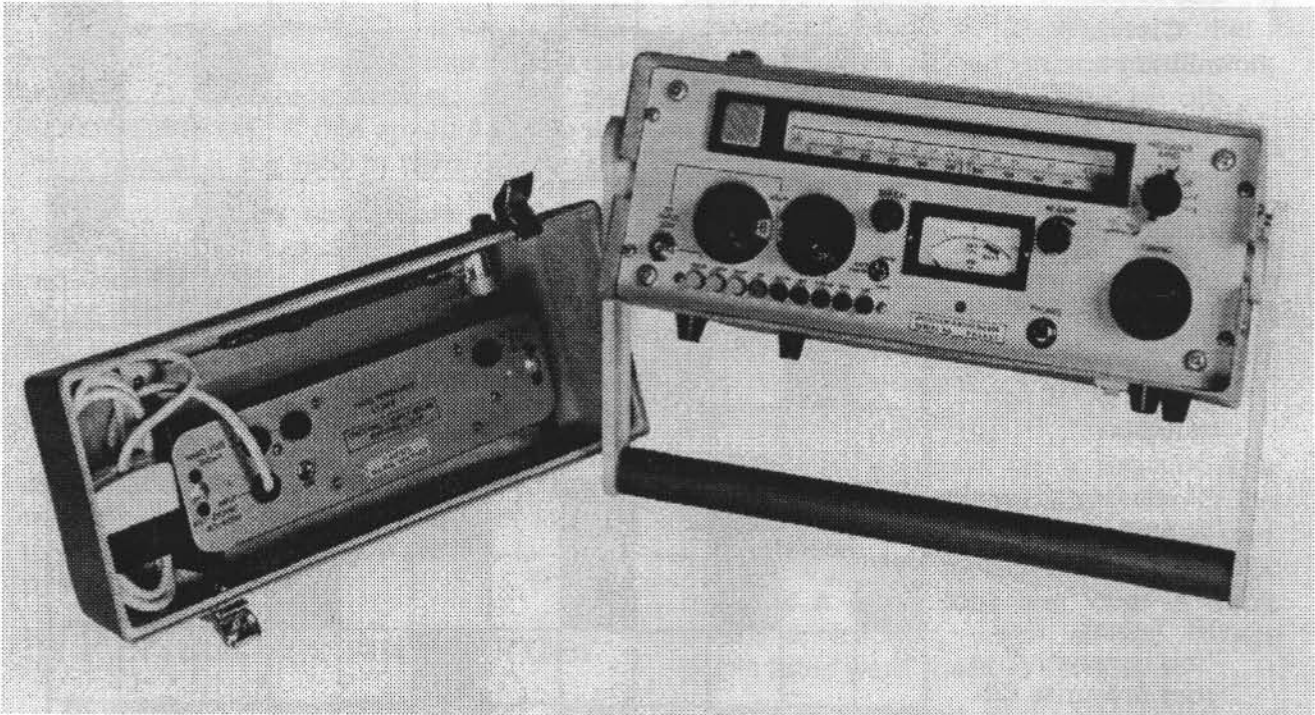
17. Complementary colour to blue in colour tv theory (6)

19. In communications, a range of frequencies within two prescribed limits, used for a definite purpose (4)



The Eddystone Model 40A Noise Measuring Set

Main feature by Simon Robinson M5POO – BFO Modification submitted by Ken O'Brien



The 40A was introduced in 1979 to compliment the VHF / UHF Model 31A. It was designed to the exacting specifications of the British Post Office for investigating radio frequency interference in the range 130kHz to 32MHz. Other uses it was ideally suited to were mainly industrial including acceptance testing on a wide range of electrical appliances.

Measurements can be taken of the voltage or field strength of CW signals, or impulse noise with pulse repetition rates as low as 1Hz. The unit is supplied with a whip antenna and internal ferrite "loop" aerials for various frequencies. Separate correction and conversion tables are supplied with calibrated aerials specifically intended for field strength or radiated noise measurements, or to facilitate the assessment of conducted noise using a suitable artificial mains network.

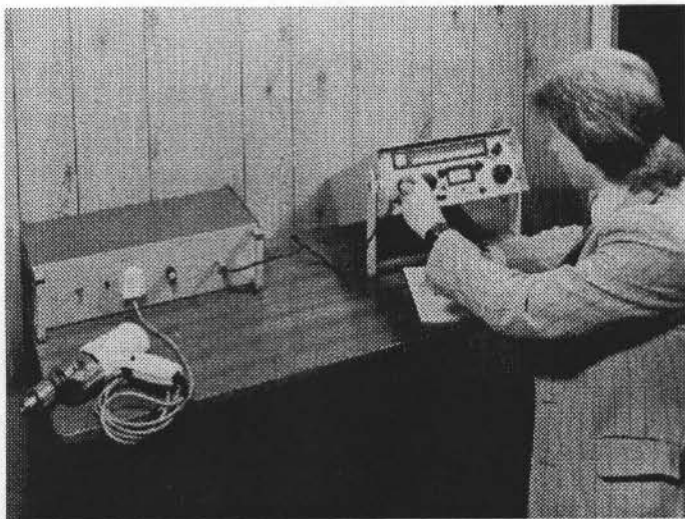
The equipment is extremely simple to operate and long-term accuracy of a high order is assured by standardising the overall system gain against an internal impulse calibrator, prior to taking each reading. Power is derived either from the internal battery pack or via the mains supply module.

A fibreglass moulding is used to house the unit and although robust, can easily be damaged, as it is quite brittle.

Internally the 40A is a beautifully engineered unit and is surprisingly complicated if you'd care to dive inside the case.

Whilst the company data sheet provides full details, here is a brief specification:

- Frequency Range : 130kHz to 32MHz
- Input Impedance : 50 ohms approximate
- Measurement Range : (equivalent sinewave p. d. input) 0dBuV to 100dBuV with use of 'IF + 20dB facility.
- IF Frequency : 1.75MHz
- Bandwidth : 9kHz +/- 1kHz
- Bandwidth at 60dB : 36kHz maximum
- IF and Image Rejection : better than 40dB (150kHz to 30MHz)
- Spurious Response : rejection better than 40dB
- Internal Noise : does not exceed -5dB point on meter after calibration.
- Frequency Calibration : +/- 2%
- Audio Output : 100mW into an 8 ohm load at the front panel phone jack.
- Power Supply : Internal dry batteries or 105-125 / 190-270V 40-60Hz



The trendy chap on the *left* is using a 40A to check an electric drill. *Below*, our snappy dresser is tracking the source of some "industrial static".

Having asked the machine operator to remain motionless for four hours, quite easy in the 70's, he finds the static is being created by the swish of his new nylon flares.

Throughout the EUG there has been a revival of interest in this little "gadget" with a view to using it as a receiver. Quite frankly, why anyone should want to do this is beyond me. The 40A was not designed as a short wave receiver as it has an IF bandwidth of at least 9kHz and a fixed BFO. In my opinion you should keep the 40A original and buy an EC10 if you want a basic receiver. We did however promise you details of a variable BFO modification for the 40A. A word of warning now – before you embark on any work on your 40A make sure you have a copy of BOTH manuals which are available from Dave Simmons.



VARIABLE BFO MOD TO EDDYSTONE 40A RECEIVER

INTRODUCTION

The Eddystone 40A noise measuring receiver is provided as standard with a fixed beat frequency oscillator (BFO). In order that both USB and LSB can be received a variable BFO is required. This document describes a suitable minimal modification to enable the BFO frequency to be varied.

Extent of modification

The IF PCB is modified by the removal of one capacitor and the addition of two trimmer capacitors, three resistors and a varicap diode. The front panel control 'SET CAL' control is reassigned as the BFO control.

REQUIREMENTS

Tools required

Large Phillips screwdriver
Small Phillips screwdriver
Small adjustable spanner
Soldering iron
Side cutters

Components required

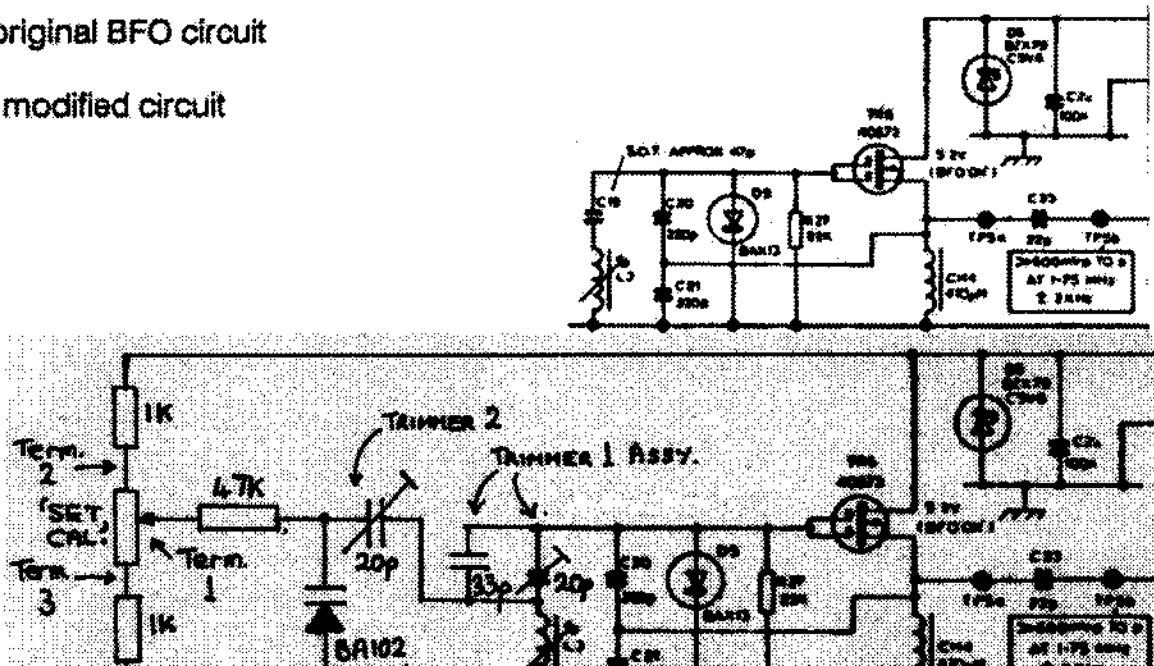
1x BA102 or similar varicap diode
1x 47k 1/4W resistor
2x 1k 1/4W resistors
1x 1k miniature preset resistor
1x 33pf tubular polystyrene capacitor
2x 20pf trimmer capacitors

DESCRIPTION

Refer to the circuit diagram. The frequency of the original BFO oscillator is set by C19 (fixed) and L3 (adjustable). The modification retains L3, replaces C19 with a trimmer and adds a varicap diode to provide a DC-controlled frequency shift. This DC shift is controlled by the front panel pot 'SET CAL', which is rewired for the purpose.

(Right) original BFO circuit

(Below) modified circuit



PROCEDURE

DISCONNECT THE RECEIVER FROM THE MAINS. Disconnect any other connections to the receiver.

Remove the battery pack if fitted. The mains power supply may be left fitted but NOT connected to the mains.

Using the large Phillips screwdriver, remove the two screws in the base of the receiver.

Using the large Phillips screwdriver, remove the two screws either side of the handle on the each side of the case (four screws, making six case screws in total).

Remove the receiver chassis from the fibreglass case. Take care not to damage the fragile case while stored.

Using the small Phillips screwdriver, remove the screws holding the top and bottom chassis lids and remove the lids.

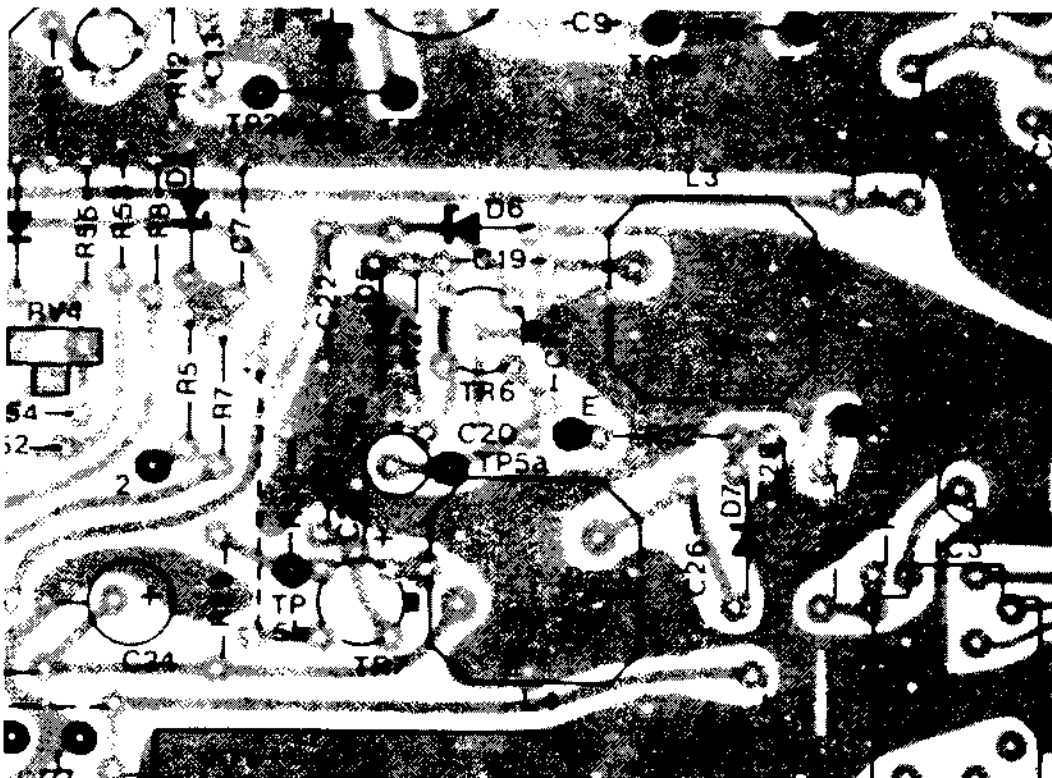
The IF PCB is mounted vertically behind the front panel. Turn the receiver upside down. Using the adjustable spanner or other suitable tool, remove the hex head screw near the corner of the PCB which secures it to the vertical bulkhead.

Turn the receiver the right way up. Remove the two screws on the angle brackets which secure the IF PCB to the vertical bulkhead.

Gently release the flat co-ax connector on the right hand side of the (metal-cased) crystal filter.

Gently pull the IF PCB straight up out of the receiver.

Using the component overlay diagram as a guide, locate L3. Desolder and discard the horizontal 47pf capacitor C19 between the Zener diode D6 and TR6.



Solder the 33pf capacitor across the terminals of one trimmer capacitor. This assembly will be referred to as trimmer 1.

Using wires to extend the pins, solder trimmer 1 assembly in place of the 47pf capacitor in such a manner as to let you adjust the trimmer when the PCB is replaced.

Solder one side of the other trimmer capacitor to the side of trimmer 1 nearest L3 in such a manner as to let you adjust the trimmer when the PCB is replaced. This will be referred to as trimmer 2.

Solder the cathode of the varicap to the other terminal of trimmer 2. Solder the anode to the bright metal strap which covers L3.

Solder one end of the 47k resistor to the junction of trimmer 2 and the varicap diode. This will be referred to as terminal 1.

Solder one end of one 1k resistor to the left hand side (banded end) of the Zener diode D6 on the PCB. This will be referred to as terminal 2.

Solder one end of the other 1k resistor to the bright metal strap which covers L3. This will be referred to as terminal 3.

Examine the wiring to the front panel SET CAL control. The grey cable from the pot is connected to the horizontal PCB which the IF PCB plugs into.

Looking at the PCB end of the grey wire, the centre of the three wires is the pot wiper and the braid is the earthy end. Label or remember the colour of the centre wire. Disconnect the three wires from the PCB.

Using short link wires, solder the 1k trimmer to the PCB where you have just desoldered the grey cable. The wiper connects to the centre pin.

Work the cable free of obstructions so that it will reach the bulkhead where the IF PCB lives. Do not fit the IF PCB yet.

Solder the braid of the grey cable to terminal 3 (1k resistor to L3 strap).

Solder the wire from the pot wiper (the one you labelled or noted the colour of) to terminal 1 (47k resistor). Solder the other wire to terminal 2 (1k resistor to D6).

Taking care to ensure the multi-way plug is seated correctly, ease the IF PCB back into place. Check that the holes in the angle brackets line up with the holes in the bulkhead. If they do not, the multiway plug is not seated correctly, so remove the PCB and refit.

Reconnect the flat co-ax cable connector on the right hand side of the (metal-cased) crystal filter. It will only fit one way.

The receiver is now ready for initial testing and calibration.

BFO Calibration

Supply power to the receiver and switch on.

Select 'loop' (internal) aerial.

Using the BFO switch, turn the BFO off. Tune the receiver to a MW broadcast station (eg *Talk Sport* - 1.053 or 1.089 MHz). Adjust the attenuator for a reasonable signal strength. Do not overload the input - if you do, setting up is more difficult.

Adjust the front panel SET CAL control to mid-position. Switch the BFO on. Do not be surprised if nothing seems to happen.

Trimmer 1 forms a very coarse BFO frequency control. Adjust the BFO frequency for zero beat against the received carrier (set BFO centre frequency).

Using the front panel SET CAL control, check the frequency range of the BFO. You should be able to vary the BFO frequency either side of the carrier.

Trimmer 2 sets the width of the BFO frequency range. It is inter-dependent with trimmer 1. Use trimmer 2 to set the upper and lower frequency shift limits, and trimmer 1 to set the centre frequency to zero-beat with an AM signal. Repeat the adjustments until you are happy with the settings.

Note: the BFO control range may not be symmetrical; with zero beat at the centre of the SET CAL range, one side may well have a greater shift than the other. This does not cause any practical difficulties in use.

Meter recalibration

As you have replaced the SET CAL control on the front panel with a preset resistor, the calibration of the meter will not be set. Follow the instructions in the manual to calibrate the meter, but use the 1k preset resistor rather than the SET CAL control. This provides an acceptable compromise between the absolute accuracy of the meter and the difficulties in adding a new control to the front panel.

Reassembly

DISCONNECT RECEIVER FROM MAINS BEFORE REPLACING COVERS.

When you are satisfied with the operation of the BFO and meter, reassemble the receiver as follows.

Refit the two screws securing the IF PCB angle brackets to the bulkhead.

Refit the hex head screw securing the IF PCB to the bulkhead.

Refit the bottom chassis plate. Check that the tuning scale pointer is properly seated in its groove and free to move normally with the tuning knob. Turning the receiver upside down tends to make it fall out.

Refit the top chassis plate. Refit the receiver in its case and replace the six screws. The

EC10

Notebook

(Including EB35/6/7)



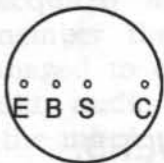
Two simple tips

Let's take the simplest first; and simple it is! Every month the question of replacements for the very early generation Mullard germanium PNP OC171 transistors crops up. These are used in the RF; Mixer; LO; IF and BFO stages in all the above models (no BFO in the EB-series, of course).

I must mention that original (very old stock) OC171's are available from Birketts at Lincoln (01522-520767, have your plastic ready; carriage £2 on orders under £10).

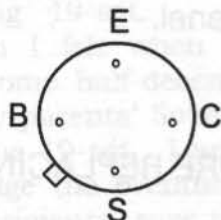
But for those who prefer current production, EUGer Chris Snipe reminds us that the AF127 is a direct replacement and is still in the 'RS' Catalogue. But don't forget the base connections are different:-

OC171



Bases viewed from below.

AF127



E = Emitter B = Base
C = Collector S = Shield (earthed)



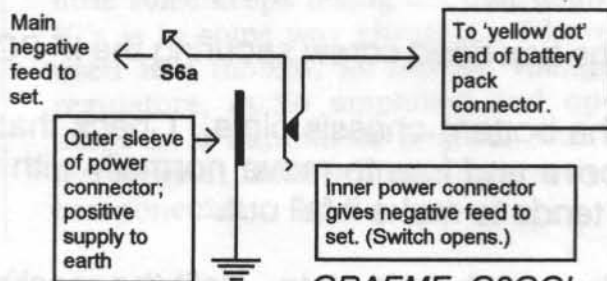
Next comes a question of mains PSU. Although one was supplied as an optional extra (S.924) very few customers seem to have bought one. This was probably on economic

grounds; remember the set cost about £50 when the average weekly wage was around £14. This would make it the equivalent of about £800 at today's prices.

It would be quite possible to build a PSU into the battery box but this would lose the portable facility. An easy option which I have carried out on several sets is to use a 9-volt 300-mA (or better) plug-top power unit ('black brick'). These can be found at rallies for a pound or two or purchased new for around £7-£12.

All EC/EB sets have a 'patch panel' at the RH end of the rear chassis (i.e. at the other end from the aerial panel). Depending on the model it will have either nothing on it, or one phono socket for recording, another for input, or a phones jack. Whatever arrangement, there's still room for another socket.

A good choice for this purpose is the 2.5mm single-hole-fixing socket (type JK10L in the Maplin catalogue, price 99p.) It needs an 8mm (5/16th") hole and incorporates a changeover switch to cut out the internal battery. But whatever you do, REMEMBER THAT EARTH IS POSITIVE.



GRAFME G3GGI

RADIO RAMBLINGS

Gottings from my Notebook



OCTOBER 2001

BEWDLEY

Autumn Greetings to all EUG Members and many thanks to all those who send words of encouragement, items for Lighthouse and renew their memberships.

Plenty to report so I shall get cracking at once.

FAREWELL 12 w.p.m.

I suppose it came as a bit of an anti-climax when it was announced last month. The abolition of the 12wpm Morse test, that is. At the same time the 'new' Class AB license is also abolished.

They all now become Class A automatically. I presume that there will be a pause in the issue whilst prospective hams wait for the next World Conference in 2003 when all the Morse requirements will undoubtedly also be abolished.

I'm not being dog-in-the-manger about this, so please will nobody take offence. I'm very proud of being a G3 at a time when there was no option, and the first twelve months were compulsory Morse. One day I'll recount to you the amusing story of my own Morse test . . .

But I do foresee a future demise of the old-fashioned fone natter-net. The WWW is already doing that. The WAB (Worked All Britain) and similar nets may survive as a form of competitive pastime, like golf.

The true future of 'technical' ham radio (in my humble opinion) will be QRP-CW. It combines the satisfaction of home-brew (which is enormous) and also the use of a distinctive skill, to wit the Morse code.

The nearest parallel I can think of is making your own 'flies' and using them to catch trout!

But consider this: An Eddystone 730/4, still available at a reasonable price, combined with a 3 watt transistor or (preferably) a 10 watt valve transmitter, and a simple random loop aerial will work the world. At its simplest the TX will be one valve and a couple of

By
*Graeme
Wormald
G3GGL*

RANDOM LOOP AERIAL

Which brings me to another little matter. For some years I've been using a full-wave 80 metre low horizontal loop aerial at this very low-down QTH (90 ft asl and 90 miles from the sea). It is about 19 ft high and 275 ft round, which means it fits into a plot about 70 ft square. Or 40 ft X 95 ft.

And it loads up easily on any band using my 1982 Trio TS-530 barefoot with a 20 ft co-ax feeder. It needs no earth. A modern transistor PA rig would need a simple ATU.

It defies theory, and listen to this. Elsewhere in this issue you will see the report of 'EUG Steam Radio'. Whilst operating there we met an old friend who is a white-stick operator.

He went on the air using the EUG station and caused a bit of a pile-up on 15 metres. He asked what we were using for an aerial and was surprised to hear the answer.

To cut a long story short he said he was having serious aerial problems and couldn't really get a signal out. Jesse and I went round to survey his suburban plot, which turned out to be 30 ft X 40 ft . . . and without masts.

We returned the next day and fitted up a co-ax fed loop, mounted on cup-hooks on the side of the house 10 ft up and going round two bean-sticks fastened with cable-ties onto the bottom of his garden fence (also 10 ft up). We got about 120 ft of wire round this mini-farm.

The following day Henry was working all over Western Europe with his Trio TS-440 and AT-230 ATU.

It makes you think, doesn't it! And you don't need Planning Consent for a ham radio aerial which isn't higher than the apex of your roof; remember that.

Compare it with expensive commercial multi-band aerials which take up much more room. And trap verticals which need expensive

RADIO AUTHORITY POCKET BOOK

The R.A. was created just ten years ago to license and regulate analogue and digital independent radio services in the U.K.

To celebrate this anniversary they have produced a 100-page Pocket Book which gives a wealth of detail about the British radio scene, including maps.

It is available free of charge by phoning them on 020 7430 2724.

IMPOSTER !

EUGer Jack Townsend reported that he visited the 'Leicester' show at Castle Donnington. There he saw a large Eddystone radio bearing the legend '770 L'. When he got home he couldn't find it in his QRG guide, but it looked like a '770 S'.

A quick phone call to former Chief Engineer Bill Cooke confirmed that there was no such thing, but that a skilled artist at Stratton's specialised in customising pre-production 'rejects' for company staff!

EDDYSTONE MODEL S.940

Readers will know that I am sceptical about specific faults in particular sets. My brain tells me that the vast majority of faults in Eddystone Valve Sets are generic. That is to say that a screen dropper of 100kΩ in ANY set is likely to be a culprit for deafness.

But once in a while a set has a design quirk that seems to be especially peculiar to itself. This is not too easy to explain, and probably needs a little more research, so I'll cut the cackle and begin.

Our correspondent Roger Bebbington, MØBWP, had a nice little feature in our last edition of Lighthouse (issue 68, page 39, 'Some Eddystone 940 Repair Notes').

The main cause of the problem was R44, a value of 100kΩ in the AGC delay network. It had risen to near infinity. A replacement improved the sensitivity of the set no end.

No sooner had that issue touched down in the antipodes than an e-mail came from Peter Lankshear in New Zealand telling me that he had found exactly the same fault in his 940. This set my grey cells tingling.

On a shelf in my 'EUG Office' (actually an insulated garden shed) stood my S.940, acquired about 3 years ago from an advert in RadCom. I had heard it playing the Kremlin Bells on the 41-metre band at the time of

purchase (somewhere near London) and on that basis twenty crisp fivers changed hands.

It was nice and clean-looking and it went to the back of the queue for servicing . . . and stayed at the back. So I got it down, opened it up, and checked R44.

It was OPEN CIRCUIT. Moscow World Service was about all it could get! Deaf wasn't the word. A replacement produced magical improvement.

You may think I'm exaggerating, but without a word of a lie, this happened. Yesterday a non-technical member brought to me for 'looking at' a recent acquisition. An Eddystone S.940. Without switching it on I checked R44. It was reading 390kΩ, four times the listed value.

Now that's four in a row with the same problem. I'm not saying that it's the only problem with these sets, there are other potentials, but they are more 'generic'.

But I've got an awful feeling creeping over me. The AGC delay on most ordinary receivers is acquired from the cathode bias of the double-diode-triode doing duty as DET, AGV and first audio. Very few Eddystones use this system, only the simpler and earlier ones like the 640, 670, 840, 870, etc.

The more advanced comms models all use a separate double diode for the DET/AGC and acquire the AGC delay from a network across the HT supply.

What I'm saying is they all have their equivalents of the 940's R44. Can we be sure they aren't all going the same way, slowly but surely? I'll bet they are. Start looking. It could be the basis of the 'deaf Eddystone' syndrome.

Dr P.N.Neid - Obituary

EUG regrets to announce the death of Dr, P.N.Neid, former professor of electronics at Aston University, Birmingham. We extend our sympathy to his daughter.

In the early days of Aston University - formerly Aston College of Advanced Technology - the Eddystone Company formed a close relationship with Dr Neid.

Many of his students acquired work experience at the Bath Tub which set them up well for their future careers. One of them in particular, Roger Sutton, well-known to readers of 'Lighthouse', is the present Managing Engineer of Eddystone Radio.

My First Job

By Bernard Harris

"AN ESSAY ABOUT THE LIFE OF A SCHOOL LEAVER BEING OFFERED A JOB WITH EDDYSTONE RADIO SITUATED AT THE BATH TUB, WEST HEATH, BIRMINGHAM."



This all came about due to the fact that my late father was the accountant for the company of Laughton and Sons since 1938. My interest in radio and television developed when I was 9 or 10 years old. I had a friend whose dad had access to old RAF transmitters and receivers with beautiful coloured control knobs; the T1154/R1155 if I remember correctly. Anyway, my interest was sort of kindled; repairs to local peoples' wireless sets were often successful, televisions also. Many electric shocks later I decided to become an apprentice Tractor Mechanic with Ford Tractors just south of the Birmingham city boundary on the A435. This was not to be however as they did not want me.

My father had a word with Harold Cox at Eddystone to see whether they would take me on as a junior to learn a trade. My interview was brief and to the point; they would take me on with no special favours due to my father's position in the company.

One Monday in September 1958, I cycled from Hollywood along the A435 to West Heath and the Bath Tub. I think it was a Mr. Scobie who introduced me to the Production Line and settled me down to learn resistor colour codes and other essentials. Eventually I ended up on the line producing the 870A receiver. Soldering and being checked was the norm however many very attractive ladies were employed on the production lines which often distracted me from serious concentration.



Insulation was often checked with a "Megger", which on occasions was connected to the metal component boxes into which the girls obtained the materials such as resistors, capacitors etc. By slowly winding the Megger handle I was able to supply a pins and needles type shock, which went down treat! To my left there was a Faraday cage in which the final alignment was carried out by Mr Fred Griffiths, a

very experienced engineer with whom I got on very well.

The receivers in production in my time there were 888A, 820, 870A, 680X 770R and 770U, all were produced and then soak tested in racks. I shall never forget the smell each morning of these receivers which had been on all night, occasionally electrolytic capacitors had exploded causing localised mess within the receiver; cabinets were not fitted until later.

I eventually spent sometime in the stores and was frequently sent into Birmingham to fetch urgently required metal parts, which had been anodised. I travelled by Bus so it was quite an occasion. The shelves in the stores contained components that had been used for previous development work some wartime projects, but the majority of parts were for current use.

Time was also spent in the customer repair laboratory; my tutor was I believe ex Royal Navy and a very competent engineer. Some of the returned receivers from abroad contained many dead insects that had entered the case, matured and then died. Time there was very interesting.

I well remember the day a highly secret piece of test equipment arrived for use in Development it was secreted into a room and was only seen by the Chief Engineer and his close colleagues including Mr. Cox and Commander Edwards. The Chief Engineer was Mr. Bill Cook, a very eminent gentleman and very pleasant as well. He was in charge of Development and at the time was responsible for the famous 880, a very special receiver that used inductive tuning rather than capacity tuning. I spent a short period of time in the Drawing Office under Mr. Bill Scarle, the Chief Draughtsman, who was very critical of *my* attempts to become a draughtsman!!!! Again there were some very attractive Tracers; ladies who copied the very intricate circuit diagrams. There were some very interesting characters in Development many of who were Radio Amateurs. In those days all equipment was built from scratch, one member even built his own "Lecher Lines" for measuring resonance within the output of the Transmitter.



My time with Eddystone came to an end on December 1959. In January 1960 I started work at Birmingham University Medical School.

Postscript

I met Bernard at the Spring NEC this year and we talked for some time. Having managed to obtain an 880/2 for him, something Bernard had been hunting for several years, he kindly agreed to let us have his memoirs of life at the Bath Tub. Hopefully you will enjoy them – regards POO.