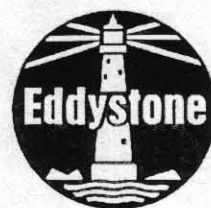
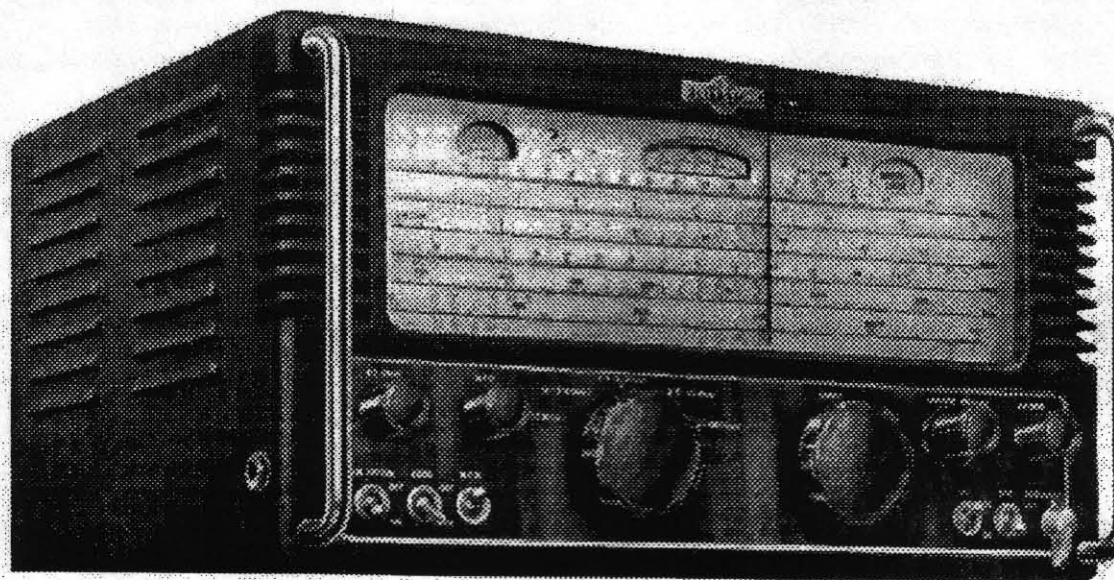


# Eddystone User Group Newsletter



Issue No: 53

February 1999



## Featured Model - Eddystone 680X Communications Receiver

- A non profit newsletter for Eddystone Users
  - Compiled and edited by Ted Moore
- Information quoted from Eddystone Literature by kind permission of Eddystone Radio Limited
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## FRONTIS

It only seems like the other day that I was writing the last frontis. How time flies. The past week or so has seen a great deal of activity on Eddystone front. Marconi have announced that they will close the company at the end of March and Matt Parkes tried to put together a management buy-out of the assets. In our desire to help Matt in this quest we issued the letter that you all received looking for "angels" who could offer some modest venture capital. I understand a number of you contacted Matt with offers of help. However the time-scale imposed by Marconi would appear to have defeated the management team and closure now looks a certainty. As they say it is never over until the fat lady sings so I do not intend to write the company's obituary yet. Who knows, perhaps phoenix like, Eddystone Radio 1999 can rise from the ashes of the present company. Watch this space for further news. Matt has already assured me that the Eddystone collection and archives will be kept safe and Graeme and I have been having discussions with various people as to where it might be housed with more public access in the event of closure. As the situation develops we will give you more news as the ideas firm up.

In the last issue there was some discussion about the company call-sign G6SL, of which I am the keeper. Graeme has been looking for G3EUG which is a discontinued call-sign. He has established that it used to be held by a Mr B D F Hutchins, of 88 Raymonds Drive, Thundersley, Essex. I wonder if any of our members, particularly the Essex based one's have any recollection of what happened to Mr Hutchins. The assumption is that he went silent key many years ago. If we could contact his family we could establish whether they could give the EUG permission to take over the call-sign. Worth doing bit of detective work on this, if anyone can help it would be appreciated.

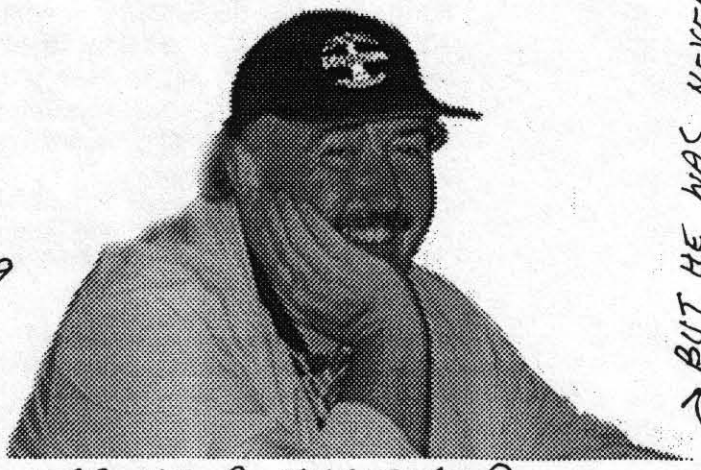
X SEE BELOW

The NEC Vintage Fair is on May 9<sup>th</sup> and we hope to see as many of our members as possible. We shall not be able to mount such a big stand this year, however look for us at the end of a row as usual. The tables will be manned by the same old faces as usual. We plan to put up a members board and book to sign in on, so bring any photos of your Eddystone's, either singular or collections, together with QSL cards if you are licensed and we will display them during the day. We can then use the photos in future issues of the newsletter.

I see Ted is featuring the 680X. Graeme tells me that this was featured in the very early issues of the Newsletter. However, it will be helpful to members who joined in recent years and I know Graeme and Ted will be interested to know of any sets that members would like to see featured in future issues.

73's and good listening

Chris Pettitt GOEYO  
Patron



X LATE NEWS FROM R.S.G.B. -  
G3EUG WAS ISSUED IN FEB '49  
AND WAS NOT RENEWED AFTER  
1965. IN 1956 CALLBOOK THE  
ENTRY IS 'B. HUTCHINGS, L.R.A.M.,  
4, HILLSIDE GDNS, WALTHAMSTOW.  
E.17

WAS HE A MUSICIAN?

BUT HE WAS NEVER A MEMBER OF R.S.G.B.





1

\* Issue 53 \*

Another year, and I have high hopes myself for this year of 1999. This will make it our TENTH year for EUG, and for those of you with the original EUG Newsletter Issue 1, you can see how we have grown, and improved.

It is always a bit of a system shock for me when I discover, or hear somebody has discovered, a heretofore unknown model. "Here we go again" I said to myself when, during a recent visit with Graeme and Dave, I was told about another 'new one' which needs to be added to my list of models. A 950 no less, but one apparently still-born as it is simply marked up as a 'Specification' and 'Prototype'. Saying that last word implies that at least one must have existed. Eddystone usually built two prototypes and used them for testing and modifications, so where are they ??? Graeme has promised to ask about this when he has his next QSO by landline with Bill Cooke.

Then, lo and behold, Graeme mentions on the phone that he has another "new one" for me ! Ah well, the more the merrier says I. This is the so-called transistorised portable, although from what I have been able to glean it was more of a semi-portable. A cast aluminium case, all first generation germanium transistors, it would have been so over-engineered that the cost would have been sky-high. Another non-starter from the production point of view.

I mentioned the recent visit with Graeme and Dave. Graeme was expected but when Dave Simmons turned up we had a triumvirate of EUGers. Quite a bit of the discussion period centred upon Graeme's research into the present whereabouts of the old G6 SL callsign ('SL' as for Strattons Ltd). This has now been located quite near at home and after discussions with the Radio Authority and RSGB, plans are afoot to obtain this licence for use by EUG. It will be held in our name by Graeme, G3 GGL. Only right and fair this since nobody has contributed more to the Amateur side of EUG than 'GGL'. This is a very historic call and could well be the subject of an item in a future N/L. It featured frequently in the the old - the real - mags such as SWM and WW. a bit of research by somebody with the necessary time to peruse old mags might be necessary. Any offers ??? I do have some recollections of it being the call used by a Factory station which, whilst testing from the Roof Lab; was heard across the 'pond', on the old 60 Mc/s, Five Metres, band in the thirties era. More later on this.

At the same time Graeme has been investigating the possibility of us acquiring a G x EUG call and maybe even in the near future an M x EUG call, more of this from Graeme when he gets things sorted out. Wouldn't it be nice to have an all 'hollow-state' Eddystone equiped, station on the Sunday EUGnet Graeme ? It could be done too using a design from the Eddystone Manuals of the '40s and '50s.

Two new copies of old blueprints which have surfaced, courtesy of Christine at the Factory. Both a bit thought provoking in some ways. The one was a follow up from my noticing that the Blueprint Register contained mention of an Everyman Transmitter, a two valve HF, CW only, job this. Graeme asked Christine for a copy and as usual she turned up trumps. The second is a copy

of a two valve SW receiver of a design common in the '30s era. Yet there is a slight anachronism involved since the Blueprint is dated in the late '50s ! This has to be a copy drawn by a trainee or apprentice draughtsman as the panel for details is incomplete.

Back to the first BP mentioned. This Everyman Two Transmitter as drawn could never have worked. With the HT (supposedly DC) being drawn from one of the anodes of the psu it would be a non-starter, so we are back to the surmise that it was a drawing exercise, or copying exercise to be precise, by a trainee or apprentice. Even so, both are of interest and so are reproduced here for your information. See pages 3 and 4 this issue.

The Xmas issue has drawn a bit of mail, mostly regarding Graeme's very handy supplement. For those with limited servicing knowledge this should fill a real need. All of the comments about this handy guide have been very positive. A few queries re items in the N/L itself have come up and will be dealt with in this issue (hopefully !)

Thanks to all of you for your best wishes to myself and the rest of your EUG team, we shall try to keep our standards up throughout the coming year, maybe we can even improve ?

## Tradition And A 750

The Christmas break is usually that period when folk get down to the jobs that they have neglected throughout the past year, just so for Stan. The 750 had developed a nasty habit of losing most of its AF output shortly after being powered-up. In some instances this happened within minutes, on other occasions the problem might not manifest itself for several hours. Just a sudden reduction in output which could be made good by turning up the AF gain from - say - one third to two thirds of its rotation.

With the usual Xmas cheer inside of himself Stan says that he put the set on the table on Boxing Day, opened it up and began probing. It was still there a week later and he was no further advanced. A set of spare, part-used, valves were substituted one at a time, to no avail. Next came mechanical checks for dry joints etc; by using one of the XYL's long plastic knitting needles. This one was about 5 m/ms in diameter and so it was possible to poke fairly hard at the various components. Again, a big fat zero !

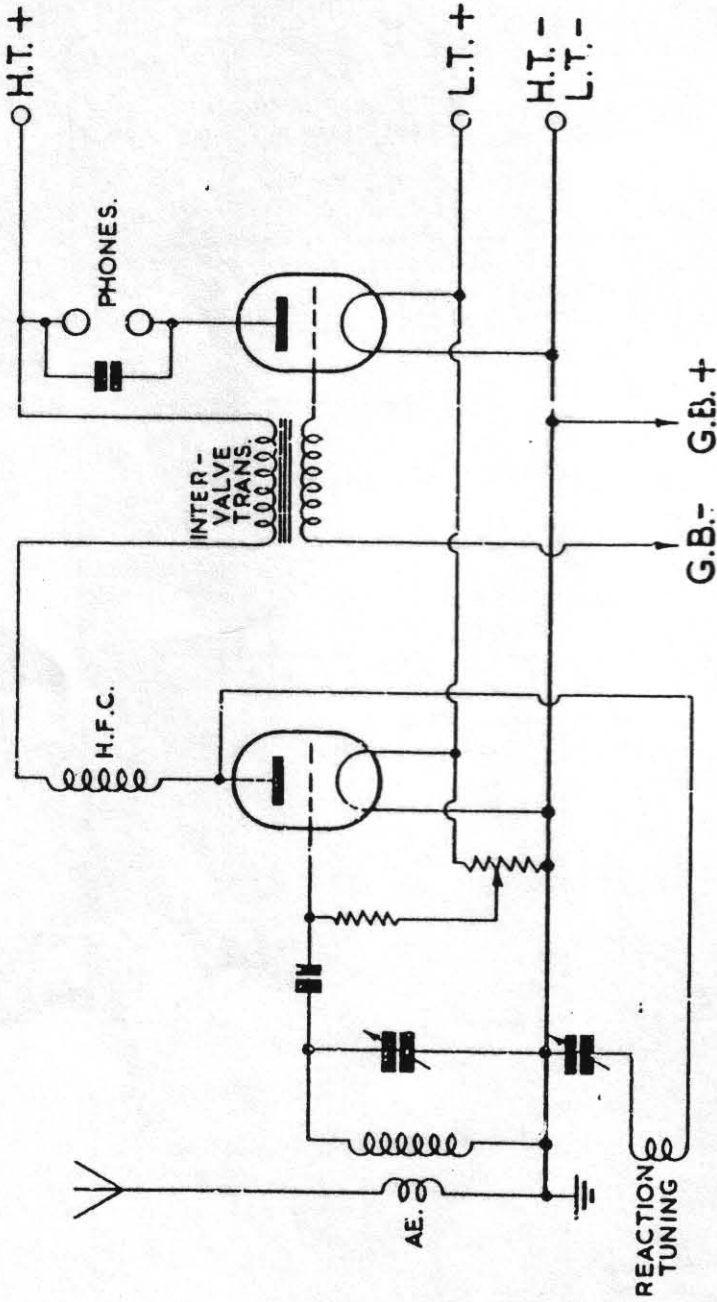
By now several days had gone by and Stan - never a very patient person - had become quite frustrated with the 750. The set was on, but upside down on the table. Lifting it up, to turn it right way up, Stan put it back down just a little heavier than usual and ABRACADABRA, the volume came back up. In his mind this was proof positive of an intermittent of some kind and so he reversed the chassis again and began probing. This time he was poking away in the vicinity of the phones jack when one poke lost him most of the audio. A bit of experiment showed that the problem really was in the jack itself and that it might well be mechanical, more than electrical.

By carefully manipulating the wiring to the jack it was possible to remove it from the front panel without any disconnections. Tricky this but it can be done. The contacts on the break part which dissed the speaker for use with phones were completely oxidised and only by rubbing hard could any



REVISIONS.

3



# EDDYSTONE 2 VALVE RECEIVER.

BP 949.

STRATTON & CO. LTD  
BIRMINGHAM  
ENGLAND

DRAWING NO BP 949.

DRAWN W.J. SCARLE

TRACED

CHECKED

APPROVED

DATE

19.2.57.

MATERIAL.	TOLERANCES
SUPPLIER.	FRACTIONAL ±
OUR ORDER.	OTHERWISE AS STATED
FINISH	

STRATTON & CO. LTD.  
BIRMINGHAM  
ENGLAND

DRAWING NO.	BP580
DRAWN	/
TRACED	
CHECKED	
APPROVED	
DATE	10-9-46

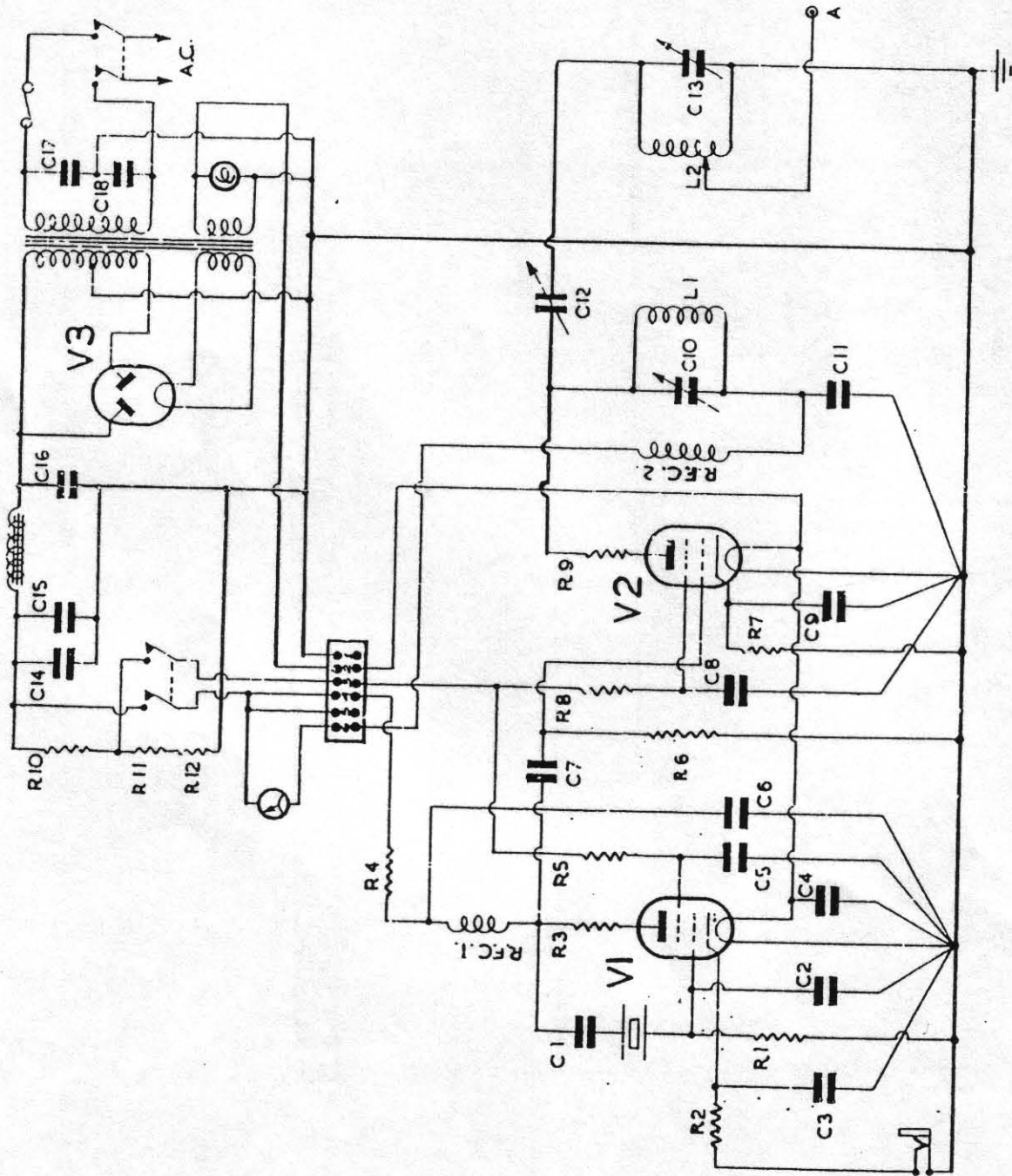
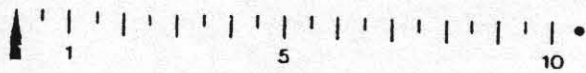


FIG. 1.  
EVERYMAN TWO TRANSMITTER





continuity be made for passage of the AF signal. The 750 had never been used in a damp atmosphere apart from the bedroom shack but it has to be assumed that moisture from central heating and possibly the effects of many years of smoking in the shack had some part to play. Long periods of operating with the phones left plugged in both during and between sessions may also have allowed the contacts to build up a coating of non-conductive material. The jack was totally dismantled and the contacts were cleaned and burnished before re-assembly. Some weeks on there has been no further signs of the original problem. Sometimes the hardest part is locating the problem ! Clearing the fault may be but a matter of minutes with the can of switchcleaner Stan.

## AM/FM Tuner Model 820

The 820 isn't often heard of, it doesn't often go Kaput either. This one had been in regular use with nothing more than valve replacements at intervals of several years. When trouble did come it would be on the FM range which was most commonly in use.

The 820 in this QTH feeds a venerable Leak Point-One amplifier and whilst only Mono the quality has always been acceptable. Now however it sounded as if the audio signal was being 'chopped' or clipped drastically. It may have come on over a long period as the whole system had been unused for a couple of months whilst the owner was in sickbay.

A full check on all of the 17 listed points showed no anomalies at all. The next step was to couple up the 'scope to the output and to work back from the output. There was extensive clipping on the AF output socket, it was still there on the switch wafer, and on the cathode of V6 the double diode 6AL5. There was very little to be seen on the anode of V5 and so further checks were done on the in-between components. R 30 and R 31 are both 100 Kiloohms, sorry, they ought to have been ! In this instance both were way out of tolerance with R30 being circa 800 kilohms and R31 being totally open-circuit according to the Avometer. Both looked okay on the outside.

New 100 kilohm resistors of a modern and improved design were bought and fitted and the sound was restored to normal. Whilst the set was open - in this case out of its wooden cabinet - the other resistors were checked out and whilst most were at the limit of their tolerance or slightly over it was decided to leave them for now, a list has been made and they will be procured for use when the time allows of more extensive surgery.

## The S.640 on Two Metres

Yes ! It can be done, and Yes it works. But finding SSB or DSB on Two metres these days is not easy.

The 640 had been bought from the Shack clearout of a Silent-Key, a postwar G3-plus 3. When bought it was not known that this mod had been incorporated but upon delivery the chrome plated heads of four screws on the outside of the lid gave the game away. Upon lifting the lid there was a small

copper chassis mounted onto the underside and this held several very miniature valves and a couple of coils. Two small co-ax leads led out from this chassis to the rear of the 640. It was evident that the power supply had been hard-wired to the internal pins of the accessory socket. No circuit diagram was available but the three valves and coils appeared to indicate an RF amplifier, local oscillator, and mixer. The plugs indicated a 75 ohm input to the two metre convertor and an HF output directly to the HF aerial sockets of the 640. Since the 640 as received had been switched to Range 1 and tuned to the Ten metre band on the scale it was assumed that the IF output of the convertor was between 28 and 30 Mc/s. This eventually proved to be the case when the convertor was powered up, as will be seen.

Before anything was touched the 640 was checked out on all ranges on the usual HF aerial - a basic Marconi 'inverted L'. All appeared okay here and so the small switch on the copper chassis was pushed to 'on' and the input output leads were connected. The 75 ohm input was taken to a simple wire dipole which was made up and taped to the wall. The output was taken to Aerial and Earth sockets of the 640.

By now all three mini valves were warm to the touch and so the 640 was tuned from one end of the 28 to 30 Mc/s segment. The only signal was a very distorted one from the local repeater, some 3 miles distant and 'line-of-sight' from the QTH. Going down below 28 and tuning through 27 Mc/s some QRM from commercial data signals was heard when the BFO was switched on. This same QRM can be heard on the station receiver, an R-5000 by Trio.

The set was powered down and the convertor unit was carefully removed for further examination. The valves used were unlike any seen before and carried the letters RCA and 6CW4. A check on a valve data book and it was found that they were called Nuvistors and a phone call elicited the info that they were made only for a short time when their utility became doubtful with the advent of transistors. This valve is a very high impedance triode and was made to military specifications, whether it was meant for use at VHF I know not, but it does work. The whole convertor paraphernalia has been left in situ since it has been professionally built and does not detract from normal use of the 640 in any way. The 640 now sits alongside the other Eddystone, a 940.

## Out of the Mouths of Babes .....

Okay this has nothing to do with Eddystone or Eddystones, but it may say a lot about why some of us wrinklies still prefer the analogue readout models as opposed to those new-fangled digital readout models. Let Don explain, -

Following a recent abortive break-in where the intruder was last seen being hotly pursued across the paddock by our very vocal biological intruder deterrent, (a flock of 7 quite vicious geese), we informed the local bobby and he in turn advised us to check with our Insurance Company. He doubted that they would consider such a device as being sufficient for full, continued, home insurance cover. Sure enough we were advised quite strongly to have a modern Intruder Alarm fitted, or else our policy conditions would not be met. Steps were taken to comply, this meant getting the local alarm company in.

Come the day when the local expert alarm fitter, middle-aged, arrived with



his acolyte in tow. Since both the wife and I work from home, we run a smallholding, we were able to observe the antics of the fitters at intervals during the day. Much running about the house pushing, threading and snaking wire from all doors and windows to the site of the alarm control box, plus the installation of movement sensors in all rooms. By about three in the afternoon all wiring was installed and the new control box was installed in its niche on the kitchen wall. Niche it was because this was a gap of some 15 inches between the end of the wall cupboards and the corner of the room. This choice of location had been the reason for our buying the particular model. One of its sales points was that the oblong control box could be mounted either vertically or maybe horizontally, depending upon the available space. All that was needed was to rotate the push switches and the LCD display on the front panel, to suit.

The box was mounted, the multiplicity of leads were connected, the power was applied, and in front of the four of us the LCD display came up with just one symbol. Just a big 'E' in the centre of the display.

Much consternation since as we all know from our use of those indispensable pocket calculators, this was the Error symbol. The unit was powered down and opened up for a very thorough visual inspection, plus some poking and probing around the PCB containing the micro-processor and associated components for this modern all singing, all dancing, wonder.

Power up again after the local expert alarm fitter, middle aged, (herinafter referred to as the LEAF,MA). had declared all to be okay. Again the large 'E' and nothing else. The three coloured LEDs for Mains power On, battery charging, and system activated were showing their vari-coloured hues, but still that one letter 'E' on the LCD display.

The acolyte was dispatched to check on all upstairs sensors whilst LEAF,MA himself checked the ground floor sensors. Once more all was declared okay and power was applied with the same result as before. Just the one big 'E'.

By now it was four 'o' clock and young Suzy came rushing in from being dropped off by the school bus. Making a bee-line for the frigo she stocked up with a bowl of ice-cream and some wafers, then sat down to watch this new and interesting adult game.

Both LEAF,MA and his acolyte went off to double, and triple, check all sensors and wiring. This accompanied by much muttering between the two of them. Back again for a further check on the box and its wiring then another try. Power on and again that obstinate large 'E' was displayed. With red faces it was finally decreed that the control box must be faulty and that another would be obtained and that they would be back next week.

Meanwhile the 8 year old Suzy had been looking through the Instruction Booklet which we, the all-knowing adults, had ignored. With a wisdom far beyond her age Suzy made the heretical suggestion that "maybe the 'picture' is upside down". My wife had begun to 'shush' the infant when the LEAF,MA reached over and took the booklet out of Suzy's hands. He read through the part of it referring to 'Commissioning' and then, very red in the face, he opened the control box, undid two spring clips, rotated the LCD display by 180° and replaced the clips. Shutting the door now gave us a display reading '3.' The booklet gave a menu listing for the various display readings ranging from '1.' for Mains Power On but no DC on the PCB. '2.' meant both AC and DC power okay but no charge going into the back-up battery. '3.' meant All power supplies okay

and the alarm system is ready for programming, etc; etc;

Of course what we clever adults had not noticed was that the large 'E' displayed actually was preceded by a dot on the display in the top corner. The full test now went ahead with two rather sheepish experts looking everywhere except where sat the junior expert. After the installation was completed and the ritual tool packing job was done, young Suzy decided to compound her Error by asking in a rather guileless tone. "Does this mean I can come to you for a job when I leave school?" Viva Analogue Displays. Don.

## 1999 Onwards

A New Year and so there ought to be some Resolutions to go with it. I am notorious for not keeping to my resolutions and so if I say that I resolve to make this year's N/Ls as good as last - - well don't expect me to keep to that !! They will hopefully be BETTER. If they are it will be due to the unstinting work and dedication of all those who help make EUG a viable concern. The list reads from Christine (still at the Factory), through the entire Wormald Family (so it seems when time comes for packing and posting), to Chris Pettitt our Patron, and not forgetting those who contribute in silence such as Simon the computer Wizard, Ron, Dave, Jim, Bill, AND ALL THOSE WHO CONTRIBUTE. Keep it up lads !! This Newsletter is a Co-operative effort.

## Eddystone Radio

Isn't it strange, so many letters this month from those who comment that they did not know that Eddystone is still alive. This came from my comment re the latest version of the Orion 7000 still being around. They are, albeit a bit in the doldrums of late, still around. There is once more talk of a closure date in April, talk also of a Buy-Out by management, again. But then is not all of British Industry in trouble lately ??? It must be a case of wait and see, especially since there is talk of a multi-million pound order for the Sultanate of Brunei, a VHF/FM Broadcast network some say. Graeme is our 'mole' and so we shall await his latest gen on this subject.

## I.F. Transformers

Alan tells me that from long experience with the servicing of classic radios he has been forced to conclude that one of the components most likely to suffer from 'old age' is the RF or IF coil winding. In the case of Eddystone products he suggests that the sealed IF transformers may well be susceptible to damage from moisture ! Seems daft he admits but it appears from his work on Eddystones that this is so.

Both beeswax and shellac varnish are to some degree hygroscopic, they attract and retain moisture from the atmosphere. These items are both used in the manufacture of coils. During the manufacturing process the part complete windings/transformers will have been left out on the benches overnight and will have collected some very slight amounts of moisture, which may not at the





announce NEWS of

# EDDYSTONE

COMMUNICATION RECEIVERS



- ★ Eight valves (plus rectifier).
- ★ One R.F. and two I.F. stages.
- ★ Three bands 9.7 to 176.5 metres.
- ★ Band-set control has amateur bands calibrated. Band-spread control with fly-wheel for smooth and positive tuning.
- ★ B.F.O.
- ★ Crystal filter.

## THE NEW "640"

### for Short Waves only

### 31 to 1.7 Mc/s

Model "640" is designed for high-efficiency on short-waves (note broadcast band is omitted) and has electrical band-spread available throughout tuning range. Particularly applicable for both commercial and amateur communication use.

PRICE . . . . £42 . 0 . 0 (PLUS PURCHASE TAX £9.0.7)

The "640" has outstanding signal/noise ratio and extremely good image rejection. Provision for external connection of "S" meter.

A SPECIMEN MODEL may be seen at Webb's and we are now taking orders for rotational supply in August/September. Write for details of our Registration Scheme.

## MODEL "504"

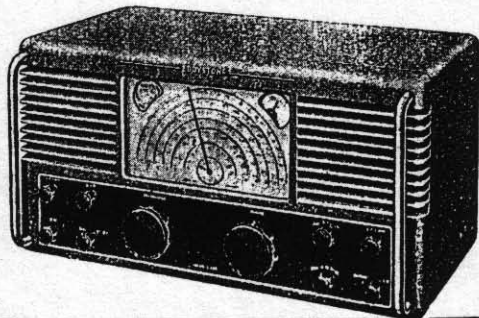
### Continuous Coverage 30,000 to 600 Kc/s.

The Communication Receiver for general purpose use, continuous coverage 30,000 to 600 Kc/s. One dial tuning with precision gearing, effective scale length is 36 inches per band.

PRICE . . . . £48 . 10 . 0 (PLUS PURCHASE TAX £10 . 8 . 7).

A limited number of "504" receivers are available ex stock at Webb's.

- ★ Nine valves (plus rectifier).
- ★ Two R.F. and two I.F. stages.
- ★ Crystal Filter.
- ★ Noise Limiter.
- ★ B.F.O.
- ★ Five switched bands.
- ★ Continuous coverage 30,000 to 600 Kc/s.
- ★ Sensitivity better than 2 microvolts.
- ★ "S" meter.



Once sealed into the can, and subjected to the inevitable heating and cooling process as the old valve sets were switched on and off in use, the moisture would tend to gravitate to the inside of the actual windings. The same goes for the waxed mica condensers often used.

Alan has conducted tests on both coil windings and mica type condensers immediately after removal from a low Q transformer unit. There was always an improvement in both the Q of the winding and the leakage of the condenser after a 'drying' session with the XYL's hair dryer. Far and away more subject to this ingress of moisture problem are the plug-in coil units of the old WW II HRO sets. The MX version will always show some improvement if the coil units are given the 'heat-gun' treatment. Thus it is not purely a problem with Eddystone products but more one of the era when they were made. Few factories in those days had 24 heating in the workplace, many had no heating at all!

Alan has one final suggestion. To prove for yourself his point. Go through your junk box, select a handful of waxed mica or ceramic condensers. Test them for both capacity and leakage immediately. Then having listed your results treat them all to a session with the XYL's 'heat gun', say a 15 minute session at low heat. Now test them all again, immediately. Shock Surprise! when you compare the results. He says that if you cannot peak an IF transformer then the prognosis is MOISTURE.

## 6 SL in the Thirties

Back in those early pioneering days the Balmoral Works had a quaint looking 'garden hut' type appendage stuck up on the roof. Access was by means of a ladder and through a hole in the roof.

This was no less than the Research and Development Laboratory of Strattons Ltd. Despite the simple location it was ideal for the current testing being undertaken on the then VHF band of 60 mc/s. Wilf Williams commented that the howling winds became audible QRM when tests were being done on the development of the 60 Mc/s tuned line, audio modulated equipment. He ought to know as he worked in the 'hut' himself. 6SL was the experimental Callsign in use then, no G prefix.

In 1937, during these tests, a telegram was received at the Factory saying that the '6 SL' signals had been received at good strength in New York. The aerial in use was a roof mounted tuned wire doublet, fed by open wire feeder from the 'hut'. On the reception side it has often been stated that it was quite common practice for the Police car transmissions from the New York area to be heard just above 30 Mc/s, even on one occasion an experimental FM Broadcast station on about 40 Mc/s.

Strattons Ltd had already the previous year been instrumental in providing a quantity of quench type TRF transceivers for use by the Oxford University Everest Expedition. These units had been successful in maintaining direct two-way communication between the various Base Camps of the Expedition. Good two-way communications could be guaranteed over a line of sight path of up to 8 miles, using a simple wire doublet, suspended just a few feet above the snow.



The approaching war clouds now brought a bonus to Strattons in the guise of an order from the Metropolitan Police for two-way VHF Radios to provide communications between all the 95 Police Stations and Scotland Yard, this in the event that bombing put the land-lines out of order.

As always the usual working hours went ignored when an emergency came up. A 24 hours seven days a week programme now ensued and the eventual equipment was based on the original tuned line development equipment as developed in the 'hut'. In this event the whole order was built, tested, and delivered by July 1939. Of course the final result was that many other Police forces throughout the UK ordered the same equipment, this was the well known S.214/215 fixed station and later the 440/450 mobile models. These models were still being produced after the War was over, many had gone to the Military but now they still went to Police Forces and also to Harbour and Pilot Authorities around the United Kingdom coastline. No known 214 or 215s exist but there are still many 440 or 450 units around. Some in the hands of EUGers, some in the hands of others.

The suffix numbers for the 440/450 series are known to have gone up to 'F', this being the version which went to the Hull and Lowestoft Port Authorities.

## We Go To War

By 1939 most people realised that war was close at hand, but Jack Shrimpton of Strattons must have been one of the first to know just how close it really was when, at 08.00 one morning he picked up the following Ham message, "DJB calling W2 XE . . . Hullo W2 XE we have some news for you. This morning at 05.15 under the leadership of our glorious Fuehrer, we crossed the border into Poland".

When war was declared just two days later, many of Strattons most experienced men went into the Forces, in particular the RAF. Already providing a considerable amount of Services equipment, the Company had to meet vastly increased demands with fewer trained employees. Twelve hour shifts were organised and women were recruited and trained, many of them becoming so expert that Ken Wilkins remembers them carrying out the complete final testing and alignment of VHF transmitters and receivers.

The Above is an excerpt from EDDYSTONE, The first 50 Years, 1923-73.

## A Work Of Art.

This is referring to the recently remanufactured manual for the ECR Communications Receiver of the Thirties received from Tor Martinsen in Norway.

Tor has no compunction in admitting that he is a collector Eddystone Radio Co ephemera of all kinds. He does have a collection of receivers (but does his XYL know about them all ? ), but he also has a vast collection of paperwork relating to every aspect of Strattons/Eddystone.

During the last couple of years he has been renovating an ECR and at the same time has been re-doing the original manual which was in a pretty poor state. Just before Xmas Graeme and I received from Tor copies of a beautifully re-done ECR manual with clearly detailed photographs of the ECR from all angles, both inside and out. Not only has Tor redone the photos but he has produced transparent 'overlays' for each photo showing the locations of all components. He has retained the rather archaic and idiosyncratic text which was done on a 1930s manual typewriter by some long forgotten typist at Strattons, this lends an air of authenticity to what is a genuine work of art. It is a manual which I shall keep and show to other Non-Eugers as an example of the dedication shown by Eugers towards their hobby. Thanks Tor, very much appreciated Pal, and thanks also for the Xmas prezzie, Ted.

## Cough ! Cough !

The trusty 1002 started to go hoarse and there was a definite smell of iodine during a listening session just a few weeks back. Turned off rapidly, and allowed to cool down a bit, the set was opened and the smell was quickly traced to a shorted out diode rectifier in the built-in psu assembly. These do not simply give up the ghost for no reason at all ! A check on the dual 7500 $\mu$ F condenser showed that one side was almost down to two figures in leakage and the other showed a full short. This was the culprit which had so much overburdened the rectifier diodes to the point where they expired with a pong of iodine.

Nothing approaching the original 2 x 7500 muffs was available and so a similarly sized 2 x 3600 muffs was pressed into service. The diodes were replaced with a modern bridge type rectifier unit and the Rx was powered up again. No problems at all manifested themselves and the reduced capacity made no noticeable difference. The 1002 has performed well since this surgery and appears to be happy with the low value of smoothing capacity, it will be left this way.

## TLC for an 870A

This mini-Eddystone was acquired by Tom for his collection. A working collection this with all sets wired up and available 'On Demand' so to speak.

An immediate observation was that the tuning knob had some tension when it was turned to either end of the scale, this resulting in the knob turning back on its travels by some 20-30 degrees. As this problem has been encountered before with other models it was easily cured. The drive cord had been replaced at some point and when the pointer was replaced it was not done exactly as before. The cord now came off at a big angle whenever the end stops were reached.

Not so easy was a deafness on all ranges, even with the 132 feet long shack aerial in use it was way down in output. A search for possible mods showed up nothing in the way of non-original parts or soldering. Next step was a voltage check on all points as shown in the manual table. No Avo was to hand so a DVM was utilised with a 220K resistor across the tags on the 250



volt range. The anode resistor for V1 was way up out of tolerance here as the measured HT was a mere 26 volts - a miracle that the set worked at all !!

Before going out and buying the required resistor it was thought prudent to check the values of ALL other resistors. Good job I did as no less than 9 were outside the stated tolerances. Maplins supplied the new ones and the job was completed that same saturday evening, with results that must be the equal of those pertaining to a new 870A.

The condensers were all checked but none needed swapping and so they were left alone. Tom.

## QRT Portishead QRT

Goodbye Portishead Radio ! in effect this and, other, world famous British Ship to Shore Radio Stations will be no more after 1999.

BT have announced that with effect from the start of 1999 all MF and HF Ship/Shore R/T and TLX services will be closed down, famous names such as Portishead Radio will be heard no more on the bands.

Citing the more than 80% drop in usage of these services over recent years BT have announced the closure. The BT announcement stated that as more and more use is made of SatCom for Oceanic communications and CellPhones for Coastal services, the viability of their Ship/Shore Services has been made uneconomical.

Services such as Navtex and Meteo will not be affected as these are operated by the Dep't of the environment.

Following the shock announcement of the closure of all but six of the UK Marine NDBs, this further reduction in Marine signals on MF and HF will make a big impact on our listening. Many EUGers write in with comments re their listening to Ship to Shore transmissions, or to their Beacon collections. It is to be hoped that some of these last transmissions from famous stations will be taped for posterity.

On another point re the above. What will happen to the now unused frequency bands ? It seems likely that other countries will follow the UK in downgrading their Marine Communications Facilities, who or what will take over the empty MF and HF channels now vacated by these facilities ?

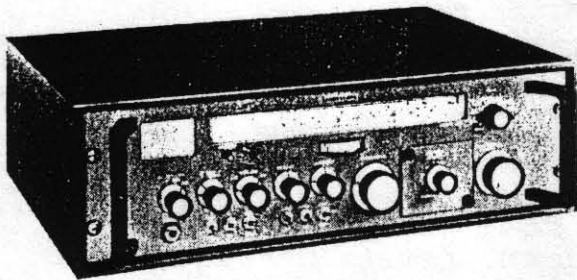
## The 'new' Portable

I think I have now got to the point where I will accept anything dredged up from the Company past. This Portable though looks to be an excessive marketing error on the part of Strattons/Eddystone. Since I have to admit to knowing NOTHING about this one I must leave it to Bill to describe it.

# NEW from Eddystone



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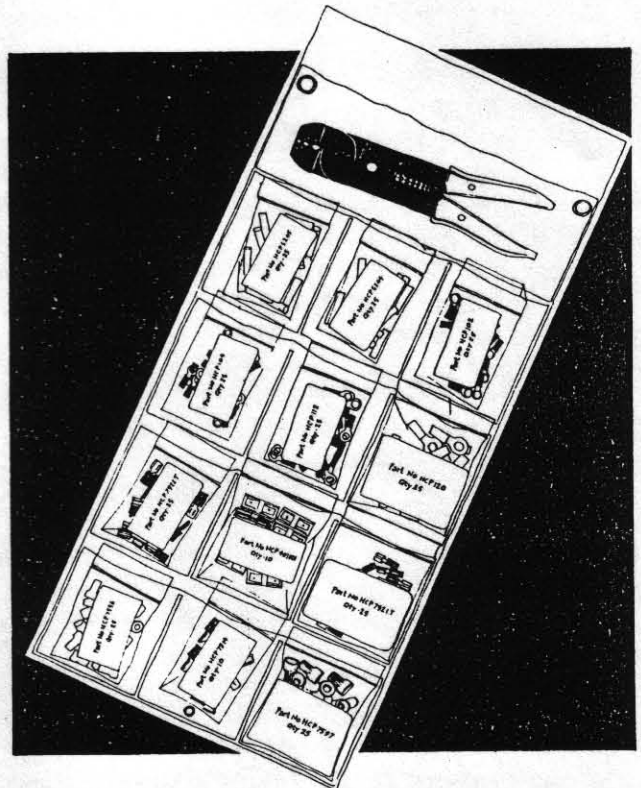
LTD/ED87

WW-051 FOR FURTHER DETAILS

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WW-052 FOR FURTHER DETAILS



## THE HUDSON STRAITS EXPEDITION

- 1931 -

This is just one more of those University financed expeditions of exploration which was catered to by Strattons Ltd with their current, state of the art, radio equipment.

What is the problem ??? Well that info above is just about all we know about this particular expedition. It would be nice to learn more about the expedition itself, its aims, personnel, equipment, and the success or otherwise.

So how about it ? Can any EUGer out there help us out. Maybe you already do know something, maybe you have the facilities to find out more for EUG members ? From my mail I do know that many EUGers are avid readers of just such items which have some historical connection with the Strattons/Eddystone Company. Info please to Graeme or to myself direct, and thanks in advance.  
Ted.

### The Yachtsman

A letter recently asking for more info on this model, main question being was it solid-state or was it hollow-state ?

Both the model 720 and the later EY11 were called the YACHTSMAN in Company literature. I seem to recall having mentioned this previously in a newsletter but maybe this member has joined since then.

Neither of these models appears to be 'in captivity', that is, in the hands of any EUGers. They were both produced in small batches for sale and one would have expected some to have survived. I do not have the schematic for either model and would dearly love to get hold of these for the EUG archives. So come on, if you have a copy, or can point us in the direction of a copy, then please tell us. Ted.

### That Elusive Page Eleven.

Well we know it did get to Graeme, but then what ??? Maybe the printers devil did not like it ! Anyway it has been re-done from floppy and sent on to Graeme for inclusion with this issue. Thanks to all those of you who brought this boo-boo to our attention. Cannot recall this ever happening before in the history of the Newsletter. Ted.

### Moving !

I shall be on the move again soon, cannot be helped, it is all part of the process. This ought not to create difficulties which are beyond the capabilities of the Admin Staff. Meaning Graeme ! I hope that things will go smoothly but am going to chat with both Graeme and Dave Simmons in the near future to see what can be sorted in advance. You will all be kept informed. Ted.

## Featured Model - 680X

Seems strange that this has never been featured before. fact is it has never been asked for until about November last.

This was an updated version of the well known 680/2, with the by now current slide-rule and full width dial. Coverage was the same for both models, i.e. 480 Kc/s to 30 Mc/s. with but minimal differences to the band edges.

The circuit was practically the same, same 450 Kc/s IF and two RF, two IF amplifiers. Also two AF amplifier stages but whereas the old 680 has a dual triode the 'X' version utilised two separate pentodes type 6BR7 (8D5).

Both models had a crystal filter and when two good sets are compared side by side it is doubtful that any noticeable difference in sensitivity or selectivity will be found.

My own preference will always be for the 680X since I have never been at home with the old half-moon scales which give different length scales for each band.

Possibly the one backward step to my way of thinking is the fact that the phones socket has had to be fitted on the side of the cast front panel. It is all down to the ergonomics of the panel layout but this does hinder the use of the set as a 'built-in' part of the station.

Many hundreds of 680X were manufactured and sold to Government and Civilian users, both at home and abroad. The 680/2A version had slightly different plugs at the rear and a different selectivity knob, this was made for an order from the Australian P&T dep't; amongst others.

Mechanically this model was as robust as any in the long Strattons/Eddystone model line-up, the one recurring problem, mainly caused by clumsy operators, was that the selectivity ganging became 'loose'. I have myself seen over keen, over-enthusiastic operators trying to force this lever knob past its stops in an attempt to get more selectivity. The system is one where mechanical levers ganged on a single shaft, which is operated by the front panel lever-knob, move the IF transformer coils closer together or further apart to obtain the requisite degree of selectivity. This works admirably if one treats the control with the necessary respect.

An archive picture has been included on page 17 and a block schematic on page 18.

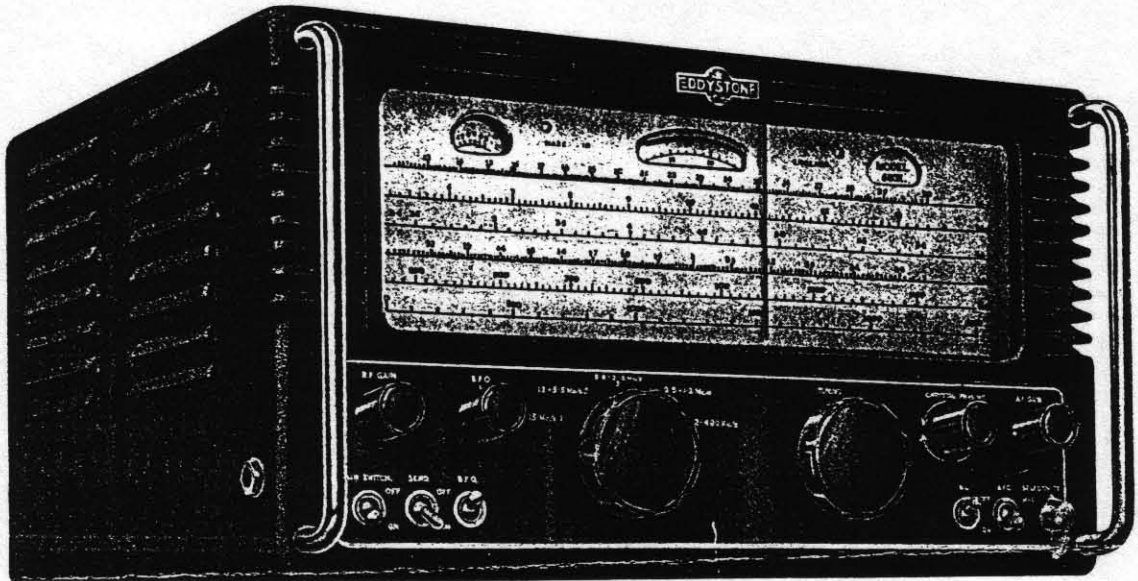
*LATE ADVERT SQUEEZED IN AT THE LAST MINUTE!*

FOR SALE: Eddystone Model 770R VHF Receiver, 19-165mc/s, clean and working, with handbook. £75 or near offer. Buyer to inspect and collect (Basingstoke). Call Johnny, G3MJK, 01256-389439. THE PROCEEDS of this sale will go to help RAIB, the Radio Amateur Invalid and Bedfast charity. Tell Johnny where you saw this advert.



## H.F. COMMUNICATIONS RECEIVER

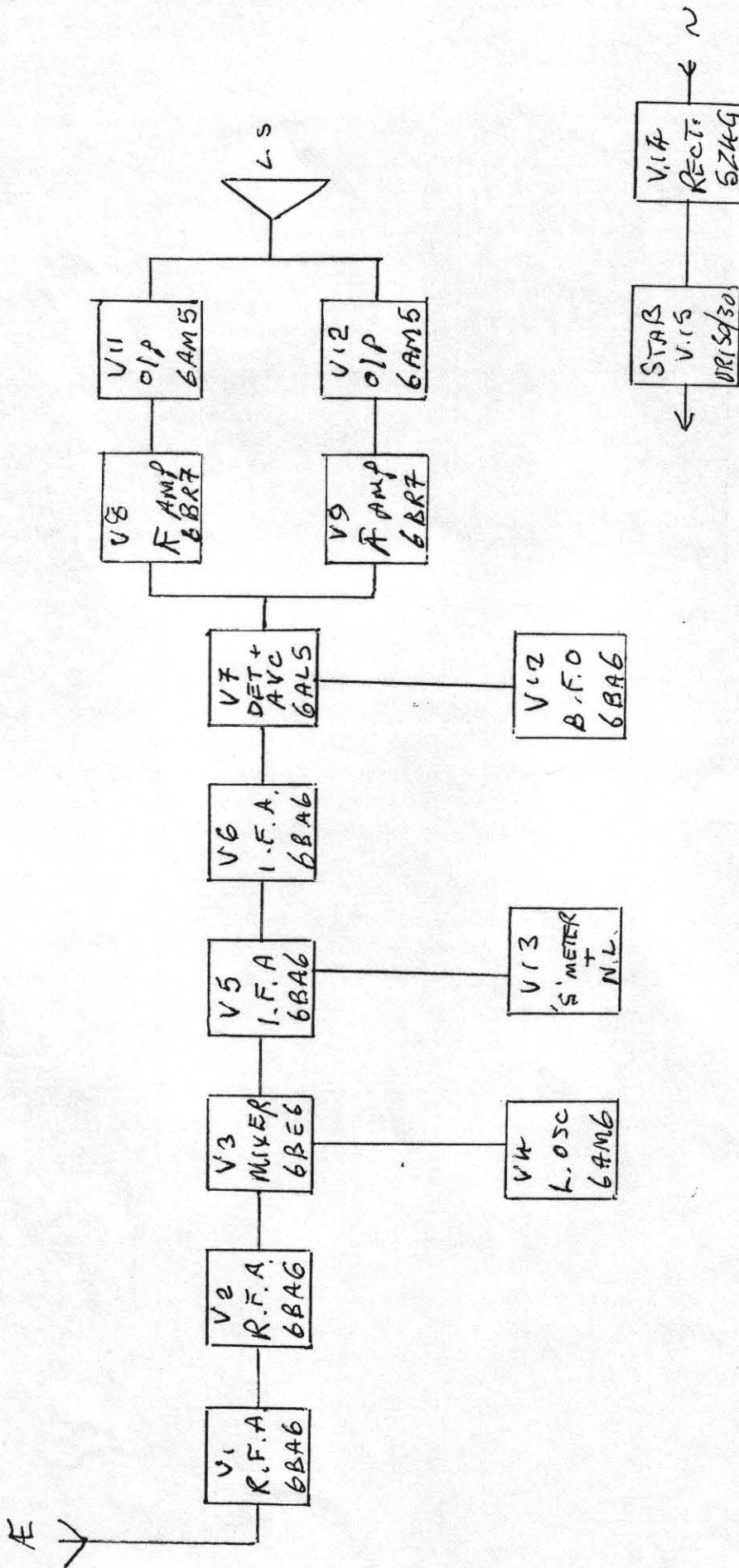
### MODEL 680X



The Eddystone "680X" communications receiver has continuous coverage from 480 kc/s. to 30 Mc/s. It is of the superheterodyne type, uses a total of fifteen valves and incorporates the most modern techniques. The receiver possesses an outstanding performance and can be used with confidence in any climate. The construction and workmanship are of a high order.

The excellence of the receiver electrically is matched by the ease of control, for which reason this model has found much favour with Professional operators. The wide scale, with its clear and accurate calibrations, the smooth positive drive, and the neat and convenient grouping of the various controls all materially assist in selecting a given signal and bringing it to maximum intelligibility.

The "680X" operates from standard A.C. mains and is available in two versions, one for table use, the other ("680X/RM") for mounting in a standard international rack.



Block Schematic model 680X



## PROBLEMS FROM ACQUIRING AN EDDYSTONE 640.

Peter Lankshear

Recently, I paid a very overdue visit to a long time friend and fellow vintage radio enthusiast. Bill has an enviable collection of pre 1935 equipment and several comfortable rooms in the basement of his spacious home to house it. We had spent some time admiring and discussing his treasures when I spotted a very familiar but somewhat out of place metal cabinet in amongst the gleaming old wooden cabinets. Yes, it was an Eddystone, a pristine model 640.

Naturally I commented favourably and Bill asked if I would like a 640. I replied that I would not want to take his, but he replied that he had a spare – he had discovered it in an auction sale and had rescued it for a very modest sum. It did not go but I was welcome to it. Naturally, as I did not own a 640, I said “yes please” and happily transferred to the boot of my car. For good measure I was also given a copy of the manual. One does not look a gift horse in the mouth, or a gift Eddystone under the lid – at least until one gets it home, so I had to curb my impatience and wait to inspect it further!

When I did look at the internals I realised that things had been done to it. Where there should have been a second EF39 I.F. valve was now a 6K8 converter valve, and more seriously, instead of the third IF transformer can, there was a pair of very out of place smaller aluminium cans plus an extra valve, a 6SK7. Clearly, the 640 had been “got at” and I suspected I knew why and in what manner. It seemed quite likely a ham had adapted it, to better suit his operating needs.

There are various RF/IF superheterodyne configurations used in conventional communications receivers and they have a direct bearing on two vital aspects of shortwave receiver performance, selectivity and image rejection. Selectivity is important in separating crowded signals and inadequate image rejection results in signals being tuned in two places on the dial, separated by twice the I.F. frequency. Images become a problem when there is insufficient R.F. selectivity prior to the mixer stage. In domestic and basic communications receivers these appear above 10 - 15MHz. When there are only a few signals, images may not be a problem but in crowded conditions they can interfere with legitimate signals.

All receiver designs are a compromise, and even the well executed examples that Eddystone produced are no exception. An important fundamental is the choice of I.F. frequency. A low frequency I.F. provides high gain and good selectivity, whilst using a high IF frequency, typically around 1600 kHz, trades these for good image rejection. Basic communications receivers (and superior domestic receivers) have the classic lineup of R.F. stage, mixer and single stage IF amplifier, generally around 450kHz. Some Eddystone examples are the 659, 670, 740 and 840. With only two IF transformers, these receivers have fair selectivity but lack of image rejection above about 15MHz can be a problem.

An excellent but expensive method of improving image rejection is to provide two R.F. stages. This is the solution pioneered by National in the classic HRO and it is found in more advanced Eddystones such as the 504, 730, 680 and 940. Consequently images are not a problem with these fine receivers. Importantly, receivers of this class have two IF stages to provide good selectivity, and the ability to separate adjacent signals. This is a major function of the IF amplifier and much depends on its operating frequency and number of stages. Single stage I.F. amplifier receivers struggle in crowded conditions. Crystal filters can assist considerably in C.W. operation but are of limited assistance in speech and music. Amateur bands are notorious for their overcrowding and their need for extremely sharp selectivity. To provide anything like adequate performance, receivers using a 1600kHz IF invariably have two stages of amplification, and the Eddystone 640 is a good example.

A very low frequency IF is more selective than 450kHz, and super selective receivers use an IF in the region of 85 kHz. However, such an IF amplifier by itself would present impossible image problems. The trick here is to use double conversion with two IF amplifiers, the first operating at 1600 kHz, to provide good image rejection and the second at 85 kHz to provide knife edge selectivity. This gives the best of both worlds and is the system adopted for the top performance amateur receiver types 750 and 888.

I suspect that a previous owner of my 640, with its 1600 kHz IF amplifier, wanted better selectivity and so modified it to double conversion, using ex US military 85kHz IF transformers for the second IF amplifier. He replaced the second 1600 kHz IF stage with a mixer, and added a 85 kHz IF stage. No doubt this improved the gain and selectivity, but unfortunately for me, in the process, he discarded the third IF transformer and the 1600 kHz BFO assembly.

Now, although his workmanship is reasonable, I like my Eddystone receivers to be as original as possible and I plan to restore the 640. Consequently I have asked Ted to publish in the Wanted Column, my plea for a replacement IF transformer and BFO assembly. Can anyone help?

# RADIO RAMBLINGS

*Gettings from my Notebook*



By

Graeme Wormald

G3GGL

Several of you have queried the dating code printed at the back of the Quick Reference Guide presented with Newsletter No 50. These are the codes 'PP' and 'DD' which have come to light. 'PP' doesn't exist in the list and 'DD' stands for 'April 1952', very confusing on a set which didn't emerge until 1960 (or later!). The answer is quite simple once you know. 'PP' stands for 'Pre-Production' and indicates a prototype. 'DD' stands for 'Development Model', effectively the same thing. They will usually be followed by a low serial number (eg 0002) and have often been developed to the point of near destruction! They were never sold but were usually raffled off to members of the staff, after which they may have been sold on, disposed of in a Silent Key sale or otherwise dispersed. So if you find such a set beware; it may be below normal standard. But an interesting collectors' piece, nevertheless.

## MEDIUM WAVE ATU

From time to time members enquire about a suitable aerial matching unit (commonly miscalled an ATU) for medium waves. In fact, most MW fans use directional frame aerials, which are tuned and loop-coupled to the receiver. Or, if they are very serious DXers, a Beverage aerial, which may be a mile or so long. But sometimes it is desired to match a random length. Browsing through the January 1999 edition of 'Radio Active' magazine I came upon a review of the 'Howes' kit type CTU8 Rx tuning unit which covers 0.5-30mc/s. This is most unusual, as all the rest cover only 1.6-30mc/s. The reviewer (Geoff Brown, GJ4ICO) gives the unit a first-class report, especially on Medium Waves. Price of the kit, with all hardware and case, is £29.90, or £49.90 factory-built. (UK p&p extra £4 in each case.) Order from C.M.Howes Communications, Eydon, Daventry, Northants NN11 3PT, tel: 01327 260178.

## N.V.C.F.

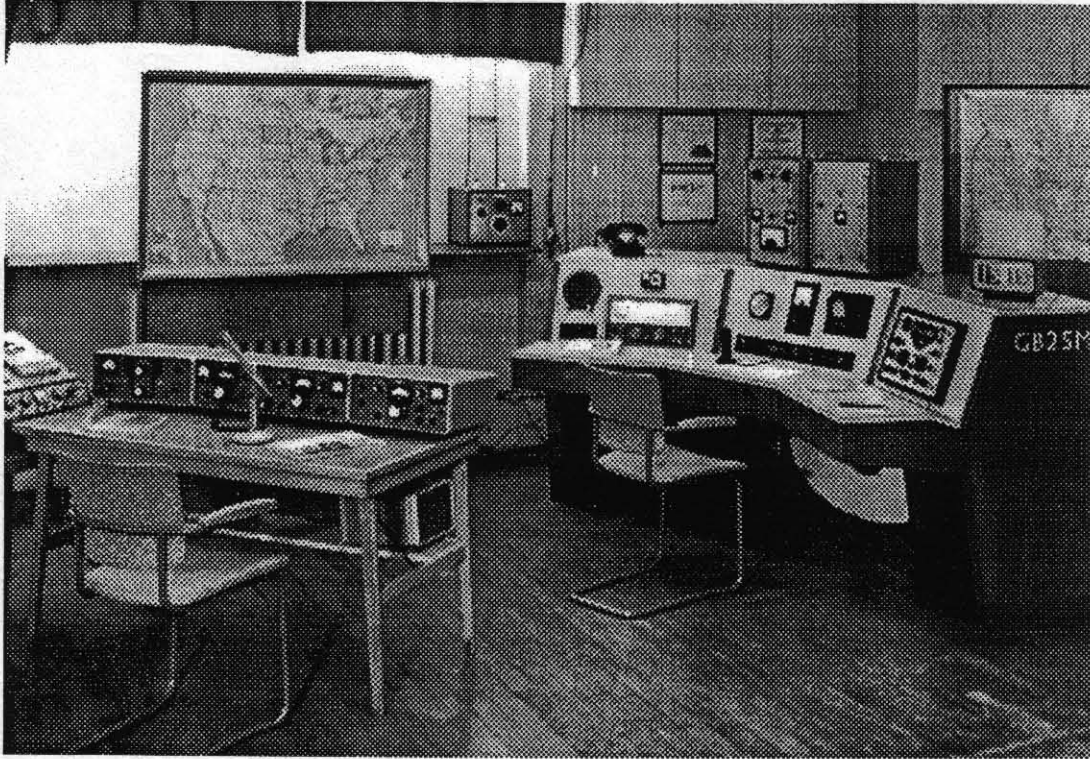
The National Vintage Communications Fair will take place at the N.E.C., Birmingham, on 9th May this year. E.U.G. intends to be present, although the scale of presence this year will be rather reduced, due to circumstances beyond our control (which will be much more obvious by then).

## ARE THEY REALLY DEAF?

From time to time this old chestnut rears its head. Last month a non-member (but a Class-A licensee) brought me an EA12 which he'd had since new in 1967. It had failed in the CW/SSB mode and changing the product detector valve was the limit of his servicing skills. (It didn't help.) In common with most Eddystones it's impossible to get the AVO on the BFO valve pins to check voltages. (Without a special adaptor, that is.) The answer is to remove the valve and check the resistance from the anode and screen sockets to the HT line. Problems soon reveal themselves. In this case the anode load (R70), which should be 68k, was 950k! (cont . . . )



## EDDYSTONE AT SOUTH KEN IN THE SIXTIES



WE ARE GRATEFUL to EUGer Gary McSweeney (G4CFQ) for the above thirty-year-old postcard of GB2SM, the first GB2 call ever issued and one of the very few permanent 'Special Event' callsigns. It was issued to the Science Museum's Amateur Radio Station in South Kensington, London, in 1955, when Stratton's donated a 680X. In this 1960s picture the new EA12 is clearly visible in pride of place.

*(continued from previous page . . . )* Soon cured. But then I thought the set was rather deaf in the audio department. The AF gain was nearer 3 o'clock than the usual 9 o'clock for good speaker strength. I asked the owner what he thought and he said it was usual. I didn't think so . . . Investigation showed that the first AF stage had NO VOLTS on the anode. The load resistor (270k) was open circuit! And it was still working. Just a bit deaf. Makes you think, doesn't it?

3 x EF50 YET AGAIN . . .

This month's EF50 model is by H.E.Styles. Published in W.W. for December 1955, it's probably the last of its line. It has also by far the most curious circuit and the most detailed discussion. It should prove a treat for the discerning armchair engineer! It will almost certainly convert well to short wave operation by reducing the coil sizes.

WELL, JUST FANCY THAT!

Which page do *you* turn to first in 'RadCom' (after 'Eddystone' in the Members' Ads, that is)? If you're like me it's 'Technical Topics', penned by the doyen of British technical journalism, Pat Hawker, G3VA. Last month Pat (who is one of our regular readers) dropped me a line to say that he was interested to read our Christmas Special.

*(continued half-way down next page . . . )*

## SPECIAL EVENT ON TYNESIDE

On Christmas Eve 1922 BBC Station 5NO opened at Newcastle-upon-Tyne



TO CELEBRATE the 75th Anniversary of this Tyneside occasion a Special Event Station with the call GB5NO was established. We are grateful to EUGer George Lee, M1BTG, for this photograph of the station which included Eddystone Models 770R, 680X, and 640.

*(continued . . . )* This, you will recall, was "Eddystone Servicing, the Post-War Years," and (to quote Pat) they all went through his typewriter! Pat had joined Newnes' Technical Books Department (whose head was Edward Molloy) in February, 1951 and his first job was to take over the editing and compilation of "Radio Engineers' Servicing Manual". This was published by Newnes' in many forms from 1952 to 1965, when the title was sold to Pergamon Press. Pat reckons that Newnes' printed almost half a million volumes! (No wonder you see them at every vintage rally . . . ). He later joined the IBA as Principal Engineering Information Officer and many of you will recall his weekly Special Transmissions for the Trade (before breakfast television was invented). The Overture from The Mikado still reminds me!

MY GROVELLING APOLOGIES . . .

. . . for the loss of page 11 from the Xmas Issue. It disappeared without trace but fortunately Ted still had it on floppy; it's reproduced at the end of this Issue so collectors may remove and file it in its proper place.

GRAEME



# Specialised Receivers

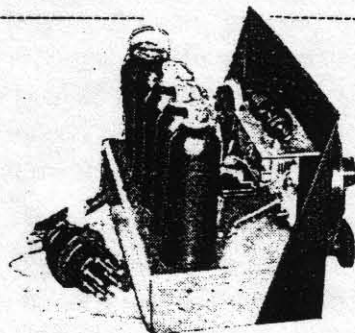
**OUT-OF-THE-WAY** requirements, particularly on the shorter wavelengths, are now well catered for by various makers of special-purpose receivers. Among those described in this section are to be found "overseas" sets, covering two or more short wavebands in addition to the medium broadcast band; these sets have also a certain appeal to home listeners who take short-wave reception seriously. There are also more specialised sets, including many which cover only the short and/or ultra-short bands; most of these differ from standard broadcast receivers in that they are generally used with an external loud speaker and sometimes with an external power supply unit.

**EDDYSTONE.**—Although it is designed primarily for overseas requirements and is built to withstand tropical conditions, the Eddystone All-World 8 is by no means without interest to the short-wave enthusiast at home. A superheterodyne circuit with a total of eight valves is employed; the set is for battery operation, and wave changing is effected by interchanging inductance units

only, tropical proofed components being used throughout in its construction. Wave coverage is 13.3-28, 27-60, and 200-560 metres. A pentode first detector and separate triode oscillator are preceded by a signal-frequency stage, and the output valve is a pentode. The bakelite cabinet in which this receiver is housed has been found particularly suitable for overseas conditions.

**EVRIZONE.**—The Evrizon "Single-Signal" superheterodyne is a specialised set designed for the amateur bands—10, 20, 30, 40, 80 and 160 metres. It is available either for AC, DC or universal mains supply, and the extreme selectivity which is required for

## NON-STANDARD SETS FOR THE SHORT WAVEBANDS

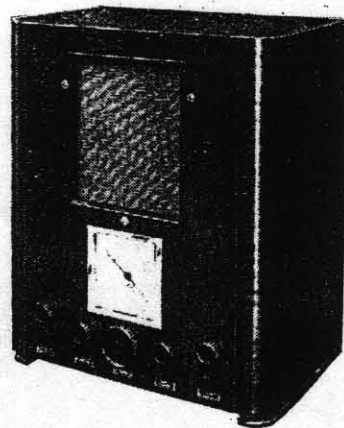


Epoch ultra-short-wave superheterodyne.

tor feeds into an output pentode. All-metal valves are used throughout.

The receiver unit, which is exceptionally compact, does not include power equipment, but a companion unit is available for supplying anode and heater current.

**G.E.C.**—Except for the fact that it has a special tuning dial, the G.E.C. model BC3782 is externally a conventional superheterodyne. However, it covers three short wavebands (16-36, 36-98, 80-220 metres) in addition to the medium broadcast band. It is an AC model giving the exceptionally large output of 6 watts from push-pull valves; there are six other valves in all. Variable selectivity is included.

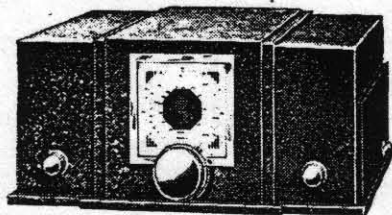


G.E.C. four-band "overseas" model with 6-W output.

The receiver complete costs 25 gns. and is also available in radio-gramophone form at 44 gns.

**GRAHAM-FARISH.**—The "Quest Short Wave Two" is a battery set, supplied in the form of a kit of parts, which covers wavebands of 12-25 and 21-50 metres by means of plug-in coils; an extra coil for the 38-102 metre band is available.

The detector is a special short-wave screened-grid valve with a ceramic base and a top grid cap; an interesting feature is the



Eddystone "All-World 8" receiver.

which normally cover from roughly 13-34, 27-60 and 240-573 metres, although additional units are available for other short wavebands as well as for long broadcasting waves from 800-2,000 metres.

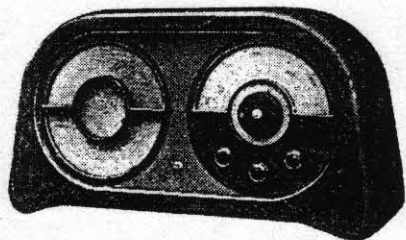
A separate loud speaker is employed, and the set, without accessories but with valves and the three inductance units mentioned above, costs £27 10s.

The "Homelander" is a rather less ambitious receiver with a TRF circuit covering waves from 13-85 and 250-550 metres in two steps. It embodies a built-in speaker and is battery operated; the price is £12 10s.

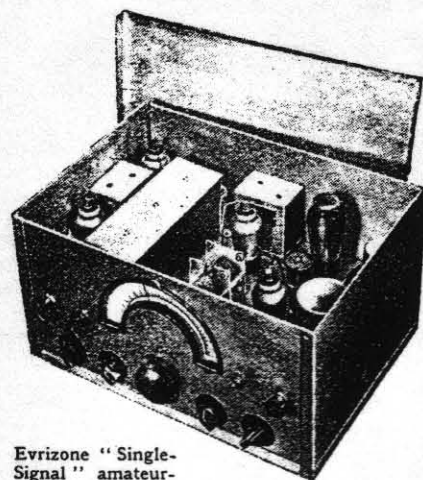
The Eddystone All-World 4 is mounted in a die-cast aluminium alloy cabinet and is exceptionally flexible in the matter of wave range, as interchangeable coils are used. The coils normally supplied cover from 13.6-95 and 250-500 metres, but other windings for short, intermediate and long bands are available. This is also a battery set.

Several short-wave sets, transmitters, converters, etc., for the home constructor are described in the Eddystone Short Wave Manual.

**EKCO.**—The Ekco SW86 superheterodyne is an AC receiver manufactured for export



Ekco superheterodyne for short and medium wavelengths.



Evrizon "Single-Signal" amateur-band receiver.

amateur working under certain conditions is obtained partly by the use of reaction, which takes place both in the tuned RF stage and in the IF amplifier. Band selection is carried out by interchanging triple-coil units, and the form of tuning adopted—ganged, but with external trimmers—is extremely practical for a receiver of this kind. The AC or DC model costs £20, an extra charge of £2 being made for the AC/DC version. A special tropical model costs 50s. extra. Prices do not include power supply or AF amplifier, but suitable units can be supplied.

**EPOCH.**—One of the very few commercial receivers designed exclusively for working on the ultra-short waves is the Epoch superheterodyne, made by the Radio Development Co. By using appropriate coils wave ranges between 1.5 and 10 metres may be received.

The circuit arrangement includes an RF pentode as frequency changer and two variable- $\mu$  RF pentodes with resistance coupling as IF amplifiers; the second detec-

## 3 x EF50 RECEIVER

This is the last in our present series of 3 x EF50 projects (until somebody finds more for us!). It is probably the most interesting article in the collection and is sufficiently different from the run-of-the-mill to warrant experiment.

Note that the power supply is easily replicated with a new 6-volt 1-amp transformer from any of the suppliers, plus a 1N4007 in lieu of the metal rectifier. One warning, however; the mains goes straight to chassis and it is essential that this is the NEUTRAL side. The problem of the 100:1 output transformer is easily overcome by using a (modern) 8 ohm speaker and a normal 40:1 output tranny (or another new 6-volt tranny).

The original model suffered from a mysterious instability from time to time. This was dealt with in the following issue of the *Wireless World* and has been appended at the end of this feature. Have a good read!

### Sensitive Three-Valve T.R.F. Receiver

*Incorporating Amplified A.G.C. and Negative Feedback Volume Control*

By H. E. STYLES. B.Sc.

**I**N an article published in the *Wireless World* of November, 1951, S. W. Amos and G. G. Johnstone described a three-valve t.r.f. receiver in which amplified automatic gain control was achieved by applying to the r.f. pentode suppressor grid the negative potential changes produced at the anode of an anode-bend detector by rectification of the input signals.

A modified version of this receiver was subsequently described in an article by J. L. Osbourne published in the April, 1954, issue of *Wireless World*. Special features of this modified circuit included the employment of an aperiodic aerial coupling and a diode detector which provided means of incorporating automatically variable negative feedback in the a.f. amplifier.

The writer decided that a circuit incorporating the special features of each of these two receivers might be worthy of investigation and, as an outcome, it has been found possible to introduce modifications leading to greatly enhanced sensitivity and a number of other novel features which it is believed may be of general interest.

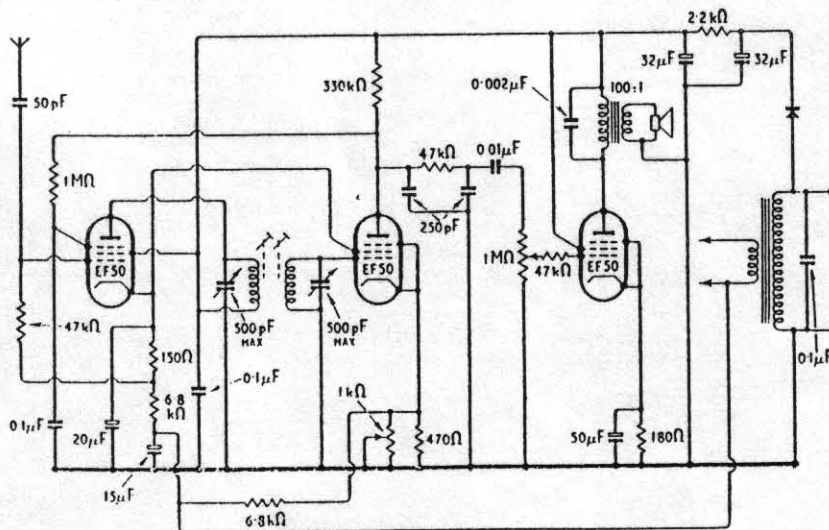
**Preliminary Considerations:**—It was decided that the aperiodic aerial coupling used by Osbourne was undoubtedly worth retaining, not only for the reasons given in his article, but also because it should be virtually independent of the particular characteristics of the aerial employed. On the other hand the anode-bend detector employed by Amos and Johnstone was regarded as

preferable to a diode on the grounds that the former would obviate unwanted damping of the detector circuit.

As a preliminary, therefore, the circuit shown in Fig. 1 was assembled using Litz-wound coils with dust-iron cores for the intervalve bandpass coupling, the required degree of coupling being obtained by spacing them about 1½ in apart. The 0.1-μF capacitor across the mains input was found necessary in order to eliminate an otherwise rather pronounced modulation hum.

Very satisfactory results were obtained with this circuit which, in particular, was found to be entirely free from any tendency towards instability over the whole tuning range. This fact prompted an attempt to determine whether reaction could usefully be em-

Fig. 1. Initial circuit which formed the basis for the experiments described in the text.





played as a means of increasing the sensitivity and selectivity obtainable.

With a view to avoiding distortion of the response curve of the bandpass coupling, and possible mistuning effects which might arise from application of reaction to one circuit only of the inter-valve coupling, it was decided to endeavour to obtain reaction by feedback of r.f. from the detector output to the input of the r.f. amplifier. This was successfully achieved by means of the circuit shown in Fig. 2, a smooth control of regeneration being obtainable by variation of the potentiometer R. An alternative circuit giving equally satisfactory reaction control is shown in Fig. 3 where it should be noted that reaction is increased by reducing the value of the variable capacitor C.

For the foregoing circuits to function properly, it is necessary for the r.f. at the anode of the detector valve to be in phase with the input signal to the r.f. amplifier. Assuming both tuning coils to be wound in the same sense, this requirement can be satisfied by connecting the anode of the r.f. amplifier valve and the grid of the detector valve to corresponding ends of their respective coils.

Reaction so applied caused no significant alteration to the tuning adjustment and produced a truly remarkable increase in sensitivity. With critically adjusted reaction a large number of transmissions were receivable at night, at good volume, in the London area, using no more than six inches of wire as an aerial. This increase in sensitivity, valuable though it was, by no means proved to be the only outcome of incorporating the reaction control. Other interesting and useful effects resulted from the combination of reaction and a high degree of automatic gain control and these are described in the following paragraphs.

**Effects Produced by Reaction:**—It was observed that increase of reaction to the point of instability immediately produced audible "motor-boating," the frequency of which increased as reaction was further increased. This effect can no doubt be explained by the fact that as soon as r.f. oscillation results from regeneration, the signal thereby pro-

Fig. 2. Reaction was added by controlled feedback from the detector to the grid of the r.f. stage.

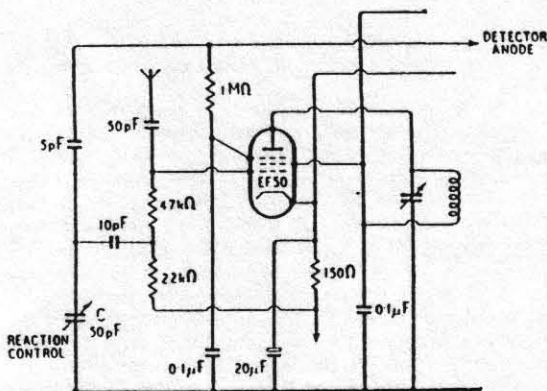
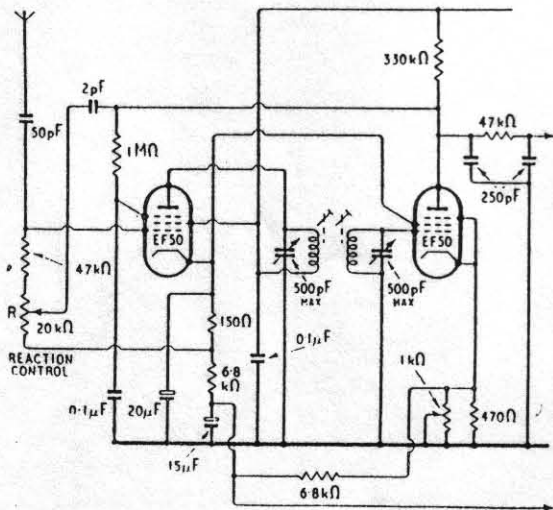


Fig. 3. An alternative method of controlling reaction.

duced causes the automatic gain control to come into operation. This, in turn, reduces the amount of feedback as a consequence of which oscillation ceases. The overall gain then increases until oscillation recommences and the sequence of effects repeats indefinitely at a frequency dependent upon the degree of reaction applied and the various circuit constants.

The production of an audible indication of oscillation, together with the fact that the amount of reaction needed to produce such oscillation depends upon the overall gain of the r.f. and detector stages, offered a simple means of adjusting the circuit for optimum performance.

In the first place, critical adjustment of the r.f. valve's suppressor grid potential was easily effected as follows:—With the aerial removed and the receiver tuned so as to avoid pick-up of any strong local signal, the reaction control was adjusted until oscillation was gently maintained. The variable resistor controlling the suppressor grid potential, i.e., the detector cathode resistance, was then adjusted to give maximum frequency of "motor-boating." Reaction was then reduced so as just to maintain oscillation and the suppressor grid potential finally adjusted to the value which enabled oscillation to be just maintained with the least possible amount of reaction. This obviously corresponds to the setting giving maximum gain with no signal input.

Secondly, alignment of the two tuned circuits proved possible in the following manner:—The coils of the bandpass coupling were first separated sufficiently to reduce the coupling to sub-optimum so as to avoid any double hump in their combined response curve. With the aerial removed to prevent signal pick-up, the receiver was first tuned to the low frequency end of its tuning range and the dust cores of the coils adjusted so as to enable oscillation to be obtained with the least possible amount of reaction. This again implies maximum overall gain from the input of the r.f. amplifier to the output of the detector and, with loosely coupled coils, corresponds to correct tuning of the two circuits.

The receiver was next tuned to the high frequency end of its tuning range and the same procedure followed except that alignment was obtained by adjustment of the trimming capacitors and not the cores of the inductors. Having made this adjustment at the high frequency end of the tuning range the whole process was repeated until no further adjust-

ments proved necessary at either end of the tuning range.

Thirdly, optimum coupling for the bandpass circuit was attained, at a chosen frequency within the available tuning range, as follows:—Again with the aerial removed, the receiver was tuned to a frequency somewhere near the centre of the tuning range, and the reaction was set so as to just maintain oscillation. The spacing of the coils was then adjusted to give maximum frequency of "motor-boating," reaction reduced to the minimum necessary for maintenance of oscillation and the coil spacing finally adjusted so that oscillation could be produced with the least possible amount of reaction. This procedure is, of course, based upon the fact that optimum coupling of a bandpass circuit provides the maximum gain obtainable from a pair of coupled coils tuned to the same frequency of resonance.

In the case of the receiver constructed by the author, it was found that reaction effects tended to increase as the receiver was tuned towards the low frequency end of its tuning range. This effect was counteracted by increasing somewhat the coupling between the coils of the bandpass circuit and a compromise setting was established empirically whereby the reaction setting required to just maintain oscillation remained almost constant throughout the major

part of the whole tuning range. For many purposes it would thus seem possible to make the reaction control a pre-set one though the author prefers otherwise.

By virtue of the dependence of reaction upon the overall gain of the radio-frequency section of the receiver, it was found that, with the receiver in a just oscillating condition, oscillation ceased whenever a signal sufficiently strong to cause operation of the automatic gain control was accurately tuned in. The stronger the signal, the greater became the freedom from tendency towards incipient oscillation so that, in effect, the receiver not only possessed automatic gain control but also automatic reaction control. In the case of reasonably strong signals, application of reaction produced little or no change in the volume of sound produced from the loudspeaker owing to the functioning of the automatic gain control. Such reaction, however, resulted in a reduction in the level of interference partly by virtue of the increased selectivity brought about by reaction in the usual manner and partly by virtue of the increased strength of the wanted signal causing the automatic gain control to reduce the overall sensitivity of the receiver to unwanted signals.

**Variable Negative Feedback:**—Having effected what is regarded as a significant improvement in the r.f. and detector portion of the receiver, attention was next directed to the audio-frequency section. The circuit shown in Fig. 1 makes no provision for negative feedback though, wherever possible, such feedback is regarded as very desirable, particularly in receivers employing the EF50 type valve in conjunction with small-sized output transformers which inevitably possess inadequate primary inductance for the required load impedance of some twenty-thousand ohms.

On the other hand, it is equally desirable that, at maximum setting of the volume control, there should be no appreciable negative feedback in order to avoid unwanted loss of sensitivity when it may be desired to receive unusually weak signals. A method of volume control which automatically increases negative feedback from zero, at the maximum volume setting, to a large value (consistent with freedom from instability) at the minimum volume setting is thus to be regarded as the ideal. Attempts leading to a

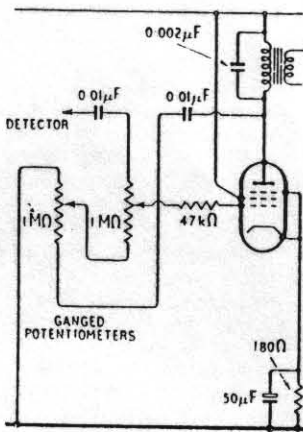
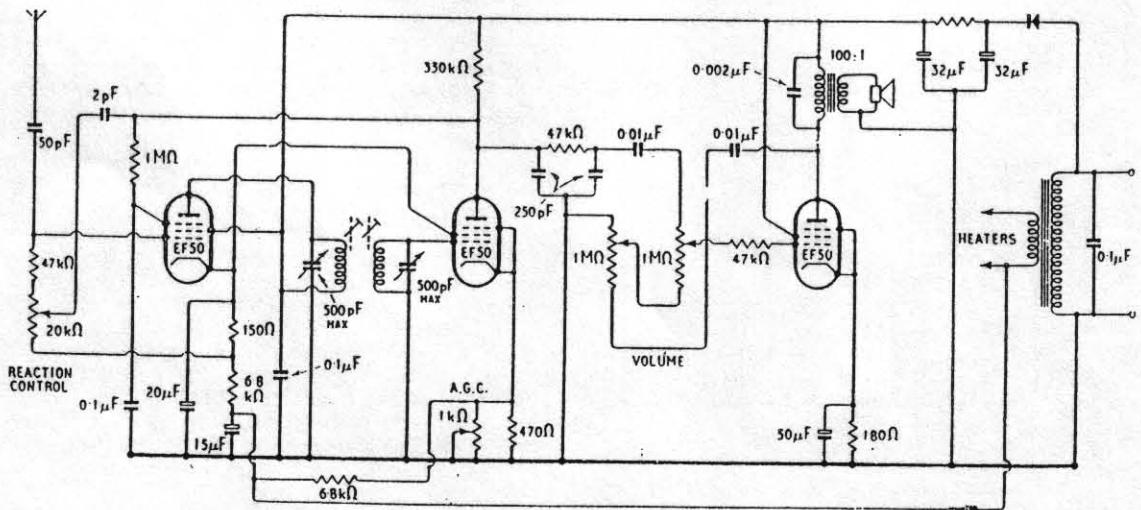


Fig. 4. Negative feedback circuit which provides an adequate range of volume control.

Fig. 5. The final circuit of the receiver incorporating the desirable features described in the text.





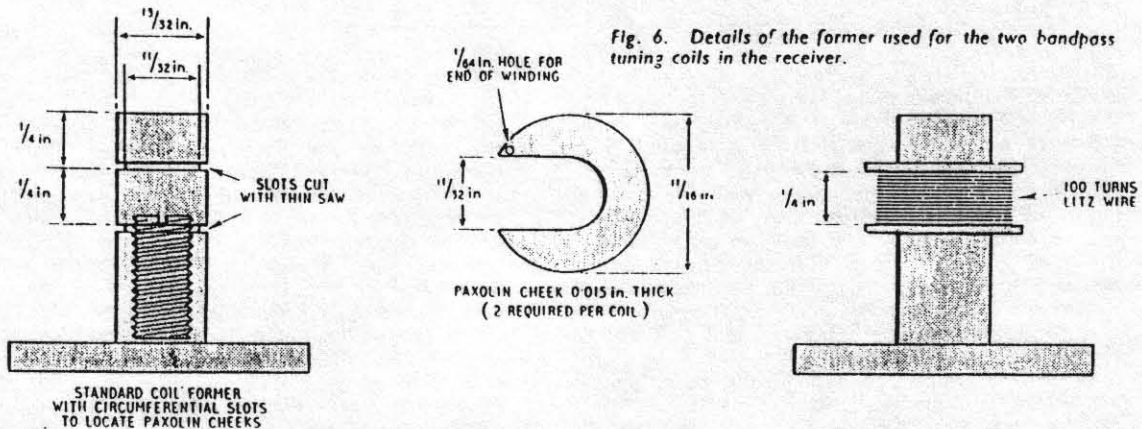


Fig. 6. Details of the former used for the two bandpass tuning coils in the receiver.

successful solution of this problem are described below.

The first possibility investigated involved mechanically coupling the normal output valve volume control potentiometer to a second potentiometer wired into the circuit so as to provide variable feedback from the secondary of the output transformer to the cathode of the detector. This scheme proved to be unsatisfactory for the following reasons: (a) variation of the feedback control potentiometer caused variation in the effective value of the detector cathode resistance and thereby upset the functioning of the amplified a.g.c.; (b) the maximum degree of feedback was limited by onset of instability due to phase changes arising from intervalve coupling and output transformer characteristics; (c) maximum feedback (consistent with stability requirements) was obtained only when the normal volume control was set to its minimum position. This, of course, implied that the effective amplification of the output stage was reduced to a very small value so that full benefit was not obtained from negative feedback; (d) as the normal volume control was within the feedback loop, its effect was largely nullified by virtue of the feedback and control of volume tended to be confined to the minimum end of the control potentiometer. For the reason given in (c), this could not be considered very satisfactory.

In view of these difficulties it was decided to confine feedback to the output stage alone, a certain amount of feedback being in any case provided in the detector circuit by reason of the un-bypassed cathode resistance.

Initially, attempts were made to obtain the desired degree of feedback without employing anything more than a normal volume control potentiometer, but they proved impracticable because volume could not be reduced sufficiently despite the limiting effect of the receiver's automatic gain control.

The problem was eventually solved by means of the circuit shown in Fig. 4 which involved the use of a pair of ganged one-megohm potentiometers. This arrangement automatically varied the feedback from zero to 100 per cent as the volume control was moved from its maximum to minimum positions. Furthermore, at the minimum volume setting attenuation of the signal input to the output stage was limited to 50 per cent so that, within the feedback loop, amplifier gain was maintained at a reasonably high level.

In practice, owing to the limiting effect of a.g.c. upon the detector output, it proved unnecessary ever to reduce the volume control to anything approaching its minimum setting; hence the signal applied to the grid of the output valve was normally not attenuated to any appreciable extent. Control of volume was thus virtually effected by feedback alone, all surplus signal strength thereby being usefully employed in minimizing distortion. It is, of course, possible to apply 100 per cent feedback in this manner to a single valve without risk of instability and the arrangement can thus be regarded as almost perfectly meeting the ideal requirements for a volume control. Certainly, the results obtained, in comparison with the original control without feedback, amply justified the efforts made to gain the desired effects.

**Final Circuit:**—Fig. 5 shows the complete circuit as finally developed. The previously published articles, to which reference has already been made, should be consulted for details as to the exact mode of functioning of the amplified automatic gain control which, in the present circuit, has been made even more effective by simultaneous automatic control of reaction. A very small aerial is all that is required and its use obviates the likelihood of cross modulation difficulties arising as a result of applying too large an input to the first valve. Even so, a strong local signal causes "swamping" of weaker signals in adjacent channels and it is probable that incorporation of a wave trap, as advocated by Amos and Johnstone, would prove beneficial. This, however, has not so far been attempted.

## APPENDIX

### Coil Design Data

The two coils of the intervalve bandpass coupling are identical and may be constructed with standard moulded formers of 1 1/32 in external diameter fitted with threaded dust-iron cores. Thin Paxolin cheeks are located on the formers by means of slots as shown in Fig. 6, so as to provide a winding space one quarter of an inch in length. Within this space, 100 turns of Litz wire are pile wound in a random manner so as to approximate to wave-winding. The Litz employed consists of nine strands of No. 45 s.w.g. enamelled copper wire enclosed in an outer covering of silk but alternative forms of a similar kind would no doubt be satisfactory. In fact, in view of the use

of reaction, it is probable that solid wire could be employed in place of Litz without detriment to the receiver's performance, though somewhat more reaction might be necessary.

Using tuning capacitors of  $0.0005\mu\text{F}$  maximum

capacitance, the coils described should provide a frequency range of 550 to 1,550 kc/s approximately with the dust cores almost fully inserted which should ensure the maximum benefit from the use of dust-iron cores.

**T**HE description of the above receiver published in the December, 1955, issue of *Wireless World* made reference to various special features of the circuit for which advantages of one kind or another were claimed. Subsequent experience with the receiver has brought to light one further special characteristic, in this instance one which must be regarded as a drawback although its elimination can readily be accomplished. As this particular feature may give rise to somewhat mysterious effects, it seems desirable to describe its nature, cause and methods of elimination.

It has been found that, in some circumstances, the automatic gain control of the receiver fails to function properly when the receiver is first switched on. The symptoms of this are severe overloading on local signals and oscillation without the characteristic "motor-boating" when reaction is sufficiently increased. When such trouble occurs, it can be overcome either by momentarily switching off the receiver or by momentarily short-circuiting the suppressor of the r.f. valve to its cathode. Following such action, the trouble has not been observed to recur during subsequent operation of the receiver, but it reappears when the receiver is switched on again after a period of disuse.

These facts leave no doubt that the abnormal behaviour can be attributed to the accumulation of

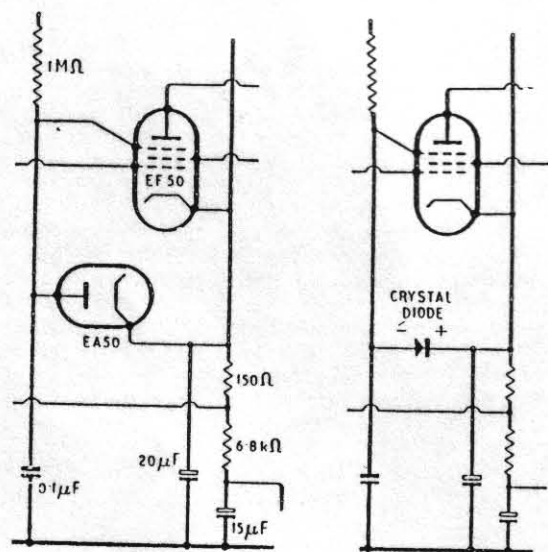
If, on the other hand, the r.f. valve commences to conduct before the detector valve, it does so whilst its suppressor grid is still at a highly positive potential relative to its cathode. In such circumstances the suppressor grid readily loses electrons by secondary emission and, owing to the high resistance in series with the suppressor, this may suffice to maintain the electrode at a high positive potential despite the subsequent fall in the detector anode potential when the detector valve commences to conduct. In such case, the functioning of the automatic gain control system is completely upset with consequent production of the previously described symptoms of abnormal behaviour. Momentary interruption of the power supply, or short-circuiting of the r.f. valve's suppressor and cathode, will both result in the removal of the accumulated positive charge on the suppressor grid, which will not reappear so long as the detector valve remains conductive.

It follows that the trouble may be cured by interchanging the detector and r.f. valves if these happen to be sufficiently different in respect of warming-up characteristics, but such procedure cannot be regarded as particularly satisfactory as valve characteristics may well change at different rates during life. Moreover, a circuit which is sensitive to such variations in valve performance cannot be regarded as very suitable for general use.

The employment of a power supply having a time lag greater than the warming-up time of the detector valve would presumably overcome the difficulty, which might also be avoided by inserting a small amount of resistance in the heater wiring of the r.f. valve, sufficient to lengthen its warming-up period without seriously affecting its working characteristics. Undoubtedly, however, the most satisfactory solution of the problem is the one mentioned in S. W. Amos' letter, to which reference has been made; namely, the connection of a diode between the suppressor grid and cathode of the r.f. valve so as to preclude the possibility of the suppressor becoming appreciably more positive than the cathode. This addition is shown in Fig. 1.

This may be effected either by substituting a 6F33 for the EF50 r.f. valve as the former incorporates the required diode as an integral part of its construction, or by adding to the circuit a suitable diode with its anode connected to the suppressor grid of the r.f. valve, the cathode of which is connected to the cathode of the diode. The author has adopted the latter alternative using an EA50 which, with care, can be soldered directly into the wiring of the receiver thereby avoiding any major alteration in the layout. This modification has proved to be a complete cure for the trouble in question though the receiver can no longer strictly be described as a three-valve set. An even simpler solution would be to employ a crystal diode, in which case one suitable for a peak inverse voltage of something more than fifty should be used; see Fig. 2.

The introduction of the diode makes no difference to the normal performance of the receiver but, since it prevents the r.f. valve's suppressor grid from going positive, the gain control potentiometer can be set so as to obviate attenuation of relatively weak signals; in other words the gain control can be given any desired degree of delayed action. If, however, this is done, it will be found that automatic control of reaction becomes less satisfactory, there being a tendency for weak signals to cause increased regeneration instead of the greater stability which characterizes the circuit when no delay of gain control is present. Apart from this drawback, which can probably be disregarded for most purposes, a small degree of delay is advantageous as a means of rendering the receiver less susceptible to changes in supply voltage and, in particular, as a means of ensuring that the receiver will function without trouble during initial stages of warming up.



Left: Fig. 1. Method of wiring an EA50 or similar thermionic diode into the r.f. stage.

Right: Fig. 2. If a crystal diode is preferred it can be arranged as shown here.

a positive charge on the suppressor grid of the r.f. valve by the mechanism described in the letter from S. W. Amos on page 224 of the May, 1954, issue of *Wireless World*. That the trouble is not always encountered can probably be explained as follows:—

When the receiver is first switched on, all three valves are in a non-conducting state and, since the metal rectifier of the power supply functions without any time lag, the potential of the r.f. valve's suppressor grid becomes raised to the "no load" voltage of the power supply. If, then, the detector valve commences to draw current before the r.f. valve, the anode potential of the former drops to its normal working value as does the suppressor grid of the r.f. valve. In such case the circuit performs correctly and no difficulty arises.



**FROM ONE****EDDYSTONE****TO ANOTHER****By Gary GW8BNL**

*When you have a collection of Eddystone receivers some tend not to be used for a while and when you switch one on it is surprising the fun you can have.*

*My 990S is a good example of this, I recently switched it on after a period of about 9 months to have a listen around. To anyone not familiar with this model it covers 230-870 Mc/s in two ranges, and takes in the UHF TV channels. Graeme tells me it was mainly used in the laboratory, with Radar development as one of its uses.*

*To enable this type of reception wide IF filters are fitted namely 1Mc/s and 6 Mc/s for AM and 1Mc/s for FM, this is totally unsuitable for NFM signals such as the 70cm amateur band from 430Mc/s to 440 Mc/s.*

*If one tries to tune in signals on the 70 cm band several signals can be heard on top of each other and are unintelligible, so what is the cure?.*

*The fitting of a narrow filter in place of the existing filters is one answer , but I do not consider any modifications to Eddystone receivers are permissible except for safety reasons (e.g. earthing, fusing etc).*

*A quick look at the circuit reveals that the IF frequency of 36.6 Mc/s is brought out to a BNC socket on the back of the receiver and there in lies the answer!.*

*A quick cable was made up to connect the IF output of the 990S to the Aerial socket of a spare Eddystone 770R, both receivers were switched on. The 990S was set to range 2 and tuned to about 435 Mc/s with the filter set to 6 Mc/s, the AF gain was turned down. The 770R was set to range 5 and tuned to 36.6 Mc/s, then by tuning the 770R 3Mc/s each side of 36.6 Mc/s gives 6Mc/s of the 70cm band spread over 6 inches of the dial of the 770R (this compares with a quarter of an inch on the 990S). With the filter of the 770R now doing a fine job all signals can be tuned quite separate and are fully intelligible.*

*This arrangement can be used on any frequency within the range of the 990S with the tuning scale of the 990S being the "Bandset" and the tuning scale of the 770R being the "Bandspread". If anyone doubts the effectiveness of this try swopping the headphones back and fore between receivers and hear the difference.*

*I am sure this has been done before but the results are so good I have left this as a permanent set-up.*

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# THE COOKE REPORT

## Part Six

*In his last instalment, Bill Cooke, GWP/ION, described how the 'fifties brought new models into the Eddystone range and the company consolidated its reputation. He now takes us into the nineteen-sixties . . .*

### TIME FOR A FACE-LIFT . . .

"By the late 'fifties our sets were selling well but starting to look a bit dated and our competitors were coming up with technical innovation which we had to match. The first step was to create a new look for the existing best-sellers. The 'Style C' cabinet (as Ted and Graeme describe it in the Quick Reference Guide) was designed to give a smart new look for the 'sixties. The 770R and 770U VHF/UHF models were slightly modified and given the /II suffix; the 670A and 840A were likewise treated and became the 670C and 840C. This gave all of them a new lease of life.

### LIFE BENEATH THE WAVES

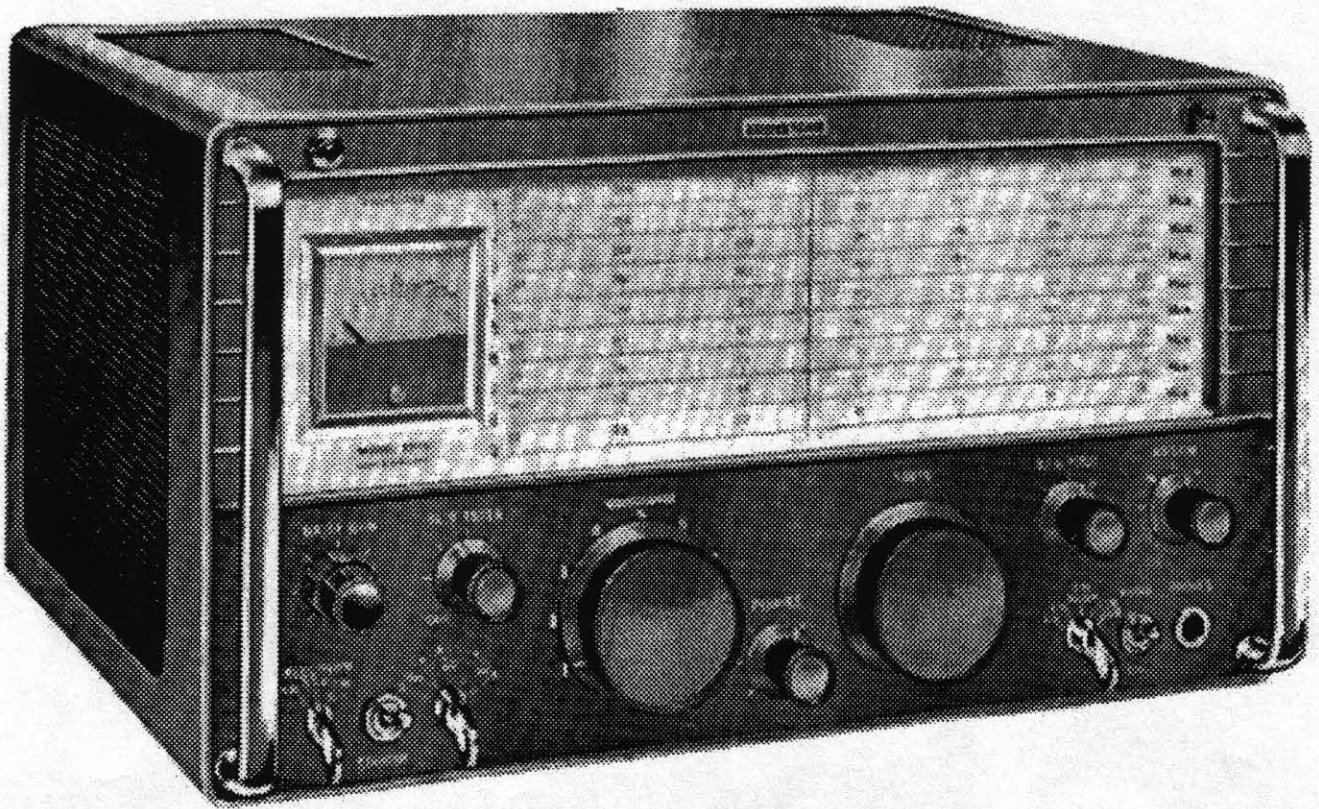
"Research and development continued apace and three new valve sets were based on the style. The first was the 850-series VLF communications receiver, covering 10-600 kc/s. It was highly specialised and intended for communicating with the Royal Navy's new 'Polaris' atomic-powered submarines, Britain's independent nuclear deterrent. They carried American rockets with British warheads and spent enormous periods at sea, in secret places and unknown depths. It was necessary for the Admiralty to be in continuous contact with them and only VLF will work underwater. At the same time the Soviet Navy was building up a fleet of nuclear subs which travelled to and fro through the Baltic and the Arctic. The Canadian and Swedish governments took many 850s for their monitoring networks. I doubt if the operational history of the series will be revealed before the 22nd Century!

### OLD FAITHFULS STAND DOWN

"The 680X and 730-series were replaced by the 830-series, an extremely successful 15 valve MF/HF double-superhet with both local oscillators being tunable. Using a built-in 100 kc/s xtal marker it was possible to directly tune the set to within 1 kc/s right up to 30 mc/s. An excellent performance for a set costing under £300. It ran to 12 versions world-wide and was the last valve set to remain in production; until 1973.

"£300 may have been cheap for the professional user but it was too much for the average amateur and SWL. Arthur Edwards, G6XJ, Sales Director, pressed for a new low-priced amateur receiver; in his words, we had nothing to meet the amateurs' requirements. Harold Cox (Technical Director) was convinced that no money would be made for Eddystone in the amateur market. The final solution was to make as





#### A NEW LOOK FOR THE 'SIXTIES - THE EA12 HAMBANDER

simple a change as possible to the 830, using xtal-controlled first oscillator with interpolation second mixer. This was the EA12 and was priced below £200, but it was too specialised for the SWL. So it was decided to produce a new general coverage set for the carriage trade end of the high street; a lot cheaper than the 830 but more sophisticated than the 840C. The result was the 940, an 11-valve set with a low-noise cascode front-end, S-meter, xtal filter, variable IF bandwidth and product detector. Harold Cox gave me the job of designing it, as far as possible using components already stocked for other models. The project was completed in under six months and the price kept at just over £100. Several hundred were rushed out to our world-wide agency network and the set became very popular during the whole decade.

"We even had an enquiry from the War Office and produced a batch of twenty sets fitted with pre-set crystal channels. These were delivered to the Army's tank testing centre at Abingdon, near Oxford, for AVF (Armoured Fighting Vehicle) assessment.

"That reminds me of a previous military adventure, many years earlier; before the war, in fact. It hinged on Britain's greatest airship disaster... In the late 1920's the Government built a giant airship for the RAF and called it the R-101. It crashed on its maiden voyage to India in 1930, killing all but six of the 54 souls on board, including Lord Thompson, the Air Minister. That was the end of airships in Britain.

"In the late 1930's the Army devised a new system of radio nomenclature and HF receivers were in the series R-100. Yes, you've guessed it; the military version of the Eddystone All World Eight battery set was designated the R-101 . . . It was fitted in a tank and when the gun fired all the filaments blew! There was a lot of playing about

with toilet-rolls and cotton-wool, but I don't think anything came of it. Maybe that's why the well-known WS-19 tank set used all indirectly-heated valves!

"But I digress... At the end of the 'fifties work also started on the development of a whole new concept in professional receivers: the 880-Series. This freelance project featured 30 one-megacycle bands (0.5-30.5 mc/s) with xtal-controlled first frequency-changer and variable permeability-tuning. This was based on a large brass frame, which moved up and down. It also suffered from distortion and we had a few goes before that settled down. The other big problem was the 30-way wavechange switch; just think about it! But in the end we cracked it. The greatest asset was that we made the set virtually free of oscillator radiation.



CLIFF HARTLES (Inspector) & CHRIS PEARCE (Chief of Test)  
EXAMINE A BATCH OF 940s ON FINAL RUNNING TESTS.

In this day and age when unwanted birdies seem to fill the bands it is sometimes overlooked that unwanted radiations can give 'the other side' much free information.

"For instance: if a receiver in a British Embassy had an IF of 450 kc/s and was radiating a note on 5682 kc/s, then the KGB (listening across the street) would know that it was tuned to 5232 kc/s, and start earwiggling accordingly. The radiation from the 880 was so low it couldn't be detected outside the radio room. The Foreign Office

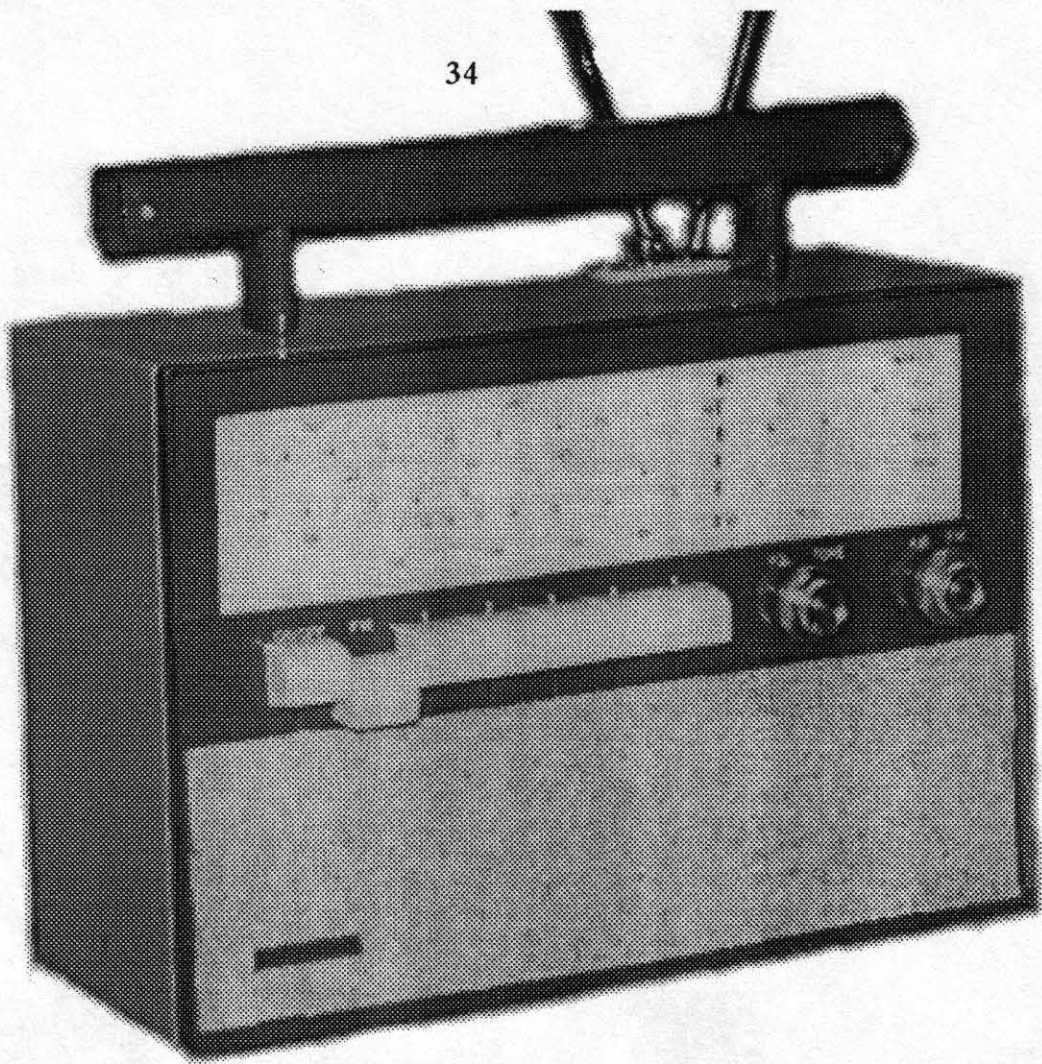




YOURS TRULY (Chief Engineer) & HAROLD COX (Technical Director)  
EXAMINE THE 880/2 UNDERGOING STABILITY TESTS

and GCHQ took an immediate interest and became our main customers for what was, at almost £400, our most expensive set by a long chalk.

"Another departure from our usual run of sets was the model 950, built to a specification from the Air Traffic Control Centre at Aldergrove, Belfast. This was for a single-channel xtal-controlled air-band VHF receiver. It was intended to be operated remotely and permanently. We made a run of half a dozen for evaluation, but I'm afraid nothing ever came of it. So if you ever find one in a flea-market, snap it up; it may be the last one in the world...



THE "STRATTON PORTABLE" ALL BAND TRANSISTOR RADIO OF 1961

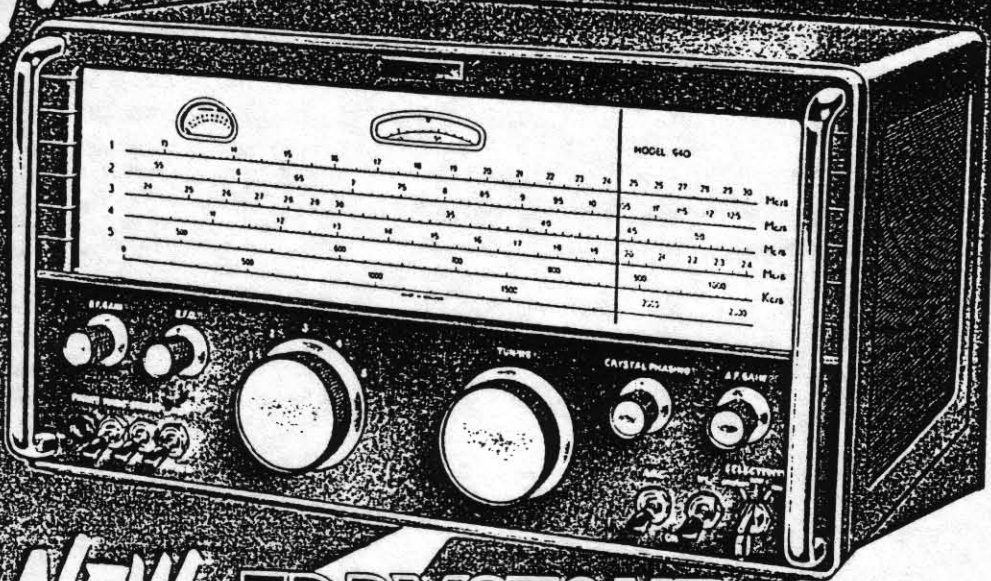
"But the best-kept secret was our first transistor radio; no, not the 960 or the EC10, but the STRATTON PORTABLE of 1961. Yes, really, and to prove it here's its picture. It was intended for the domestic market and covered Long, Medium, and Short (up to 30mc/s) as well as VHF/FM. It was built into a fabricated aluminium case (of course!) with rabbit-ears dipole for HF and VHF and a ferrite aerial in a plastic handle for Medium & Long.

"Unfortunately our build-quality was too good for competitive marketing. Discussions with the mail-order company John Myers proved that we couldn't get the price low enough for the trade, with its large margin and stock requirements. Only three models were built; they were never sold but raffled off to the staff (as were most prototypes). So that's something else to keep your eyes open for!"

*In the next episode of 'Report' Bill has thoughts about the new technology, more on 'solid state', and Stratton's sale of their 'Radio Section' to the Marconi Company . . .*



# Announcing —



## the NEW EDDYSTONE

# 940'

## H.F. COMMUNICATIONS RECEIVER

This new Eddystone receiver has been produced for the Professional user and the enthusiastic Amateur. It has a number of attractive features that will be highly appreciated in operational working including:—

- ★ Single conversion superhet covering 480 kc/s to 30 Mc/s in five switched bands.
- ★ Two R.F. stages and two I.F. stages including phased crystal filter.
- ★ First R.F. is of cascode type resulting in excellent noise and cross modulation figures.
- ★ Precision gear drive, flywheel loaded, and an adequate degree of mechanical bandspread.
- ★ High selectivity and excellent signal-to-noise ratio.
- ★ Suitable for C.W., A.M., S.S.B., reception.
- ★ Push-pull output stage with excellent quality of reproduction.
- ★ Modern styling in two-tone grey finish, table or rack-mounting.
- ★ Suitable for operation from 110/125 and 200/250 volts 40/60 cycles, with built-in power supply and stabiliser.

LIST PRICE **£125**



Please write for detailed Technical Specification to:

**STRATTON & CO. LTD · BIRMINGHAM · 31.**

R.S.G.B. BULLETIN AUGUST, 1962

THIS IS THE FIRST announcement of Bill Cooke's popular 940 communications receiver, described as 'for the Professional and enthusiastic Amateur'. In fact it was designed for the well-heeled amateur, as the 830 and 880 series were the true professional models. The 'R.S.G.B. Bulletin' is, of course, now renamed 'RadCom'.

## TIME FOR THOUGHT

by Graeme G3GGL

These days it's often said that one of the problems with ham radio is the high price of equipment. You can't get on H.F. with a new rig for much under £700 and if you want all the bells and whistles it's £2,000 . . . Mmmm.

The average working wage is currently around £16,000 a year (government statistics), about £300 a week. So that's three or four weeks' wages to get up and running. With a brand new 9-band 100 watt transceiver. It may have one or two VHF bands thrown in if you're lucky.

Now cast your eyes to the right, at that fascinating piece of history: Webb's price list for November 1950, complete with thumb-nail sketches. Younger EUGers can ignore the next question. Can you remember what you were doing in November 1950?

I can; very well indeed. I'd left school the previous summer, been called up for National Service, and had just started Initial Training School at RAF Digby, Lincolnshire.

I was a flight cadet, (that's flying talk for buck private), and I'd been the proud possessor of a Callsign for almost a year. I knew just how much an Eddystone cost and my wages were 28 shillings a week, gross. 23 shillings after deductions. That's £1.15 in modern money. It had to pay for toothpaste, razor blades, boot polish, Blanco (remember?), Spam fritters and chips in the NAAFI, bus rides and cinema seats.

Now if you're any good at mental arithmetic you'll have spotted it. The "680" was nearly two *YEARS'* pay for me. Now *THAT* commands respect!

# WEBB'S *Radio*

MAIN LONDON STOCKISTS for

## EDDYSTONE

EQUIPMENT

### EDDYSTONE "750"

Communications Receiver

A double-superheterodyne circuit, with variable selectivity, eleven valves. Covers 32 Mc/s to 480 Kc/s in four wavebands. Easy tuning by mechanical band-spread allowing accurate re-setting and calibration.

£49 10s. 0d.

### EDDYSTONE "680"

Communications Receiver

Uses fifteen valves in advanced circuitry design. Covers 30 Mc/s to 480 Kc/s. Two R.F. and two I.F. stages. Crystal Gate. Variable Selectivity. Push-pull output. "S" meter. Designed for professional communications work, its many features commend it to the discriminating amateur. Brochure with performance figures and curves free on request.

£89 5s. 0d.

### EDDYSTONE "740"

Communications Receiver

A newcomer to the Eddystone range, offering unparalleled value for money. Uses eight valves, including rectifier. Covers 30.6 to 1.4 Mc/s and 205 to 620 metres in four bands. Flywheel tuning gives silky and precise control.

£29 10s. 0d.

### EDDYSTONE "720"

"YACHTSMAN'S" Receiver

Designed for use in cabin cruisers, yachts, etc. Internal loudspeaker. 80 to 620 and 900 to 2,300 metres, covering Consol signals, weather forecasts, 600 metre distress band, time signals, trawler and small ships band, news and broadcast. Operates from 6 volts (2 amps.).

£39 7s. 6d.

### EDDYSTONE "670"

"MARINE" Receiver

Used the world over by seafarers. Designed for general purpose broadcast cabin listening. A.C./D.C. mains operation 110-200-230 volts.

£39 7s. 6d. (plus Purchase Tax £8 19s. 2d.)

### EDDYSTONE "710"

"All World Six" Receiver

For overseas use, operating from 6 volts (2.5 amps). A high-performance short and medium wave broadcast receiver.

£39 7s. 6d. (no Purchase Tax for Export)

Fully descriptive details of any receiver gladly sent on request  
WEBB'S OFFER PROMPT DELIVERY FOR HOME OR EXPORT ORDERS

**WEBB'S** *Radio*

14, SOHO STREET, OXFORD STREET, LONDON, W.1.  
Phone: GERrard 2089. Shop Hours: 9 a.m.—5.30 p.m. Sats. 9 a.m.—1 p.m.



## End It - End it - End It

Another issue and plenty to keep your eyes busy. If there is anything you wish to comment about in this Newsletter then you may use either the EUG e-mail address, courtesy of Simon, or by snail mail. best to write via Graeme in the future and until I get settled at a new address. Next issue I shall feature the Eddystone Model 1940, honest! take care all. 73 Ted.

## Free Members Ads

WANTED - Plug in coils for Eddystone 678 Modulation Meter and 696 Wavemeter, or blank formers. Call Ben on 01562-743253

FOR SALE - Eddystone EC10 in GWO complete with matching mains PSU, £100. Call Mr McQueen 01562-886122 (West Mids)

WANTED - EA12 in reasonably clean and GWO. Please call Tom at home on 01794-514-057 (Hampshire)

WANTED - Eddystone 940. Please write to Peter Pompe at 38, Val du Prince, B-1950 KRAAINEM, Belgium. Many thanks.

WANTED - to complete my 640 restoration, a 1600 Kc/s IF transformer and a 1600 Kc/s BFO can/coil assembly. Am happy to purchase these or to swap an unused and mint EDOMETER, minus coils. Peter, 292 racecourse Rd, Invercargill, New Zealand, or E-mail to (peemel@clear.net.nz) - Thanks

## E-mail Acks

Peter Lankshear, thanks, but we have 145 Mc/s Guide, and your advert above, hope you get them. Ted.

J.M. Caines, thanks for greetings from us all at EUG, just shows that RS Components are 'with it'. Ted.

David Boardman, good to hear you are happy with Graeme's 'customer care service', enjoy your 840A, Ted.

## **DON'T FORGET THE NATIONAL VINTAGE COMMUNICATIONS FAIR AT THE NEC, BIRMINGHAM, SUNDAY 9th MAY 1999**

*Meet Chris GOEYO, Graeme G3GGL, Simon G8POO, and Ron G8URU. Don't forget to come and sign the members' book. If you have a QSL card BRING IT to pin up. If you have made a project this year bring it to show us. Simon will photograph it for the Newsletter. Bring your pictures and articles for the Newsletter. We shall be at the end of a row, near Howard, of Centre Electronics, with his Eddystone spares, lots of them (we hope!).*

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cont; from p.10.

(They will) send you a fact file of information on presently being implemented plans for NDBs, on the future use of the few remaining Beacons which will have a digital sub-carrier some 500 c/s from the main ID signal. This will carry the necessary digital GPS info. About six of these will be all we have left to chase, all on new frequencies too. FB is one of the six.

I guess that this is the price of technological progress. The loss of the last remaining manned lighthouses is another blow to us neo-luddites.

## Aero - Beacons

Whilst the above refers only to Marine NDBs it is noticed that some of the older aero beacons have disappeared without publicity, mostly when RAF installations close, or are mothballed. Occasionally there will be the odd new one too, viz; the big airshows which usually have a QRP NDB in operation for the duration of the runup/setup period and the show itself. Others appear and disappear without announcement, such as the GMP one which had some connection with the acquisition by Manchester Police of their Squirrel helicopter, callsign OSCAR 99.

Some newish temporary Aerobeacons turn up from time to time in what are obliquely referred to as 'theatres of war'. I know of several apparently just temporary beacons in the Yugoslav/Serbian area.

## DAB and Short Wave.

Two separate organisations have formulated plans to utilise the MW and SW bands for enhanced broadcasting using digitally processed signals which will eventually be transmitted in this digital form on channels vacated by the normal AM stations after the year 2015 ! Well this came from VOA so I believe there is something in it. (They employed me for some years so they cannot be all that unreliable can they ?).

Plans are for the new signals to be replete with such 'gimmicks' as RDS on multi channel transmissions, this being achieved by multiplexing. Now my old days in RTTY with the RAF tell me that multiplexing means faster bit rates and that this calls for much wider bandwidth !

I may be wrong but it will be a case of 'Wait & See'. I do know that our old sets will NOT be able to handle these signals. But then ever the optimist I just KNOW that there will be AM and SSB signals around for decades to come.

*This is the Last Page 11 from Newsletter No 52.*

*Remove it and file with that issue.*