

BULLETIN



BULLETIN OF THE BRITISH VINTAGE WIRELESS SOCIETY

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Front Cover Photography by Mark Groep

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From the Chair



I have just returned from a week in Prague attending the XIVth Scientific Instrument Symposium which is under the auspices of the Scientific Instrument Commission of the International Union

of the History and Philosophy of Science. Our hosts were the Czech Society of the History of Science and Technology and the National Technical Museum in Prague. The highlight was a candlelight buffet on the last night in Villa Lanna the home of the Czech Academy of Sciences. All very grand and a useful forum where academics mixed with collectors and museum curators. Next year's XVth Scientific Instrument Symposium will take place in Ottawa, Canada. It would be nice to think that the BVWS could organize a similar annual conference. Whatever else can be said for it, members of the Scientific Instrument Society (SIS) certainly get about! They usually host an annual foreign event quite separate from that organized by the Scientific Instrument Commission. The Scientific Instrument Commission is an academic group in which museum curators predominate, while the Scientific Instrument Society is in essence very similar to the BVWS except that its members tend to be interested in straightforward scientific instruments from the exotic astrolabe to the user friendly microscope. In recent years there has been a growing interest in nineteenth (and even early twentieth) century physics (what used to be called 'philosophical') apparatus, in particular

Geissler tubes (those miracles of the glass blower's art) and early mahogany and brass electric motors. In fact, I moved from such devices to wireless (as Mike Barker can testify after he let me have one of his electric motors which is now beautifully restored).

Now, with the missionary zeal of the convert, I try to get my fellow scientific instrument historians interested in early radios, and have filled the pages of the most recent issue of the Bulletin of the Scientific Instrument Society (of which I am the Editor) with early radios and X-rays as the SIS's contribution to the centenary celebrations. The leading article by Tony Constable is on the 'Birth Pains of Radio'. Paolo Brenni's contribution is on Eugène Ducretet, one of the foremost French makers of radio before the Great War, and Ralph Barrett's is on repeating the 1895 pioneering experiments of Popov and Marconi with facsimile apparatus. Both Tony and Ralph were participants at the Institution of Electrical Engineers' international conference on 100 Years of Radio held in early September. This was a highly successful event at which I spotted a number of BVWS members. Ralph is known for his re-enactment of famous scientific experiments. At his show at the IEE Conference Ralph was Marconi. There were also several exhibitions, including Enrico Tedeschi's of twenties Marconi(phone) wireless and ephemera, and early transistor sets.

As some of you will be aware, the committee is planning our own Marconi celebrations for 1996 in the shape of a 'Centennial Function' - a bit like the 1953 'Festival of Britain' but on a more modest scale! The intention (see the Minutes of the Committee in this Bulletin) is to have an exhibition and dinner in London, probably at the Livery Hall, on a Saturday, followed by the

Harpenden swapmeet on the Sunday. Such an arrangement should appeal to our international members as well. Indeed, we hope that many will take this opportunity to come and renew old friendships.

While in Prague I sneaked off for half a day from the Symposium and visited the National Technical Museum's store situated about 30 kilometres outside the city to examine their radio collection. Of their approximately 1000 radios and 10,000 valves they have only four sets on show, although they are intending to have a bigger display. The store contains some interesting treasures, including World War I Marconi sets used by the Czech army and home-produced sets, some of them manufactured under licence. I came across such exotic names as Radio Urania, Radioslavia, Telekra, and (our more familiar) Tungsram. I hope to have a brief report ready for the next Bulletin. What I saw was exciting enough for me not to have minded too much to have missed lectures on logic demonstrators, arithmometers and the uses of the Geiger-Muller counter.

Poor Mike Barker, our hard working Membership Secretary, has been having a difficult time of late. Because of an updating error caused by the change-over of committees in May, the computer records showed that a significant number of members had not renewed their subscriptions. He duly sent out reminders and received a certain amount of flack for his efforts. However, the good news is that over sixty of the 1993 or 1994 lapsed members have now renewed. The Society is going from strength to strength as thirty-five new members have also joined us this year. I wish them a hearty welcome.

Willem Hackmann

BVWS Logo

The BVWS logo comprising the pip top valve surrounded by the Society's name has been in continuous use since 1979, and members have occasionally asked me about its origins. In 1978, a couple of years after the BVWS was formed, members were invited to submit designs for a logo and the final choice was made at the winter meeting at Harpenden that year. The chosen concept for the logo was designed by David Robinson, the son of W G Robinson who was a BVWS member at the time, and in its original form was more of a DER than an R valve. The basic idea was later modified in committee discussions to take the traditional R valve shape with the electrode assembly visible.



The Society is approaching its 20th year and recently took steps to ensure that its name, BVWS acronym and logo are protected from use by other persons or organisations.

David Read



Enrico Tedeschi and a detail of his display of vintage equipment at the IEE '100 years of Radio' conference held in early September.



On The Air, Cheshire

ON THE AIR, the Broadcasting Museum in Chester celebrated its first year in September. Started by vintage radio collector and dealer Steve Harris, the Museum aims to bring to life the history of British Broadcasting in a way that everybody can understand.

Steve, who was a Lighting Director in broadcast TV before setting up the Museum, was able to use the help of TV colleagues in the design and construction, as well as drawing on his extensive collection of vintage radio and TV equipment and ephemera.

The exhibition was opened last August, with part of the TV section unfinished, but was officially opened in September by TV and film actor and comedian Alexei Sayle.

Improvements have been added through the year, visitors now being able to operate a TV studio camera on a 'set', and see vintage material on a Bush TV22. There is also an example of the latest technology in the form of the Sharp Viewcam, a state of the art camcorder, on loan from Sharp UK. Further developments, including an interactive video display explaining how TV works are in the course of installation.

Over 5000 people have visited the museum so far, including collectors attracted to the Vintage Sound Shop where a variety of wireless sets and gramophones are always on sale.

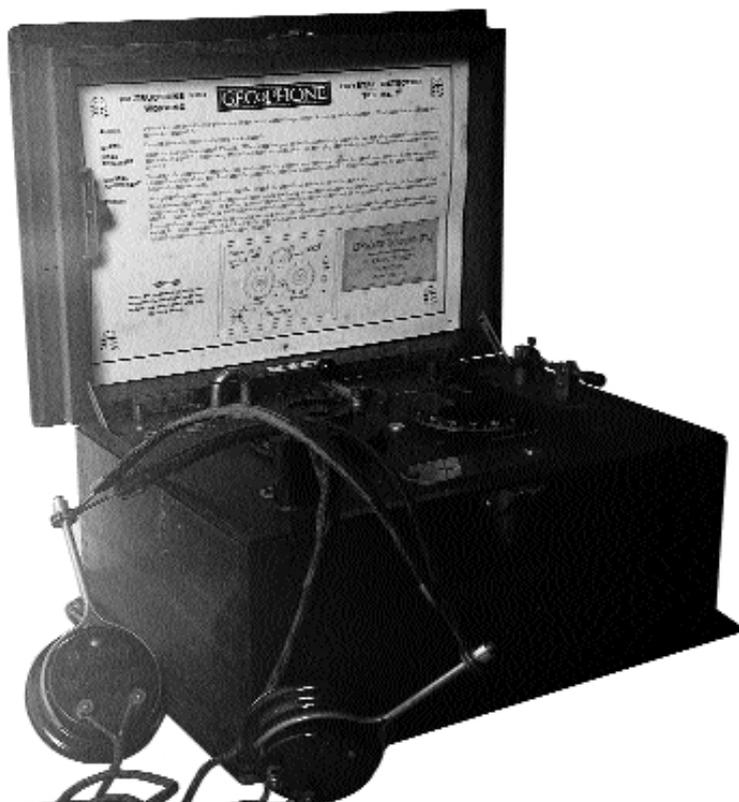


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'GECophone Wireless Receiving Sets'

Cover Story By David Read



I can't remember a time when I wasn't fascinated by everything electrical, and radio in particular. At the age of 7 in Bermuda, I was an avid listener to soap-operas from the USA. Not because of the programme material, but because of the mystery of the box with the dial and two knobs.

By the time I was 13 and in England, I had a book of 'Beginners Circuits' which I would draw endlessly with enormous enjoyment and without the slightest comprehension. Nevertheless, one needed no understanding of the diagrams in order to wind a coil with tapings, buy a crystal and some war surplus headphones and make a crystal set. The sense of achievement and wonder when a faint noise could be heard was sufficient in itself and the thrill of it is still vivid today.

At 14, my father was again posted to a job abroad, and this time I was left behind at boarding school to get the benefit of a British education. I became close friends with a fat boy and one winter term I got lucky - he wanted my Mars Bar and I wanted his Gecophone One Valve Set which he had found in a shed in Wales. A straight swap took place and I became a proud owner of my first real vintage wireless. It was 1949. I still have this set, and the fat boy, now a successful pharmacist, is still my closest friend.

The Gecophone was fitted with an HL2. This valve was of course an anachronism, but I had never even heard of a Bright Emitter and was none the wiser. With 1.5 volts for the filament and two grid bias batteries making about 18 volts for high tension I remember listening to Gilbert and Sullivan on the headphones after 'lights out'. The bed springs served as an aerial, and I had no earth, but nevertheless it worked well enough on the local transmitter of the BBC Home Service. In the holidays, and with more HT, I discovered reaction and the incredible amplification combined with selectivity that

mastering this phenomenon enabled.

The General Electric Company were one of the big six companies forming the original British Broadcasting Company, later to become the Corporation, and the design of their domestic receivers in the early days reflected the engineering side of GEC rather than their domestic appliance division at Magnet House. Gecophones are amongst the best designed and built sets of the PMG period. The one valve set forms the front end of the related two and three valve detector / amplifier sets BC3200 and BC3300. GEC described these as their low frequency sets since they did not employ an HF stage. Both were manufactured in fine mahogany cabinets with doors covering the controls and a compartment underneath for the HT battery.

These low frequency receivers were introduced in 1924, and followed the much earlier BC2001 high frequency / detector set which was sold as the high frequency model. From 1924 the BC2001 was advertised as the 'original Gecophone' having been available from the start of public broadcasting. It is readily recognisable by having a valve holder between the HF and detector valves to take the reactance unit. Sadly, this component is often missing and is today very hard to find. As the high frequency set had no LF stage, GEC offered a two valve amplifier BC2580 designed as a pedestal to support the receiver. The combination was sold as BC3400 and makes

an exceptionally fine ensemble.

Both the high frequency and low frequency two valve sets were sold in flat bed versions as well as in the upright mahogany cabinets with doors. Interestingly, these flat bed versions are today rarer than their deluxe counterparts which sold at twice the price. When these fine sets became obsolete, they suffered the indignity of having their chassis' removed and the cabinets used for a variety of domestic purposes. One apparently was as a container for pipes, leading to the appellation "smokers' cabinet" by which these sets are known today.

Not surprisingly, GEC recommended that their receivers should be fitted with OSRAM valves. The OSRAM brand name was owned by GEC and the valves were made by their jointly owned company, MOV at GEC's old Lampworks at Hammersmith. At that time, indeed, OSRAM valves embodied the most extensive experience of valve manufacturing in Europe. Nevertheless, for the cover photograph, the original 'Gecophone' HF / detector set is shown in flat bed format sporting spectacular French valves in blue glass made by Grammont under their FOTOS brand name. Blue glass was used both for bright and dull emitters in order to disguise the effect of getting the valve to improve the vacuum. By this stratagem Grammont avoided the problem of customers complaining that the valves on which they had lavished a small fortune were not new. The reactance unit which distinguishes the high frequency from the low frequency model is clearly visible between the valves. Mounted on a valve base it comprises coupled anode coils for both valves providing an element of positive feedback controlled by the nickel plated brass disk which is screwed up or down to provide the desired result. The circuit of the 'original Gecophone' is shown in figure '1' as published in 'Wireless telephony and broadcasting' by H.M. Dowsett in 1923. The HT switch as shown is a puzzle and is absent on flat bed sets.

The full range of Gecophones is too extensive to discuss in this short article; however, a fine display of Gecophones was included in the exhibition organised by Ken Tythacott on the stage at Harpenden on 24 September. Amongst the crystal sets was included a fine example of the Gecophone No 2 employing a highly selective adjustable coupled circuit with integral buzzer and test key for locating the most sensitive spot on the crystal. Also on stage was a superhet and the very rare World Wide SG4 which GEC designed around a front-end of two S625's, the first screen grid valves.

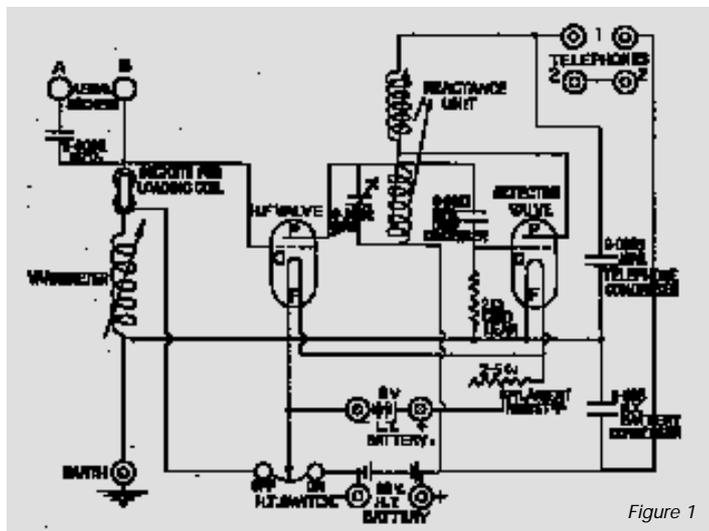


Figure 1

Addenda to the Story of Pilot Radio

by John Watkins



George Formby with his Pilot U650 radio



The dial of the Pilot PT 36

Shortly after finishing the essay on Pilot, more information has turned up. A letter from Bill Moore (USA) reads as follows:

'Found out something about Pilot radios lately by talking to an old ex-employee. Pilot ceased to exist around 1950 as it was bought out by Emerson and became Pilot in name only. In addition Pilot made only lend-lease sets during the war and all were sent to Russia and China.'

(Incidentally, the piece at the bottom of page 76-inside rear cover of the last issue of the BVWS Bulletin- was sent in by Bill Moore, but I am perfectly happy to receive the information he requests, and will forward it to him.) I haven't been able to discover the exact date of birth of Pilot's founder, Isidor Goldberg, despite the help most generous-

but as yet he remains unknown.

Despite Bill Moore's new material it is reasonable to say that Pilot Radio was in *this* country from 1935 until its acquisition by Ultra in 1959; so the firm's dates run from 1908 to 1959 - 51 years. Not bad for a one man business, trading worldwide. Pilot Radios must have something about them!

Finally the list of products from c.1930 to 1942. The volume of Mallory's 'Radio service Encyclopedia' goes to 1946, but Bill Moore's new information explains why the last Pilot entries are those of 1942. If you want a comprehensive copy of the Pilot product list please send a SAE to: John Watkins, 23 Arnold Road, Binstead, Ryde, Isle of Wight, UK.



ly offered by Alan Douglas, in this and several other aspects relating to the Pilot story. To quote from Alan's letter:

'When I wrote the chapter I didn't know Goldberg's dates, but I later found an obituary in Radio-Electronics, February 1962, p.10, with a sketch of Goldberg. He died on Nov. 23, 1961, at the age of 68, which would presumably put his birth date in 1893 (I think that makes your chances of being right 11 out of 12). He is said to have worked for Gernsback at the Electro Importing Co. as a boy of 16, and to have begun making radio parts shortly afterwards. That comes to 1909, and Pilot claim to have started in 1908, so there's a small discrepancy somewhere. I looked for Goldberg in various issues of 'Who's Who', without success...all in the late 1950's when he should have been active. So I can't tell you where he was born. I don't find his name in the 1909, 1910 or 1916 amateur callbooks.'

A mysterious, almost shadowy figure Goldberg seems now. Someone must still be alive who has at least second generation knowledge of him,

Sunday Workshops with Gerry Wells

The Vintage Wireless Museum will be running a limited number of one day training courses on 'Vintage Wireless Restoration' within the new purpose-built training facilities on-site at the museum.

The course tutor will carefully explain the problem-solving techniques and theory relevant to the 'student's' specific requirements, and demonstrate the best practical solutions to effecting repairs.

The course costs £25 and covers tuition, the use of the new workshop facilities, lunch and refreshments during the day. It also covers the cost of minor components replaced (major components may be priced individually).

For further information and booking details please ring the curator-Gerald Wells at the Museum. Telephone: 0181 670 3667

Valves: What they do and how they do it

parts 9 & 10

by: Pat Leggatt

PART 9

AC Power Supplies

Earlier in this series we saw how a diode valve can act as a rectifier of alternating current since it will conduct only on the positive half-cycles of the AC applied to the anode.

This of course gives a method of deriving the required DC supply for receivers working off AC mains, and Figure 11a shows the simplest circuit for this. In fact this simple arrangement would be quite useless in practice, since the rectified output is not nice steady DC but rather a series of half-cycle pulses which would give unbearable hum from the set.

What is needed is a smoothing circuit such as that in Figure 11b, and let us first consider the purpose of C1. The half-cycle pulses from the rectifier have gaps in between where the negative half-cycles would have been, so the diode is only giving output for half the time: and even when it is giving some output the average voltage is well below the peaks of the pulses. But when capacitor C1 is connected, the rectifier diode charges it up nearly to the peak voltage level and the capacitor stays charged during the intervals between the rectified pulses. During these intervals C1 will of course be partially discharged by the current drawn by the receiver, but the next positive pulse from the rectifier will top up the charge on the capacitor and if the receiver load current is not too great the voltage on C1 will remain reasonably steady. So C1 acts as a reservoir from which the receiver draws current during the intervals between rectified pulses and is therefore known as a 'reservoir capacitor'. This process of the rectifier topping up the capacitor charge on the positive peak of each cycle is in fact exactly the same as the operation of the large-signal diode and leaky grid triode radio detectors described in earlier Parts of this series.

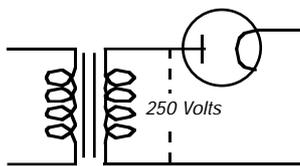


Figure 11a

of AC or varying current, but allows DC to get through, so the choke will cut down the remaining AC ripple from the reservoir capacitor. Then there is the large capacitor C2 which does the opposite to the choke and allows AC currents to pass easily but not DC. So C2 shunts off any AC ripple which gets through the choke, leaving only really smooth DC to be passed on to the receiver.

Full-Wave Rectification

There is an additional way of helping to fill in the gaps between half-cycle pulses and produce smoother output, which is illustrated in Figure 12a.

Here a second diode valve is arranged to produce half-cycle pulses, but connected in such a way that this second series of pulses fills in the gaps in the first series, as shown in Figure 12b.

This is done by feeding the two diodes from opposite ends of a transformer winding which has a centre tap connected to the HT negative terminal. With such a centre tapped transformer winding the alternating voltage at one end is in the opposite phase to the voltage at the other end: in other words, when the voltage at one end is going positively the voltage at the other end is going negatively, so the positive pulses output from one rectifier diode emerge during the time that the other diode is receiving negative half-cycles and giving no output.

The single diode circuit of Figure 11 uses only half of the applied AC wave and is known accordingly as a 'half-wave rectifier'. The arrangement of Figure 12 uses both halves of the AC and is therefore a 'full-wave rectifier': the two diodes are in practice contained in a single glass envelope with a common cathode.

Valves for AC Mains

If ordinary battery valves were used in a mains set with the filaments run from alternating current, the thin filaments would heat up and cool down as the AC cycles rose and fell: this would be another source of

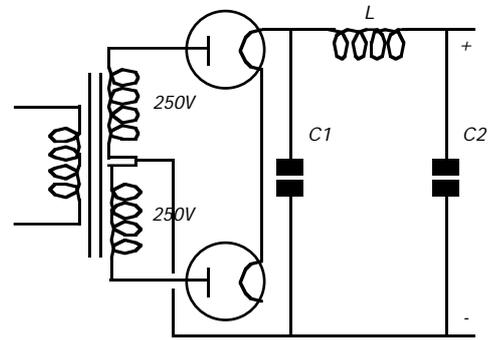


Figure 12a

serious hum in the receiver, even if the HT supplies were nicely smoothed. Furthermore if a valve filament had, say, 4 volts across it then the average potential of the filament would be 2 volts, which in a battery set would appear as 2 volts grid bias. If the filament were heated by alternating current then this 'grid bias' would be 2 volts AC, which of course would be amplified by the valve as an input signal and give rise to considerable hum.

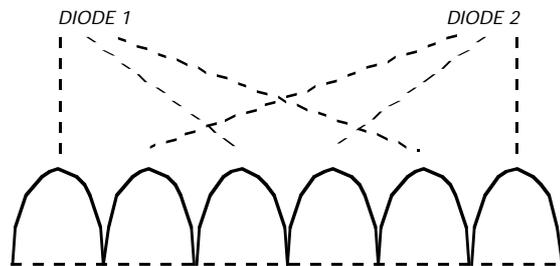


Figure 12b

To get over this problem, valves for mains sets are 'indirectly heated'. The cathodes are small tubes coated with electron-emitting

material, with a heating element inside. The heater is not thermally (or electrically) in direct contact with the cathode tube and the tube fairly slowly reaches a certain temperature and then stays that way without heating up and cooling down to any appreciable extent during the AC cycles. This of course is why mains sets take a little time to warm up before they start working.

Although the need for indirectly heated cathodes adds to the complexity and cost of mains valves, there is a considerable advantage in that the cathode area is much larger than that of a battery valve filament and can therefore emit a greater electron current. For this reason mains valves have in general a much better performance than battery valves in terms of mutual conductance and power handling.

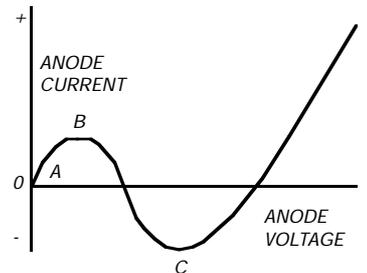
PART 10

Screened Grid Valves

So far in this series we have dealt only with quite simple valves, the diode and the triode. Now let's take the plunge into tetrode valves with four electrodes, cathode (or filament), two grids and anode.

Why is it necessary to add anything to the triode? The answer is that the anode and grid of a triode effectively form two plates of a capacitor and there is appreciable capacitance between them. When used as a radio frequency amplifier the RF voltage appearing at the anode will be fed back to the grid through this internal anode/grid capacitance and unfortunate effects can arise.

Figure 13



When for example the input signal drives the grid a bit more negative, the anode current will decrease and reduce the voltage drop across a resistive load in the anode circuit. The anode voltage will therefore move positively and this positive signal will be fed back to the grid through the internal capacitance of the valve: because the signal fed back is in opposition to the negative signal on the grid, this is categorised as 'negative feedback'. This negative feedback will decrease the grid input signal and the amplification of the stage will therefore be somewhat reduced. This might not matter very much and indeed negative feedback can have beneficial effects and is often used deliberately. But in the case of an RF amplifier there is a snag because the anode load of an RF amplifier stage is not usually a plain resistance, but is generally a tuned circuit. Without going

into complicated details, a tuned circuit can alter the phase (the timing) of a signal and it can happen that part of the signal fed back to the grid is changed such that it *adds* to the grid input signal and becomes positive feedback.

We saw in an earlier Part that positive feedback in a triode stage can produce an oscillator; and in the same way the positive feedback through internal anode/grid capacitance in an RF amplifier can make the stage oscillate and become useless as an amplifier. In the 1920's this positive feedback was sometimes cancelled out by applying a corresponding amount of negative feedback externally to the valve, a process known as 'neutralising' and patented by the American Dr Hazeltine as the 'Neutrodyne' system. This did indeed enable a fair degree of RF amplification to be obtained with a triode, but on the whole triode valves are really not very good as RF amplifiers. The best solution is to reduce the internal anode/grid capacitance by screening the grid from the anode, and this is achieved by adding a second grid between the normal 'control grid' and the anode, the result being a 'screened grid' valve.

The second grid, known as the 'screen grid' or just 'screen', must not completely block the flow of electrons from cathode to anode, otherwise the valve would not work at all. In fact the screen grid has not too close a mesh so that most electrons can get through. It is given quite a high positive voltage to urge the electrons on their way, but is kept a bit less positive than the anode so that it doesn't gobble up nearly all the electrons. To act as an effective screen between anode and the first grid, the screen grid must be at earth potential as regards the RF signals; accordingly a fair-sized capacitor is connected from screen grid to earth, giving a low resistance (more properly called low reactance) path to earth for RF signals.

The screened grid valve became generally available in 1927 and enabled high-gain RF amplifying stages to be designed with little or no tendency to oscillate.

Pentode Valves

So the screened grid provides all we want from a valve, does it? Ah you've guessed it - no it doesn't! While it works very nicely with fairly small signals, it misbehaves when asked to act as an audio amplifier where signals can be quite large.

The new problem is 'secondary emission'. The positive anode whips the electrons along so that they give the atoms in the anode a good whack and knock secondary electrons out of them. These secondary electrons

are normally attracted back to the positive anode and no harm is done: but if the nearby screen grid happens to be more positive than the anode, then the secondary electrons are attracted to the screen grid instead.

The normal current in the valve is to the anode, but if secondary electrons are attracted to a more positive screen grid this amounts to a current flowing *from* the anode so that the net anode current is reduced. If the anode voltage is made a bit more positive - but still less positive than the screen grid - electrons will be more accelerated and hit the anode harder so that more secondary electrons are produced and flow from the anode to the screen grid. The overall result is that an increase in anode voltage has produced a reduction in anode current. It even happens that each electron hitting the anode knocks out more than one secondary so that more electrons leave the anode than arrive at it and the anode current actually becomes negative; that is, the net current is from the anode rather than to it.

Figure 13 shows how anode current changes as anode voltage is increased from zero, with the screen grid held at a fixed positive potential. At first, between points A and B, the anode starts to take a little current. At B the anode potential is sufficient to accelerate electrons to the extent that secondary electrons are knocked out and go to the screen grid; and as the anode voltage is made more positive the net anode current decreases and eventually becomes negative. At C the anode voltage starts approaching that of the screen grid, fewer secondary electrons are attracted away from the anode and the anode current starts rising again.

We normally expect an increase in voltage to produce an increase in current, so that a screened grid valve in conditions where the opposite happens is said to exhibit negative resistance and the anode current characteristic shows a negative resistance kink, B-C in the diagram. With a small signal voltage swing on the anode, the anode always remains more positive than the screen grid and no difficulty arises. But with a large swing on the anode, such as may occur in an audio amplifying stage, the anode voltage may momentarily fall to a level less positive than the screen grid and the negative resistance kink will come into play and give rise to severe distortion of the signal.

To overcome this shortcoming, the pentode valve was introduced in 1928 with a third grid, the suppressor, between the screen grid and the anode. This suppressor grid is connected to the cathode, or to earth, and is therefore strongly negative to the anode. Any secondary electrons knocked out of the anode will be repelled by the suppressor grid back to the anode, rather than going to the screen grid; and so the negative resistance effect and the kink in the characteristic is eliminated.

A 21 year old's induction to Radio Magic

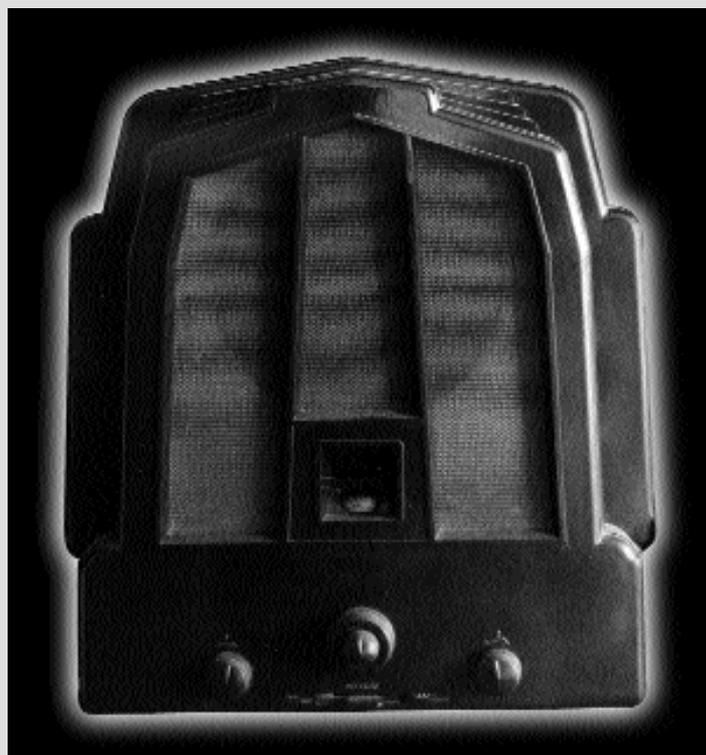
by Nicholas Odell

My first experience of Vintage Wireless was an occasional sighting at jumble sales and in exclusive shops. Several years on (and still only 21) I find wireless sets just as exciting because of the richness of their design and electronics, the stories they once told and the 'glamorous times' the sets represent - even if reality wasn't quite so pleasant! Each set is full of character, building anticipation whilst 'warming up', the 'pops', 'whistles' and 'crackles' lending a living quality to wireless.

From the beginnings of radio, the notion of sending messages through the air was considered to be little short of magic. Indeed, throughout our history, there has been a need to attempt to explain such inexplicable phenomena by resort to magical or supernatural causes. So, we should not blame people in the early days of radio for their concern or fear of devices with strange coils and wire which carried someone's voice over a great distance, into a living room, with no visible connection between voice and person. Such a magical event must have seemed rather sinister! Because of this perhaps early on, the appearance of the wireless was designed to become more acceptable for display in people's homes, disguised as smokers' cabinets or other pieces of furniture for example. In spite of such efforts to disguise the wireless and make it 'socially acceptable', it still retains the ability to conjure up magic and mystery in the listeners' imagination, just as it has in the past.

To many people, the radio set is the 'friend on the sideboard'. It entertains, teaches and informs, and most importantly is a companion. In recent years, however, experts and futuristic films have led us to expect that computers and artificial intelligence would provide robotic companions and helpers around the home. I really think that Radio stole that show years ago! Radio circuitry may be considered relatively simple in this age of microdigital electronics, and so there must be some other quality

possessed by the 'friend on the sideboard' to account for its appreciation by so many. I put it down to MAGIC!



The Ever Ready Company (GB) Ltd. The Radio Division from the inside

by R.A. Lampitt

Preface

I recently had the pleasure of meeting a collector of Ever Ready memorabilia and in answering the lady's questions regarding the company and its radio products, I found myself becoming similarly enthusiastic because it brought back many memories of my involvement with those products which by now have become collectors' items and as such are quite valuable.

The company goes back about 100 years and became, until the early 1970's, the leading manufacturer of dry batteries in the U.K., employing at its peak, 10,000 people in factories in many parts of the country. Because it was their policy to encourage the production of any article that used such batteries, it set up its own plants for the manufacture of cycle lamps, torches, toys, portable radio receivers and many other items designed for that purpose.

One of their largest undertakings, other than the manufacture of dry batteries, was the production of dry-battery operated portable radio receivers and in 1935, they formed a subsidiary under the name of Ever Ready Radio Ltd. and for a short period, co-operated with Pye Radio for the manufacture of two receivers under the Ever Ready label. The chassis and cabinets were made by Pye and consequently had a distinct "Pye" appearance.

By the beginning of the second world war the arrangement with Pye had ceased, but the company had continued to function in the Radio field by obtaining a contract with the Ministry of Supply for the production of "Forces Comforts". These took the form of simple dry battery operated receivers (known internally as Model "A") which they continued to produce until 1946, by which time they had moved their Radio Division to Wolverhampton.

I joined them in that year as Chief Engineer and Technical Manager and it was then that I met "Harry" who was the Production Manager of what was at that time, a small unit occupying part of a large battery manufacturing complex in Park Lane.

Harry was one of the original employees of the LISSEN Co. and as Lissen forms a very important part of the history of the Ever Ready Radio Division, it therefore, seems appropriate to start the story with a reference to Harry's early experiences with that company.



R.A. Lampitt

The early post-war period

His name is Tom Harrison and I spoke to him recently about his early working life. He is now 90 years of age and has a memory as sharp as a man of half his age. He was first employed at the age of 17 by the Lissen company on the top floor of a building at Goldhawk Road, Shepherd's Bush. They began by making crystal

sets (because those were the days before the introduction of the thermionic valve) in the company then owned by a man named Ward, and "Tommy" Cole. Ward later left the company, selling his shares to Cole who now became the sole owner.

The company expanded and later moved to premises in Richmond, Surrey where they were joined by a Mr. Pordes (of Dutch origin) who became instrumental in the introduction of batteries into their production schedule. It was this that later attracted the attention of Magnus Goodfellow of Ever Ready in 1928.

Due to further rapid expansion, the company moved across the river to Isleworth and then to a very large factory at Angel Road, Edmonton. By that time, the company had become very well known in the Industry, and having been taken over by Ever Ready continued to trade under the name LISSEN, making almost all of its own radio components including valves, loudspeakers, transformers, chassis and cabinets etc. plus (of all the unlikely items) sparking plugs. It was here that they produced their famous "LISSEN SKYSCRAPER" kits of parts (the name from which most of the later names were derived).

At this point, Harry was telling me about his wartime memories - of the many day-light air raids and fire-watching duties etc. and said that one morning he and many of the other employees arrived at work only to find the whole of the huge factory had been flattened. Everything had gone - "but" he told me "I remembered the tea

money - it was always kept in a tin box and I knew exactly where it should be - and I FOUND IT and it was still bloody hot".

Everyone was, of course, very despondent, when word came through that the Ministry of Supply were desperate for more of the radio receivers that the company had previously been making for the Armed Forces under the title "Forces Comforts". Under the guidance of F.R. Hillman, a small group of employees enthusiastically salvaged from amongst the rubble, some of the components and equipment and moved to other premises in Amersham where - in an assortment of sheds and old garages, they were able to set up servicing facilities for the sets. As time went on and with the willing help of other manufacturers, they actually began making them again, albeit in very small numbers.

Harry was made responsible for the practical aspect of servicing and assembly and Hillman was put in charge of the whole operation and remained in that position until they were given more space in CANAL WORKS in Wolverhampton. There they set up a new production line, with Harry as Production Manager and Hillman as Factory Manager. They soon outgrew the available space at Canal Works and finally moved to PARK LANE and it was then that the Board of Directors decided to re-enter the domestic radio field in a big way.

At that point in 1946 I joined them, with the main object of designing receivers for that market. I was responsible to the Board for the technical design together with the styling and advice on all matters of a technical nature and remained so until I left in 1963 to form my own company.

When I first joined them, they were still making the original "Forces Comforts" in the form of a simple 4 valve dry battery operated receiver



The 'Saucepan Special'

(known as Model "A"), but concurrent with this, they were marketing a smaller and more modern hand-held portable known as model "B". The latter was provided with a case the size and shape of a cigar box made in a choice of black or cream plastic material. It was being manufactured for Ever Ready under contract with The Plessey Co.Ltd in Ilford. Ever Ready was also in the process of developing a third model "C" which had a wooden cabinet with sides sprayed in cream crackle-finish paint and a cream sprayed Perspex front and back. It had a handle on top and sold quite well over a period of about two years.

The manufacturing unit was now well established in Wolverhampton and by then was capable of producing receivers at the rate of 1000 per week. All future production was therefore carried out at this location.

the mass radio market

I made the chassis of the model K into a completely free-standing unit which could be pulled out of its cabinet once the back had been removed. It was thus very easy to service and as a result, became very popular in the field. We made many thousand of these and used the general design to develop others over a number of subsequent years until transistors became available and transformed design and development of radio receivers for ever.

Returning to the LISSEN SKYSCRAPER days, which by that time had become a distant memory, it was thought that if we could use a similar name, it might tend to increase sales by influencing those people who remembered the popularity of the original. Thus it was that further designs were given a name containing the word

of a 1.5 volt L.T. battery and an H.T. battery of 90 volts).

The company had a subsidiary in Port Elizabeth, South Africa and through this, exported a considerable proportion of its battery production under the trade name BERIC. It had, therefore, a contact on that continent which led indirectly to an enquiry from the then Director of Information in Northern Rhodesia, for a white-ant proof and tropicalised battery receiver to sell to the natives of Central Africa for £5.00 I was asked to design such a set urgently and present it to the Colonial Office for approval as a prototype for possible future production. Because a wooden cabinet was out of the question in the tropics, a metal one seemed to be more appropriate. During the inevitable brain-storming exercise to find a ready-made metal cabinet suitable for the prototype, one of the engineers thought of a round cabinet and then in a series of logical steps came the idea of a saucepan. A messenger was duly dispatched to buy an aluminium saucepan of reasonable size and on return, the handle was promptly removed, a large hole was then cut into the bottom for the loudspeaker and the chassis designed to correspond. Two plastic knobs were fixed to the outer side to act as feet and a lid was made to fit on what had become the back.

This was the origin of the prototype and led to the receiver's recognised name SAUCEPAN SPECIAL. The receiver was powered by a large dry-battery pack outside the cabinet and formed a plinth on which the set stood when in use. Although the prototype was actually made in an aluminium saucepan because of the speed at which it was required, all production models were subsequently made in mild steel cases sprayed with a hammer-finish BLUE enamel. The interesting point regarding the finish, lies in the fact that, in Africa at that time, the natives were very superstitious about colour and almost every other colour was taboo in one tribe or another - so blue it had to be.

The company made about 25,000 of these receivers which were exported to Northern and Southern Rhodesia, Nyasaland and later, the Congo and many other of the then under developed countries on the continent of Africa. There was a small booklet published in 1950 by the Department of Information in Northern Rhodesia. It was based on a report by Harry Franklin (it was he who had made the initial approach to the company). In this, he had provided extracts of the many letters of appreciation that he had received from natives who had purchased a set and in recognition of his report, I have reproduced a selection of them below.

Although some of the letters are amusing, they are usually written with great labour, but they do show the sincerity of a simple people trying to express their feelings of a new-found happiness. In their pidgin English, some of them had thanked him and God for their "wireless" and told him that since they had had it, they had never had so many friends.

"I am very pleased with it and have many friends than I had before, because many people come to listen to it and they even come when it is not the right time to listen to it".

"To me every evening is a jolly evening and makes home a happy home. I like the set more than important things that I have bought with

continues on page 81



A Northern Rhodesian family listening to their radio

The first model that I was entirely responsible for was the model "K". I had joined the company from the Radio Gramophone Development Co. Ltd. (RGD as it was known) where I was a Development Engineer and had worked through the war years on various types of airborne radio and Radar equipment. The company was very well known before the war as "The Aristocrat of the Radio World" and used to produce some very sophisticated and expensive radio gramophones for the domestic market. Some of their ideas and general outlook had naturally influenced my thinking in terms of receiver design and during my period at Ever Ready I tended to make their receivers easy to service and to raise quality standards as far as I could within the necessary price restraints imposed by

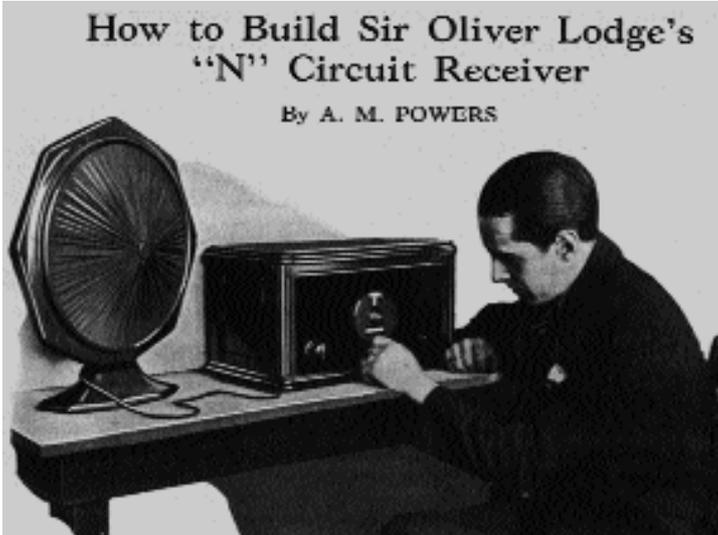
"SKY" rather than an uninteresting code letter. For some reason that I cannot quite remember, the following model was given the name Sky King, then came the Sky Queen, Sky Prince, and Sky Emperor (a very sophisticated portable containing medium, short wave and F.M. bands with high quality output).

The birth of the Saucepan Special

There were many others, including the Sky Lord, Sky Baron, Sky Baby, Sky Casket and in 1949 came the unique export model which was given the unlikely name "THE SAUCEPAN SPECIAL". Up to and including this time, all designs had utilised miniature valves with 1.4 volt filaments enabling receivers to be powered by dry batteries (usually a combined battery pack consisting

How to build Sir Oliver Lodge's "N" circuit Receiver

by A. M. Powers



In Volume 20 No. 2 of the BVWS Bulletin there was an article by "Dull Emitter" commenting on the Lodge "N" circuit. The author may find the article following to be of interest. It is from the "Radio Listeners Guide and Call Book" Volume 2 - Number 1 for June 1927. (Published in New York City.)

Some twenty years ago a well known collector of antique radios here in the USA by the name of John Caperton decided to build a set based on this article. John's primary interest at the time was in the "super sets" being made under names like Leutz, Norden Houck, Silver Marshall, etc. The "haywire" hookup shown in this article simply would not do. John elected to use first class components of the day connected by square bus bar and position components to yield a layout very pleasing to the eye. This receiver has now passed into my collection.

Aside from the curious design of the tuner, this design makes use of the Emerson "Multi valve"; a device containing three triodes with a common filament circuit. I know of only two American sets manufactured for sale that used this valve: the "Baby Emerson" and the Standardyne "Multivalve" (both quite rare today). I don't think that any other multiple triode "tubes" were ever used in commercial American sets of the 1920's.

I have not "fired up" this set myself but I do remember that John commented that this set produced very pleasing results. Maybe some winter evening I'll get around to doing a little critical evaluation of the set... I do not have the Baby Emerson in my collection but I do have the Standardyne Multi valve receiver. This set makes use of the Multivalve in a reflexed TRF circuit. I was very surprised and delighted at how well this little set performed.

I had the pleasure of visiting your area in June of 1989 when the BVWS invited members of the AWA to join in the Harpenden meet, Gerry Wells garden party, etc. That was one of the best vacations in my life! I hope it will not be too long before I can visit there again...

Robert E. Lozier, Jr.

This season seems to have awakened in radio engineers and scientists a tendency to delve into the past for ideas to improve radio reception.

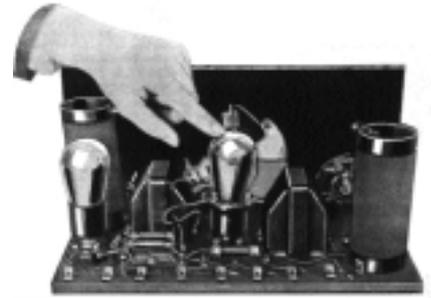
Grimes resurrected the old Inverse Duplex circuit and found it contained the germ for a really worthwhile receiver that could be made to measure up to every requirement of present-day broadcasting conditions. King produced heretofore unknown efficiency in a standard tuned radio frequency receiver by the simple expedient of providing automatic variation of coupling between the windings of the tuned radio frequency transformers. Loftin and White worked on the standard tuned radio frequency circuit and by combining the effects of inductive and capacitive coupling in a tuned radio frequency transformer they brought forth a worthy addition to the first of efficient radio circuits. Practically all of the developments of late have been made with the tuned radio frequency type of circuit as the starting point.

Sir Oliver Lodge, the man who introduced the idea of tuning into the wireless art, went back to the simple detector type of circuit for a new start in the development of a sensitive, selective and simple modern radio receiver.

To the uninitiated, his circuit seems to be one of the common, ordinary

regenerative circuits which were turned out in large numbers by the "new" circuit designers who flourished in the early days of the broadcasting craze.

This however, is far from being the case. When the circuit was first featured in the United States, many engineers and writers



Rear view of the 'N' circuit completely wired. Hand is pointing at the 'Multivalve tube'.

pooh-pooed the circuit without so much as giving it a fair trial. It was only after a few of the circuits were built up and demonstrated that the "Doubting Thomases" pricked up their ears and began to take notice. Fig. 1 shows the schematic wiring diagram of the "N" circuit. This is fundamentally the circuit introduced by Sir Oliver Lodge with a few minor changes to adapt the circuit to conditions met with in this country. The specifications given in the original English circuit have been followed rigidly with slight changes made only to make it possible to build the circuit with parts readily available in the United States.

The "N" circuit is the result of intensive research, investigation and experimentation by one of the foremost living scientists, a man who is conversant with modern broadcasting conditions. There is a real purpose behind the "N" circuit as there is behind any development produced by a true scientist. In the first place the designer has given us in the "N" circuit, one that is very simple to build and operate. The parts required are easily obtainable at a cost far lower than that required to build any receiver that can compare with it in sensitivity, selectivity and tone quality.

The detector circuit consists of two inductances, "L1" and "L2"; two adjustable fixed condensers, "C2" and "C3"; and one variable condenser, "C1". All the tuning is done with the variable condenser "C1".

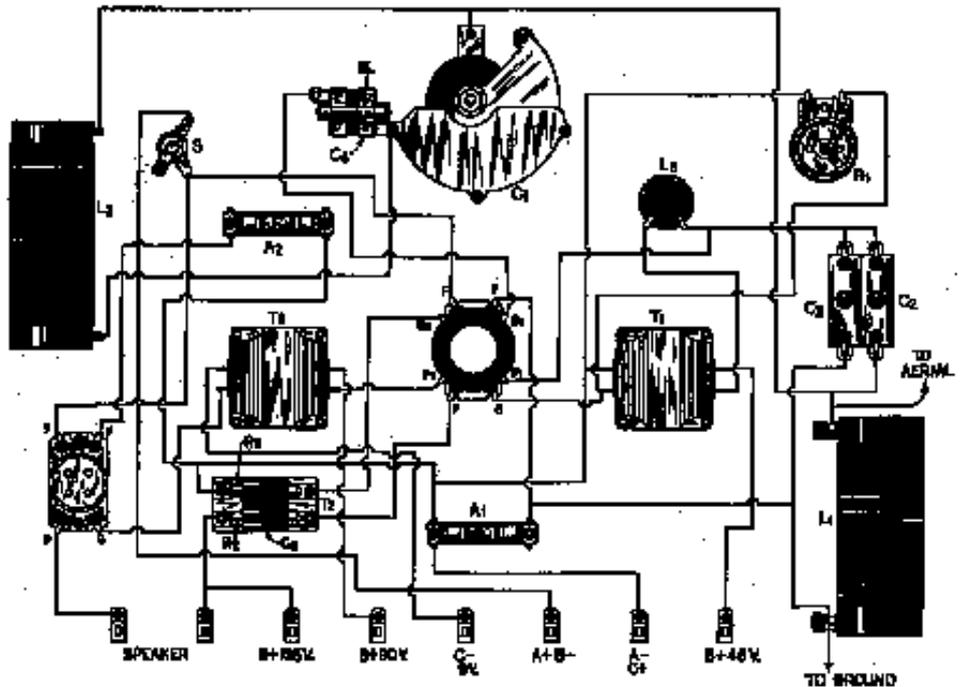


Figure 1

With this simple collection of apparatus, Sir Oliver Lodge has given us a circuit which is truly remarkable, combining knife-like selectivity with simple tuning.

The second unique feature of the "N" circuit is uniform sensitivity over the entire wavelength range. This is accomplished primarily by means of the two adjustable fixed condensers, "C2" and "C3", and is worked out by striking a proper capacity balance between the two condensers. If you trace out the circuits in which these condensers are connected you will see the application of the bridge circuit for eliminating the squeals found in the regenerative circuits whose resemblance to this circuit have caused many so-called critics to label this circuit a simple regenerative circuit.

The adjustment of the capacity values of these adjustable fixed condensers is very simple. It is made after the set is connected with the antenna with which it is to be used. Their adjustment will be described later in the operating instructions. With these condensers adjusted

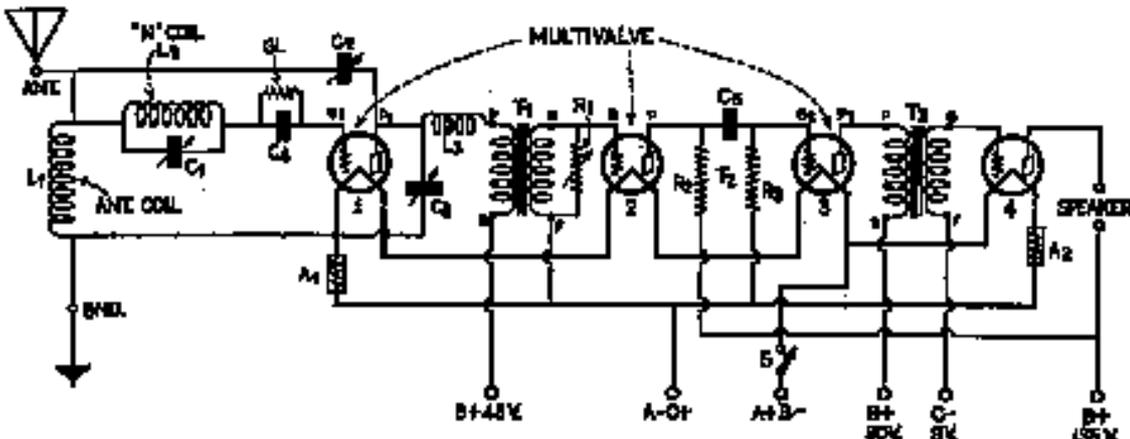


Figure 2
Schematic wiring diagram of the 'N' Circuit Receiver. Note that the first three tubes are combined in the one 'multivalue tube' as indicated

properly, the set will not oscillate, nor will howls or squeals be caused in tuning. This of course is far from being the case with the ordinary regenerative receivers.

The radio frequency choke coil, "L3" in series with the primary of the first stage audio transformer does not appear in the English "N" circuit. While the circuit will operate without it under certain conditions, it is absolutely necessary with most American made transformers.

Besides eliminating the squealing and howling nuisance, the "N" circuit provides a grade of selectivity and sharp tuning that can only be likened to the best superheterodyne and single-control tuned radio frequency receivers.

The stations click in and out with precision regularity as the tuning condenser is turned through its range. So sharp is the tuning that a vernier dial must be used on the condenser in spite of the fact that the capacity range of the condenser is only .00023 mfd. and only one tuned circuit is used.

When the "N" circuit has been balanced properly by means of condensers "C2" and "C3", nearly perfect, uniform sharp tuning, plus equal sensitivity over the whole wavelength is obtained. The actual balancing of the circuit is merely a matter of a few minutes work, and once done, need never be touched, unless the aerial is

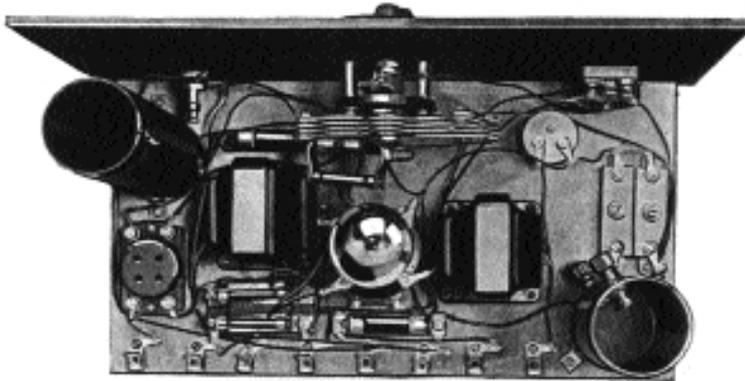


Fig 3. Sketch of socket showing 'Multivale' terminals

changed. One of the most remarkable features of the receiver is the low cost of constructing it. The complete cost of the two-tube model using a Multivale (3 tubes in one) comes to about thirty-five dollars, about half the price of most of the popular kits now available.

While the "N" circuit described in this article is equal in efficiency to a good four-tube circuit, the job of constructing it is by no means as difficult as it would appear from a casual glance at the wiring diagram. As a matter of fact the construction of the set is no more difficult than

most two-tube circuits because a Multivale (three tubes in one) is used for the detector, first and second audio stages, thus simplifying construction and conserving space. A 112 type tube is used for the last audio stage. The complete set can be mounted on a 7" x 13"



baseboard. In view of the importance of having the proper constants in the tuning circuit of the receiver, no attempt should be made to substitute ordinary coils and condensers for those units. The other parts have been selected for their adaptability, either electrically or mechanically, for use in this circuit.

The comparative simplicity of assembly is at once apparent. The wiring is unusually free from complications. Filament control is taken care of automatically by means of two Amperites. The front panel view amply illustrates the extraordinary operating simplicity of the circuit. All tuning is done with the vernier dial. Volume control obtainable by means of a variable high resistance across the secondary winding of the

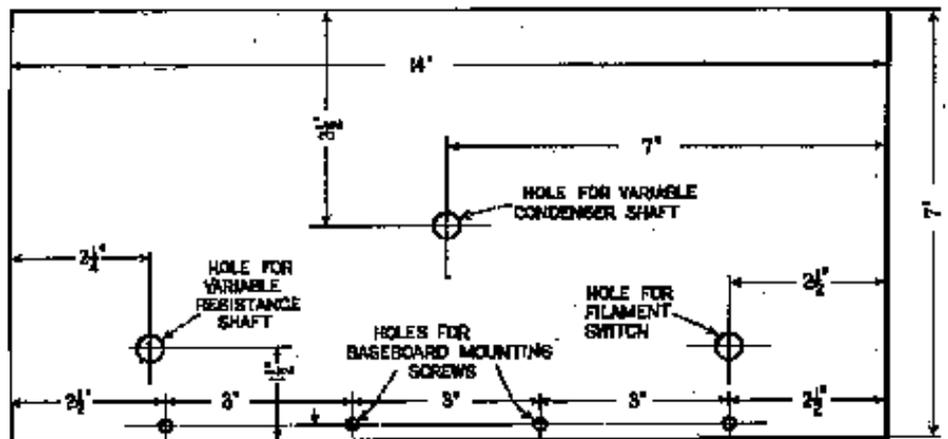
first stage audio transformer, is obtained by the knob at the left. The battery is turned on and off by means of the battery switch knob at the right. The "N" circuit is truly a one control receiver. There are no auxiliary adjusting condensers, oscillation controls or other compensating adjustments.

There is no particular trick to assembling the parts on the panel and baseboard. The location of each part is shown clearly in the pictorial wiring diagram of the receiver. The variable condenser, variable high resistance and battery switch are mounted on the panel. The grid condenser and leak is mounted with one terminal fastened to the stator plates terminal of the variable condenser. The other parts are mounted in the relative positions shown on the layout diagram. While it is possible to rearrange the parts and still get good results, it is difficult to foresee what effect a change in the location of the parts would have on the operation of the receiver. It is recommended therefore that the layout as given be followed religiously. Exceptionally good results were obtained with the layout shown so if you make any "improvement" you will have to make them at your own risk.

While the construction of the "N" circuit does not present any great difficulties, it will be worth your while to bear the following points in mind if building it. The connections for the Multivale are important so be sure to make

them properly. The use of this type of tube is not very widespread at present so a little detailed information may be useful. The Multivale has eight terminals in all. Four of them are made to prongs sticking through the base of the tube just as in the ordinary type of tube while the remaining four terminals are mounted on the bakelite ring, moulded as a part of the tube base and forming a "shelf" next to the glass portion of the tube.

The four terminals projecting through the base of the tube provide for the filament connections and one set of "G" and "P" terminals. Two filament terminals, (a negative and positive) are all that are required for the filament connections. The series connection of the filaments is made



continues next page

inside the tube. The tube socket, and the prongs of the tube which make connections with the springs of the socket, provide the connections for the first stage audio tube in this circuit. The connections to the "G"; "P"; "F-" and "F+" terminals of the socket complete the filament connections for the three tubes and the "G" and "P" terminals of the first audio tube. The connections for the detector and second audio tube are made to the "G1," "P1," "G2" and "P2" terminals which are mounted on the shelf of the tube base. The "C1" and "P1" terminals are for the detector circuit and the "G2" and "P2" terminals are for the second stage as shown in Fig. 1.

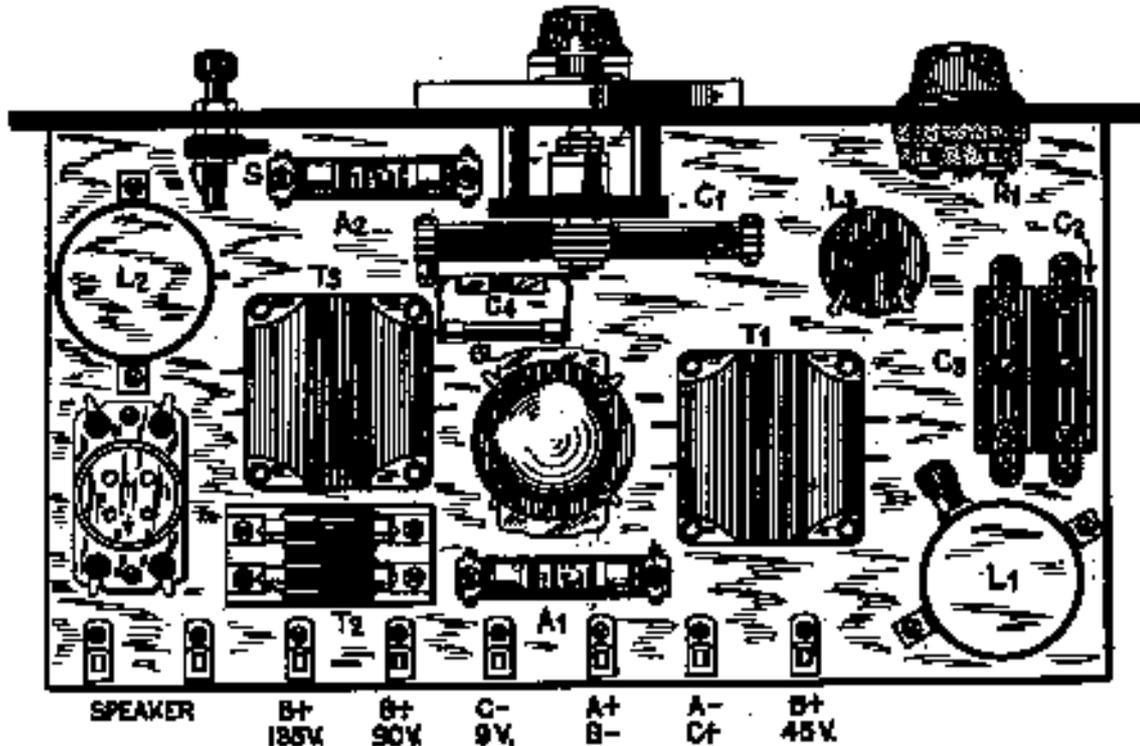
A sketch showing the location of the multivalve

aerial of over sixty feet overall length is used, while best results can only be obtained with an aerial of from eighty to one hundred feet.

When you have checked the wiring carefully and inserted the tubes; made the final connections to the Multivalve terminals and connected up batteries, antenna, ground and loudspeaker, you can proceed to balance the receiver by means of the adjustable fixed condensers. The values of "B" and "C" batteries shown in the diagrams are for use with a Multivalve using a 112(?) type tube in the last stage. If a tube of the 171 type is used in the last stage for better volume and quality, it is advisable to use no more than 135 volts of "B" battery, the same as used for the 112 type tube,

clockwise direction until the circuit just stops oscillating. Then turn the tuning condenser, "C1" so that it covers the wavelength range and note whether the circuit comes into oscillation again as you tune down to the lower wavelengths. If it does, and it probably will, it means that the capacity of balancing condenser "C2" is too great. It can be reduced by turning the adjusting screw in a counterclockwise direction until the circuit stops oscillating. Now go back to the high wavelength setting on the tuning condenser and readjust condenser "C3" so that the circuit is just below the oscillating point, and try covering the wavelength band again. Repeat this procedure back and forth, adjusting condensers "C2" and "C3" until the circuit is maintained just below the oscillation point over the entire wavelength band.

It will be noted in making these adjustments that increasing the capacity of balancing condenser "C2" has a tendency to make the circuit oscillate more and vice versa, adjustment of condenser "C3" has exactly the reverse action. Increasing its capacity has a tendency to stabilize the circuit while decreasing it has a tendency to increase the tendency towards oscillation. The whole secret of the adjustment is to strike a proper balance between the two. If the capacity in the balancing condenser "C2" is too small, the circuit will have a tendency to oscillate on the high waves whereas if balancing condenser "C2" is adjusted for too great capacity, the reverse will occur and the circuit will oscillate on the low wavelengths more than on the high wavelengths.



terminals and their location when the tube prongs are inserted into the tube socket is shown in Fig. 3. The proper connections to the positive and negative filament terminals are important so do not take it for granted that it does not matter which way you make the filament connections. It is also important to wire the Amperites into the negative filament leads of both the Multivalve and last audio tube as shown.

No clips are provided for the antenna and ground connections. The aerial and ground wires can be run direct to the binding posts of the antenna coil.

The parts are located with a view to making the wiring as simple as possible. If you use flexible hookup wire, you should be able to complete the wiring job in from two to three hours, depending on your skill in welding a soldering iron. Make the connections as short as possible, running the wire direct from terminal to terminal on the principle that a straight line is the shortest distance between two points.

Make the connections to the four terminals of the Multivalve shelf last. Do not place either tube in its socket until all the rest of the wiring has been completed, and the wiring checked to make sure that it is correct.

To get best results it is absolutely necessary to use an efficient aerial system. It is impossible to get really good results unless a well-constructed

but the "C" battery voltage should be increased to 27 volts.

Higher "B" and "C" battery voltages should not be used in the last stage unless an output circuit consisting of the standard output choke and condenser or output transformer are employed to prevent the passage of the heavy direct current thru the speaker windings.

It is an easy matter to adjust the balancing condensers, "C2" and "C3". Take a long screwdriver and screw the adjusting screw of condenser "C2" as far as it will go in a clockwise direction to adjust the condenser for maximum capacity. Do not force the screw.

Condenser "C3" should be adjusted to minimum capacity by turning the screw in a counterclockwise direction.

Now set the vernier tuning dial so that the condenser rotor plates are nearly all the way in. In other words adjust it for maximum wavelength. Now when the set is turned on, the detector tube should oscillate. This condition can be recognized by tapping the stator plates of the variable condenser with the finger, when the characteristic click-click of the oscillating circuit will be heard, or by moving the condenser, that is, by tuning down the wavelength range a bit until a whistle is heard, which will occur, of course, as soon as the tuning control reaches the wavelength of a station within range.

Now turn down the adjustment screw, in a

After these two condensers have been adjusted so that a good balance has been struck and the set is uniformly sensitive without oscillating over the whole wavelength range, make a final adjustment with condenser "C3" screwing it down a bit until the circuit is far enough below the point of oscillation so that no distortion will result.

Once you are satisfied with the adjustment of these condensers you can forget them as long as you use the set on the same aerial installation. Since the constants of the aerial circuit enter into this adjustment it is necessary to operate the set from the same aerial all the time. If you change the aerial or its constants, it will be necessary to re-establish a balance by readjusting condensers.

It is important to note that the constants of the tubes change slightly after they have been in operation a few minutes and have had a chance to warm up. It is desirable therefore to make the balancing adjustments after you have turned on the tubes for a few minutes. To prevent radiating noises, it is best to disconnect aerial and ground during the few minutes that you have the set turned on previous to adjusting the condensers. The "N" circuit is not designed primarily for distance reception although you will find it as sensitive as any set in its class. Its selectivity on local stations however makes it a very efficient set for use in congested districts, such as New York and Chicago.

PARTS NEEDED

- 1 Bakelite or Radion front panel, 7" x 14" x 3/16"
- 1 Wood baseboard, 7" x 13" x 1/2"
- 1 Emerson Multivalve
- 1 Cleartron CTX 112 power tube or equivalent
- 1 Precision Antenna coil (L1)
- 1 Precision "N" coil (L2)
- 1 Precision Type "N", R.F. choke coil (L3)
- 1 Precision Type "N" variable condenser, .00023 mfd. (C1)
- 2 X-L Type G-10 Variodensers (C2; C3)
- 2 Samson Type HW-A3 Audio transformers, 2 to 1 ratio (T1; T3)
- 1 Lynch Double resistor mounting (T2)
- 1 Lynch .1 megohm Metallized resistor (R2)
- 1 Lynch .5 megohm Metallized resistor (R3)
- 1 Lynch 5 megohm Metallized resistor (GL)
- 1 Electrad Royalty variable high resistance, Type L, 0 - 500,000 ohms (R1)
- 1 Electrad battery switch (S)
- 1 Electrad Type GS grid condenser with clips, .00025 mfd. (C4)
- 1 Electrad Type S, .01 mfd. fixed condenser (C5)
- 2 Patent cushion type UX sockets (1, 2, 3, 4)
- 1 Amperite No. 1A (A1)
- 1 Amperite No. 112 (A2)
- 1 Silver-Marshall Vernier dial
- 8 Fahnestock metal clips for battery terminals
- 1 package Kester Radio Solder
- 1 package Acme or Corwico Flexible hookup wire

continued from page 77

much money in my life. It is exactly like a big wireless".

"Oh! how very happy we are, I and my wife Lucy.



How very pleased we are when our wireless starts to speak at 5 o'clock".

"I feel proud when I switch on my set and have the WHOLE WORLD in my house... for ages I have been feeling lonely, but now with my Saucepan Wireless set, I feel as though I am in the Recreation Hall or in a Theater".

In order to buy one, some of the natives joined into pairs and at two-month intervals, each one of them in turn drew the wages for both of them, so that each one would collect enough money to pay the £5.00 necessary to buy a set (the battery was the equivalent of £1.25 extra). To this day, I have never discovered the logic of such an arrangement, but nevertheless it DID happen.

Concurrent with this export drive, another company was exporting sugar to the same area and it was discovered that many of the native children were wearing the used hessian sugar bags by cutting three holes in them - one in the end for their head and one at each side for their arms. This practice led to an arrangement whereby future used bags were over-printed with a picture of the Saucepan Special and the words "MY WIRELESS" emblazoned on both sides. The children were highly delighted at being able to run around showing off their parent's wireless and of course, the company obtained enormous publicity. Unfortunately,

none of this material seems to have survived and all that I have to support it is my memory and just the picture that accompanies this article.

The Introduction of Transistors

We switched from valves to transistors sometime in the late 50s, and our first transistorised receiver was the SKY LEADER. Due to the many advantages of semiconductors, the whole concept of radio design, development and production changed. Receivers could be made much smaller and a whole new range of batteries had to be developed and produced to correspond with the rapidly growing market for these new designs. The market itself was changing and publicity was concentrated on the belief that every household now needed a "second set". The Sky Leader was very successful and in total, we made about 150,000 of them spread over the period at least until 1963. Following this success, other designs were introduced at various times, with production running concurrently, such that for a considerable period, total production ran at a rate of 5,000 receivers per week.

One of the subsequent models represented a complete break from tradition and was the first of its kind on the market. It was a dual purpose receiver designed to operate as a portable, using an internal 9v dry battery, or as a car radio when the set was inserted into a special container that had been fitted permanently into the car dashboard. When in the car, the set functioned as a normal car radio, being automatically



connected to the car battery, the aerial and the loudspeaker. Its name CAR PORTABLE was one of the few that deviated from the now-established use of the "SKY" prefix. This led inevitably to a smaller and more sophisticated model known as the SKY TOURER.

There was also a personal set in a moulded plastic cabinet, designed to satisfy a growing tendency to develop smaller receivers that could be carried in the pocket or in a handbag. It was called (with some degree of humour) the SKY LARK.

There were a number of other designs such as a portable record player and a very elaborate receiver in a polished wooden cabinet aimed at the upper end of the export market. There were also many projects which never went beyond the prototype stage. One of these was an early form of toy piano operated entirely by batteries and a radio-gram in a beautifully polished walnut-veneered floor-standing cabinet, which, although an excellent design, was not thought to have the required sales potential.

As in most manufacturing schedules, successful models were re-introduced over the years alongside completely new designs, with either a new colour scheme or were completely restyled. So it was with the Ever Ready Range. In total, during my seventeen years with the company, well over one million receivers were sold, many of which are still being used and cared for by an ever-growing army of enthusiasts.

The Cambridge International

by John Ounsted



Introduction

In my previous article, on restoring AM/FM receivers, I remarked that the full-sized wood-cased AM radios of the early Fifties seemed to have got stuck in a rut. Indeed, a kind of visual banality was the order of the day; the best many manufacturers could come up with was the four-knobs-in-a-row-under-a-balanced-speaker-and-tuning-scale look popularised by Pye in their "no frills" post-war sets, and by Cossor's ubiquitous Melody Makers of the same period. Circuitry had similarly been standardised almost to the point of boredom.

There were, however, some striking exceptions to the general blandness.

Prominent amongst these was the glorious Pye Model J Type PE 80- a nine valve, eleven waveband table-model that can now be seen as the last of the big, bandspread Short-wave Pyes, and, moreover, one of the last sets to carry the 'Cambridge International' tag. Measuring an impressive 17.5"x23.5"x10", this receiver was clearly the flagship of Pye's 1953-54 fleet, and was designed and styled to appeal to the "serious" listener both here and abroad. Its lineage can be traced at least as far back as 1939, when Pye launched their model 906 'International'. This was a generously-proportioned, non-motorised radio offering convention-

al Long and Medium-waves, plus six bandspread Short-wave ranges. These were selected by fashionable push-buttons, as were four preset Long or medium-wave stations. The IF was 462kHz, and this and the absence of an RF stage permitted only one tuned-circuit (with some additional image rejection) ahead of the frequency-changer valve. This circuit technique also facilitated simple, electronic preset station selection on LW and MW since only two trimmers were needed to tune in each button.

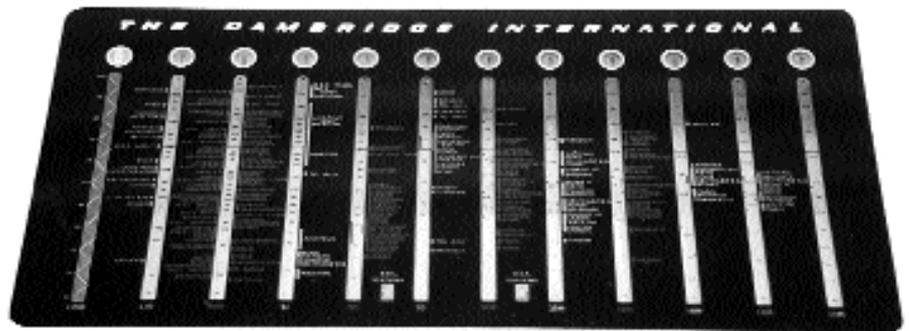
In an enthusiastic November 1939 test report, ominously bylined 'Sets for Wartime', *Wireless World* gushed: 'As far as sensitivity and signal-to-noise ratio are concerned, the performance is equal to that of many sets with an RF stage...' and 'The set speaks with a directness of utterance which leaves no doubt as to whether any particular station is working or not.'

Doubtless encouraged by such fulsome praise, Pye resumed volume production of bandspread SW radios at the ending of hostili-

ties. Philips made a notable contribution to the genre with an exotic twelve-band double-superhet, a strange looking brute called the 681A; Bush, Mullard and others pitched-in with multiple-wave radios, often intended exclusively for overseas and hence commonly omitting the Long-wave band, Pye fought back with their attractively-styled PE 60, which was only finally released onto the home market in mid-1952, and shared a number of electronic and stylistic details with the PE 80, although differing markedly in overall appearance. Of these two receivers, the PE 80 is far more frequently seen, forty years later, at swapmeets, or even in junk shops (This perhaps suggests a comparatively healthy sales record here at home). This last Cambridge International may hence be regarded as an easily-acquired latter-day classic, furthermore, capable of excellent performance and sound quality after only light restoration. In this article, I would like to take a closer look at the receiver, and to relate my experiences with it.

A First Look Around.

In designing this Brabazon of the sideboard, Pye engineers took Mullards B8A '41' range, and fashioned a nine-valve chassis, equipped with RF stage, push-pull audio output and tuning indicator, and thoughtfully provided (with one eye still on the export market) with a mains transformer capable of accepting 90 V mains! The cabinet featured contrasting veneers and gilt trim used to elegant visual effect, and a clean uncluttered frontage was achieved by placing the four control knobs on the case sides. But the piece-de-resistance of the set, as seen now, has to be the wondrous, externally-mounted tuning-scale made, with a daring simplicity, as a



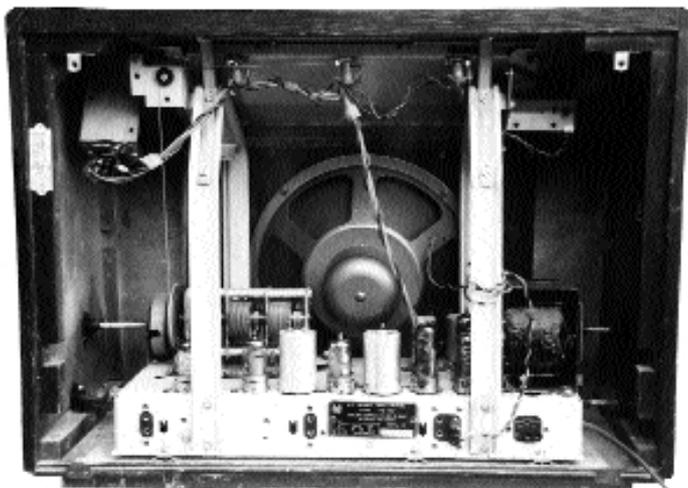
The International style: The somewhat packed dial of the Cambridge International

ties. But, for a while, they tended to make receivers, for the home market at least, that answered the 'four-knobs-in-a-row...' description mentioned earlier- sets like the I9A, I9D, PE39U, P53 and the rather more striking 39J/H-an octal valved forerunner of the PE 90, without its visual style or distinction.

Of course, in the hot-housed, export-or-die atmosphere of austerity Britain, many other manufacturers got in on the act; Ekco, for one, produced their A28 model, offering nine wavebands and five preset stations on a chassis faintly reminiscent of that used in their popular standard A23 and U49 bakelite sets;

gigantic rectangular piece of plate-glass, held to the raked top panel by four gilded cheese-headed screws, and bearing the proud inscription 'THE CAMBRIDGE INTERNATIONAL' (The use of the definite article tickles one- it's presumably to reassure us that there couldn't be another) The hubris continues in the station markings-this is clearly no ordinary superhet. Even MW offers the delights of Tel Aviv, Sundsvall (wherever that is), Istanbul, Zagreb and Damascus' The nine Short-wave bands are rather less pretentious, although "SCHWARZ 'B'G", Which is short for Schwarzenburg- still Switzerland's principal SW transmitter site manages to pop up nine times. Even the tuning indicator isn't just a tuning indicator, it's a "TWIN VISION TUNER", so there!

In early models the tuning-scale was simply black with gold relief and lettering. Later models retained a gold surround, but featured a much more attractive three-colour scale, with individual wavebands coloured either red, green or blue. Likewise, the diamond-patterned speaker cloth fitted to early sets later gave way to a gold-sprayed expanded metal grille.



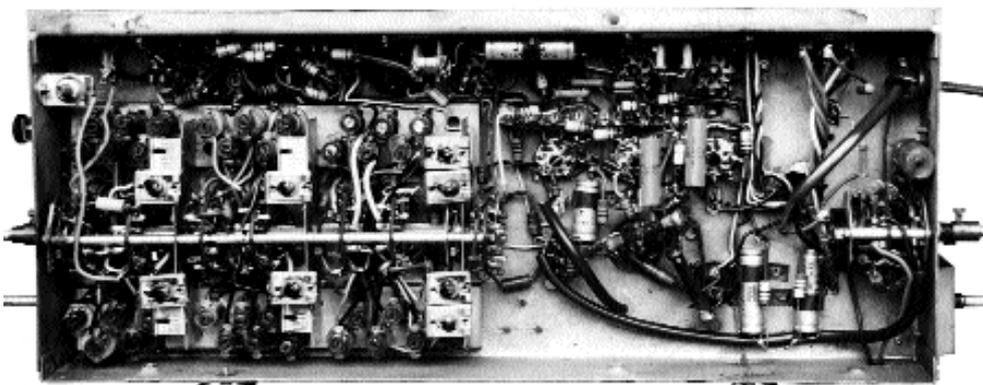
Inside the set

Your first impression, on removing the ample back and blowing the dust away, is of a cavernous box with a relatively small, powder-blue painted chassis screwed to its base. A pair of giant croquet-hoop-like steel bars bestride the chassis, bearing aloft the King-sized tuning-scale backplate, which itself houses Pye's ingenious 'shutter'-type waveband indicator, a necessity in an eleven-band set- you could get completely lost without it! A series of complicated steel wire and cord drive systems link this, and the horizontal tuning cursor (which is itself about fourteen inches long) to components beneath. (Even the Tone-switch has its own little indicator, again, driven by a steel-wire drive), Coming down on deck again, one observes that the tuning capacitor has six sections to it; there are three full-sized ones performing Aerial, RF Amp. and Oscillator tuning for the first six lower frequency bands, and three smaller ones doing the same things on the remaining higher bands. The pitch-coated output and mains transformers sit chassis right. The anonymous ten-inch speaker resembles the ones you find in vintage guitar amps- it plugs-in, of course, using those dinky miniature wanderer plugs that one can't seem to get anymore. Ah, Pye ! The "Twin Vision Tuner" is secured to the cabinet by its own private bracket, and, being actually a standard EM34, is viewed end-on through a masked aperture in the tuning-scale surround.

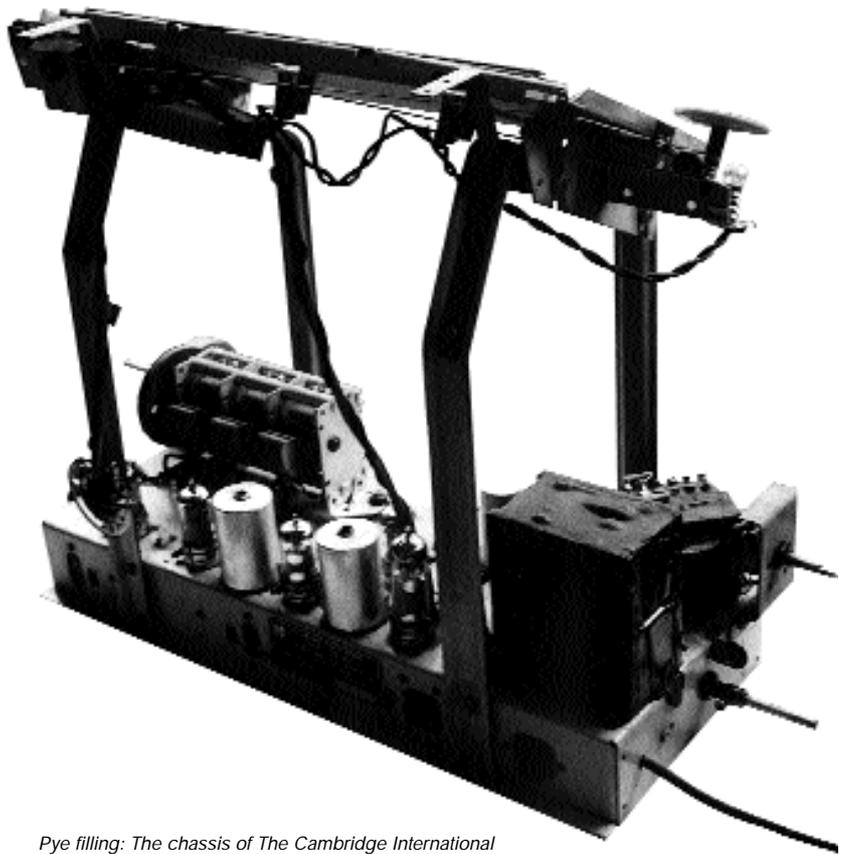
The set has no false bottom, so the chassis must be removed for most service or alignment work. This action reveals a dense plantation of coil formers and trimmers, occupying roughly half of the available under-chassis space. The wavechange switch has fourteen sections on it, and there are a staggering thirty-eight adjustable inductors, but, as a compensation, only nine trimmers. If you're contemplating aligning this beast, I'd take a packet of sandwiches and a flask of tea and lock yourself in for the duration- it's an all-weekend job!

Restoration hints

The receiver will probably work to some extent, when you first get it. But I would recommend a blanket replacement of all non-electrolytic capacitors of value greater than 0.01µF, excepting cathode decouplers, but including C65, the magic-eye grid capacitor, and C41, the AGC decoupler. (All nomenclature is derived from the data given in Newnes Radio & Television servicing for 1953-5, which also gives the alignment procedure) The capacitors which you remove will probably be found to be the brown "Hunts" or silver-coloured "TCC Metalmite" types, both fairly dodgy on the leakage front. The mains filter capacitors C77 and C78 don't



do much to reject mains-borne interference. They can either be removed altogether or replaced with modern capacitors intended for interference suppression at mains voltages. Note that leaks in either AF coupling capacitors C67 or C68 will put standing positive voltages on both the output EL41's grids, and on the grid of the phase-splitter EBC41 as well! Best to change both capacitors, therefore. The tone-correctors C71 and C72 can cause slight treble distortion if they develop non-linear voltage-related leakage. Don't try simply removing them- the AF stages will oscillate! Instead, replace them by ceramic disc or "dogbone" types of at least 750 VDC working. All the AF decoupling electrolytics may be



Pye filling: The chassis of The Cambridge International

checked by shunting them with a similar-value known-good component, and noting if the volume increases. The values of the following resistors should be checked and replacements fitted if necessary: R15, 28, 29, 33, 39, 40, and 44, plus the HT feed resistors R41, 42, 43, and 44.

The fancy tone-switch lacks the effectiveness of the much simpler ones fitted to the "four-knobs-in-a-row..." Pyses, and the set's tone may be rather too mellow for some tastes. If you crave more treble, even with the Tone-switch set to "Fid", (position 1), then try removing, in turn, C56, C60 and C63, to taste.

In the earlier sections of the receiver, the PE80 seems to be cheerfully tolerant of low-emission valves; both the EF41's and the ECH42 can be down to one quarter of their rated mutual conductance, and still make no perceptible difference to volume or tuning-indicator deflection on a weak signal. This is fortunate, because these valves often are this low and the cost of replacements is rising sharply! With this last point in mind, never

use force when inserting these valves. If a valve won't go in, check for any bent pins and gently straighten if necessary. Likewise, check the valveholder for distorted contacts. Either problem may cause the pins to be laterally stressed, resulting in cracks in the base and eventual valve failure, possibly months later, it is permissible to remove the spring-steel ring from the valveholder. This enables the valve to be gently "felt" into place, with any undue resistance much more noticeable.

As already noted, the specified tuning-indicator is an EM34, but the author would recommend trying a 6M2 in its place. This valve retains the "dual-sensitivity" of the EM34, (whereby a strong signal can never saturate the indicator), but gives a much greater angular expansion of its "petals" resulting in a much more striking visual change on strong signals. Whichever valve you select, be prepared for its "new" glow to fade often fairly quickly. When newly fabricated, these magic-eyes presumably have a high initial emission. This gives them the dazzling luminescence of a Martian space-ship, especially when seen at night. Unfortunately, this soon dies down to a workaday brightness, as the emission falls to normal. One hence understands why these "eyes" were often kept well recessed in the darkness of the cabinet, and usually observed through cowled or masked aperture, as in this case.

Alignment is indeed an epic task, but at least it gets easier on the bandsread ranges, since no repeated padding and trimming need be

done - the set is aligned at one frequency at the centre of each band. An accurate, stable, harmonic-free generator is a must - you won't get far trying to tweak this one on-air! One grumble: it may well be found that the O-100 calibration provided on the tuning-scale back plate, which you are supposed to use when aligning the set, cannot be made to correspond to the O-100 logging scale on the main tuning scale, no matter how the latter is positioned. Allowance must hence be made for any discrepancy when aligning. The bottom of the pointer carriage is used as a "cursor" for the O-100 calibration. Also, be aware of aligning on "image" frequencies on the highest bands.

A few points purely on the mechanical side: the waveband and Tone switch indicators are linked to the relevant control spindles by stranded steel wire. Should this break, it must be replaced by exactly the same kind of wire, which is available from model shops. If ordinary drive cord is used, it will progressively stretch and cause both indicators to get out of phase with their controls on higher settings. Staying in the same area, the waveband knob leads a hard life, what with all those fourteen sections to rack-over, and it sometimes breaks. Before trying to mend it, clean and lubricate all moving parts of the waveband switch and shutter - it is imperative to minimise friction. The knob can be glued together with Araldite Rapid, or similar, and bound with tape whilst the adhesive sets. Furthermore, it may be possible to swap it with the Tone switch knob, which has an easier time of it, assuming that this has not already been done. In addition, this style of knob crops up quite frequently in "knob boxes" at swapmeets, having been used in a number of Pye products of the early fifties.

On the cosmetic side, the inevitable "dust-shadow" on the speaker grille can be removed by gently washing the latter in warm soapy water. Do not rub too hard, or the gold paint may start to come off. The winged "Pye Cambridge England" badge and the gilded tuning-scale screws respond well to Duraglit wadding. The black-painted case-sides may be shined-up with T-cut. Finally, be very careful when removing the tuning-scale glass, it's heavier than you might expect, and you'd never forgive yourself if it got broken!

The Set in action

OK, let's switch on this leviathan, and hear what we get: on Long and Medium, this radio immediately shows its class: a plenitude of signals, both British and European, can be received by day on just six feet of wire; on a longer aerial, there are many more broadcasts to choose from, and the abundant gain is well controlled, the set throttling itself back well on local stations, with no distortion. It's intriguing to "scan" slowly across MW, listening to all the distant "local" stations, most of them, unfortunately, much of a muchness, but usually received with ample volume. A few naughty tuneable whistles are evident when a very big aerial is applied, but these are mostly unobtrusive and forgivable. An earth connection is essential to minimise interference however, especially in an urban environment.

The sound quality is good, though too mellow for me in its original state, hence the modifications suggested earlier. The bass is "tuneful" and acceptably free of "boom" - one is able to follow bass tracks that one had not previously noticed - but it's not quite in the Murphy class.

Clicking over to the first SW band, designated "S1", and covering 70-190m, one is a bit disappointed, for this "Trawler Band" now seems rather dead. The amateurs who once used Full-AM on "Topband" now seem to have departed, leaving just the "sideband" boys (who sound like Donald Duck on a non-BFO receiver like this), plus a modicum of broadcasters, mostly around 70m, lots of digital "traffic", and the odd cordless 'phone.

Things hot-up considerably on the next few bands, as we enter the wavelengths that standard three-band superhets designated as SW, i.e. roughly 16-50m. Here, the Cambridge International's superiority to those sets is very apparent. Tuning is greatly eased by the provision of the bandspread ranges, allowing you to return confidently and accurately to the same station on different nights, using the handy logging scale. The stations have roughly the same scale spacing as on the Medium waveband, and are not crammed together in the sort of teeming babel that you got on regular contemporary sets. They are also well received - this set never seems to run out of audio gain! Drift is slight, even from cold.

Below 20m, diurnal variations and sunspot activity take their toll on reception, and the 16m, 13m and 11m bands can be very dead, especially at night, although very lively at other times. Under present conditions, the best bands seem to be the 19, 25 and 31m, which yield reception of Canada, Japan, Finland, Australia, Ecuador etc. My current favourites are the earnest young American Bible-combers, and their rather more sinister brethren the Hellfire-and-Damnation preachers, some of whom broadcast on relayed fundamentalist talk-radio stations, with worrying names like "Patriot Radio".

Since the volume and tuning knobs are mounted one on each end of the Pye's cabinet, you have to embrace the beast when doing all this DX-ing, whilst simultaneously staring, with fixed attention, at the colourful and brightly-lit tuning-scale. It's a bit like plinky plonking away on a sort of walnut-veneered pinball machine!

A Final Word

The PE 80 was undoubtedly one of the last great AM-only receivers of the valve era. In addition, it had the luck to sneak under the wire just before VHF loomed onto the horizon in 1955. The radiogram version, the PE 80 RG, cut it particularly fine, having been released in September 1954: only one year later, and it would have been de rigueur for an instrument in its class (costing 175 gns) to be equipped for FM reception, for the home market, at least. The mind boggles at the additional electronic and mechanical complications that this provision would have entailed! (This 'gram version, incidentally, retained all the features of the table model, and added a 9 kHz heterodyne filter which was only in-circuit on radio, plus a more elaborate Tone-switch and two tweeters. In addition, it was festooned with no less than thirteen bulbs for dial and record-deck illumination!)

Through the 1950's, Pye continued to make occasional SW bandspread sets for the export market, like their model P.224, which had the dubious distinction of being built entirely on printed-circuit boards, and was one of the few British piano-key radios that did not cover the FM band. In the early sixties, they were still making a model 445U, which used chassis and valves that were already ten years out of date, receivers like these didn't have the style or spirit of the Cambridge International, which now seems the last of the breed.

The following BVWS Bulletin back numbers are currently available.



Vol 10 Number 2 Inc. The KB Masterpiece, Extinct Species "A Monster Defiant".

Vol 11 Number 2,3,4 Inc. Adey's Cigar box receiver, Was this Hitler's Wireless, Crystal Gazing, The Famous face that faded away "Frank Murphy".

Vol 12 Number 2,3,4 Inc. The PYE "Twin-Triples", The Fultograph, Ekco Coloured Cabinets.

Vol 13 Number 1,2,3 Inc. Direct action tuning, The Philips 2514, Noctovision.

Vol 14 Number 1,2,3 Inc. Cable broadcasting in the 1930's, The story of the Screen Grid.

Vol 15 Number 1,2,3,4 Inc. The wartime Civilian Receiver, Coherers

in action, Vintage Vision.

Vol 16 Number 1,2,3,4 Inc. The Stenode, The Philips 2511, Inside the Round Ekco's.

Vol 17 Number 3,4,5 Inc. Wattless Mains Droppers, The First Philips set, Receiver Techniques.

Vol 18 Number 3,4,5 Inc. The First Transistor radio, The AVO Valve tester, The way it was.

Vol 19 Number 1,2,3,4,5,6 Inc. The Birth of the Transistor, Super Inductance and all that, reflex circuits, A Murphy Radio display, restoration.

Vol 20 Numbers 1, 2, 3, 4

Supplements:

1 Brown Brothers 1925/26 Component Catalogue re-print

2 "Just a Few Lines" The Birth and Infant years of BBC Television.

3 "Metro-Vick 1922-1928", "Early Television in the UK", "Industrial aspects of the Valve before 1925"

All bulletins and supplements are priced at £2:00 each + postage.

Postage: for individual bulletins add 50p, for 2-5 bulletins add £1, for 6 or more add an extra 20p each.

All requests for back numbers, should be sent to the Membership Secretary (Mike Barker) whose address can be found in the inside-front of this bulletin.

A La Recherche des Sons Perdus

by Pat Leggatt

A year or two ago Margaret and I were on a French holiday in the Lot valley, east of the Dordogne area. One day we were driving up the D922 from Mauriac towards Clermont-Ferrand when we saw a sign to the XVth Century Château de Val. We thought that would be interesting, so turned left down a small side road where we soon came to a cafe and decided to have a coffee before going on to the Château.

While we were in the cafe Margaret noticed a poster with pictures of old radios and horn gramophones, advertising the Musée de la Radio et du Phonographe just down the road. Well we did visit the Château in the end, but first of course we called in at the Museum. Their slogan is "A la Recherche des Sons Perdus" (a quest for sounds of the past) - with apologies to Marcel Proust! - and what a splendid display is to be seen: there are more than four hundred items, about equally divided between wireless and mechanical music machines, and all in working condition. The Museum is the



Above: The book which can be purchased at the museum.



Above right and below left: some of the incredible equipment on display (see also rear page)

personal enterprise of Michel Héliez and his wife, who started collecting many years ago when what are now priceless rarities could be found in attics, barns and bric-à-brac shops. Monsieur Héliez is a university lecturer in Clermont-Ferrand, so it is generally Madame

who shows visitors round. From her one gets a warm welcome and very knowledgeable explanation of the exhibits; but she does not speak English, so one's school French must be dredged up as best one can!

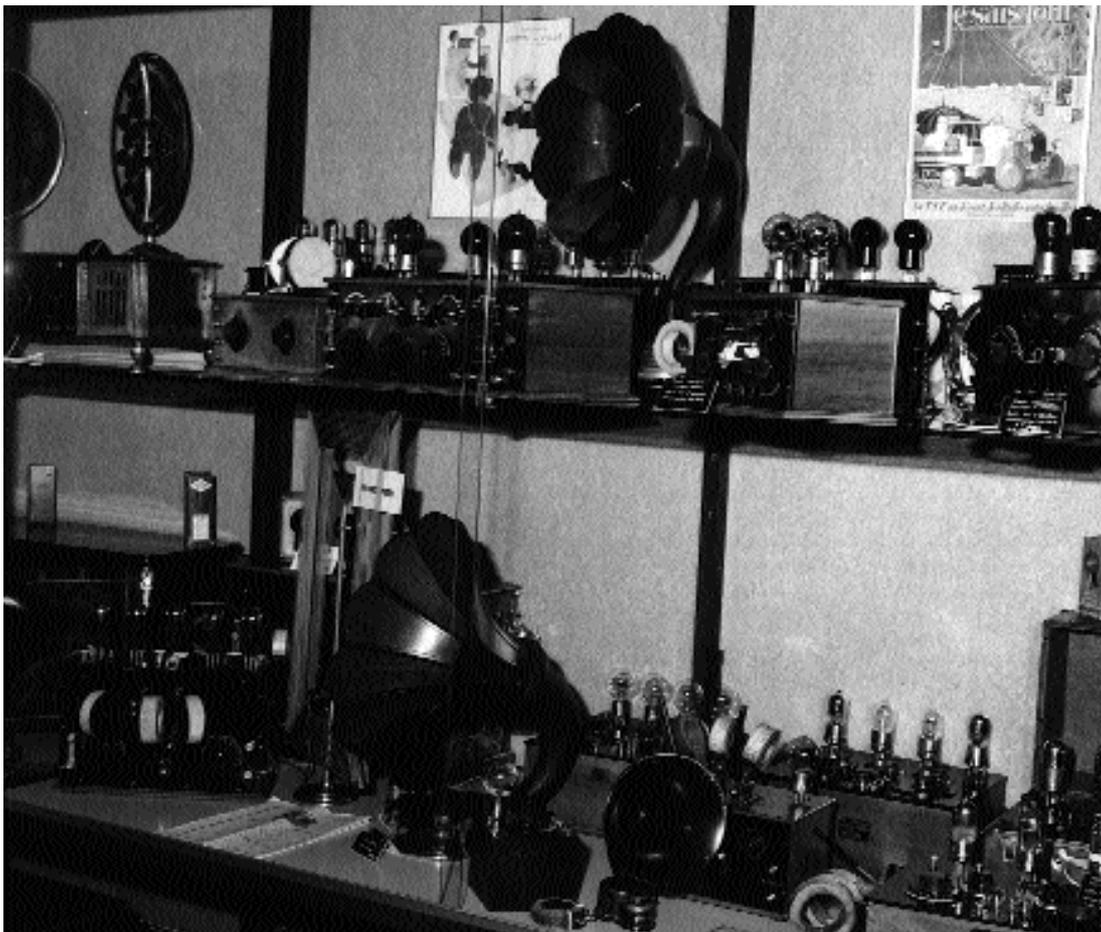
The mechanical music display is very dramat-

ic with the lavishly decorated gramophone horns, and such things as an Orchestron which Madame Héliez will set to play at enormous volume and irresistible beat. Both the mechanical music and the wireless displays are so arranged and described as to relate the history of these things and the people who developed them.

As might be expected - and what most English visitors would want - the great majority of the radios on display are French. The items range from Branly coherers and Ducretet electrolytic detectors from the early years of the century; through World War I and the 1920s and 30s; through World War II and to the post-war bakelite models. It would be hard to find a more comprehensive collection, and the pictures accompanying this note show only a small fraction of the whole.

So if you're in central France do take an hour or two to visit the Museum, and indeed the Château which is very impressive and beautifully situated on the shore of a large lake. The Museum is open from 2 p.m. to 6 p.m. April to October, with the additional hours of 10 a.m. to noon in July and August. You can find it just outside the village of Lanobre, 80 km south-west of Clermont-Ferrand on the D922.

I am most grateful to Madame Héliez for supplying the photographs and for permission to publish them.



Minutes of the Committee meeting held at the Vintage Wireless Museum at 7.30pm on Tuesday 8th August 1995

Apology for absence

from Peter Bannon who has unfortunately suffered a leg injury.

Minutes of the previous meeting

Ken Tythacott suggested that, in the second paragraph, 'author of the report on the previous Harpenden meeting' should be changed to 'organiser of the previous Harpenden meeting'. This was agreed.

Rewards for members of the interim Committee

It was agreed that while we are pleased to have the opportunity to affirm our appreciation of all the committee achieved in most difficult circumstances and that the Society will always be in their debt it was felt not to be appropriate to make a special award.

Emergency amendment to the constitution to permit a postal ballot

Agreed that members will be notified of this proposal in time for comments or opinions be made known to the committee well before the AGM. It is intended to make the announcement in the next Bulletin and voting papers could accompany the next Bulletin after that. It is suggested that the result be decided by a simple majority of those voting. It is recommended on the score of its providing the opportunity for those members who cannot reach a venue such as Harpenden to be able to take part.

Response to letter from Steve Sidaway

Steve felt that some criticism of him was implied in the report on the Harpenden meeting that he organised. There were assurances all round that this most certainly was not so. So far as the Society was concerned the meeting was excellently organised. The criticisms came from the management of the hall and we felt that members should be warned. We are very sorry if we somehow gave the wrong impression. It would seem that the warnings were heeded in that Ken Tythacott was pleased to report that there were no complaints following the next meeting. The Chairman will reply to Steve by letter.

Report on the 10th June meeting:

Ken Tythacott

Ken provided the meeting with a comprehensive report on all aspects. There were eighty-one stallholders on sixty-four tables. The total attendance was three hundred and seventy-eight. The profit to the Society was nine hundred and fifty-nine pounds.

The feedback from members was favourable on all counts except one and that was the catering. This was, in spite of previous assurances, very unsatisfactory. Ken gave details of his discussions with the manager and provided copies of correspondence. The management's final letter promised to meet all our requirements for improvements including that of providing a quick service drinks and snack counter in the foyer.

The matter of the customary 'mini auction' came up for discussion. Some said that it was not wanted by some members as the time and space required detracted from the enjoyment of the swapmeet. The majority of the committee thought that it should be discontinued. It was

agreed it will be held at the next meeting but a smaller limit be placed on the number of lots and it should start later in the day. The views of members will be sought.

Ken was complimented on his organisation and we all look forward eagerly to the next.

Legislation for electrical safety: Ken Tythacott

Ken delivered another of his excellent reports. He had had discussions with the different authorities who might have opinions or rulings regarding our particular situation. The one ruling he did obtain was that a society is not exempt. For the rest they would offer only an opinion. It seems that the law is not clear and there has not yet been any test case. We are not alone in all this. Even the leading auction houses are not sure how the law applies to antiques or collector's items.

Mike Barker produced a label as used by the leading houses that is attached to such lots. It is in the nature of a disclaimer although such is not permitted by law. One would presume that it has been composed by their legal advisers.

Ken made the following recommendations -1 We attach a label as referred to above, 2 remove the mains plug and tuck the lead inside the set, 3 keep our practice under review and act in the light of any further legal directions.

Report on proposed centennial function (1996): Ken Tythacott

Ken reported on his latest investigations in seeking a suitable venue for the Society's contribution to this. Acting on the committee's proposal for a one day event comprising an exhibition and dinner at a central London location, he obtained details from the Guildhall of the halls they have available. It was agreed that this would be suitably prestigious for the Society and would be attractive to overseas visitors. The Livery Hall would be well suited to our requirements. The booking fee would be of the order of £2870 and the catering £20 to £30 per head. Assuming a charge of £25 for the dinner seating 200 and an entrance charge of £3 per head paid by 400 members and guests we would have a deficit of £2500 which could be met by Harpenden auctions.

The views of members will be sought, particularly in the matter of funding the expected deficit since only a minority of members will be able actually to attend the event. With regard to the scale of our participation the committee felt that such would greatly enhance the prestige of the Society while meeting the wishes of our overseas members for another international occasion.

It is proposed that it should take place on a Saturday followed by a Harpenden swapmeet on the following day. This we know would also appeal very much to overseas visitors.

Next Harpenden swapmeet, 24th Sept:

Ken Tythacott

The fees will be as before. Visiting members and their guests will be required to register at the door and receive lapel badges on proof of membership and payment of fee. The reception staff will have several copies of the current membership list so that checking can be done quickly. (The payment of an overdue subscription may be allowed. This will be entirely at the discretion of the organiser.) Members and guests may register anytime from 9.00 in order to avoid any delay at opening time, 10.00 am. The front doors of the hall will remain closed until then. Stallholders will use the side entrances meanwhile.

Bulletin: Carl Glover: Editor

Carl explained the hitches that occurred in the printing and posting of the last Bulletin. In reply to a question he said that from the finalising of the Bulletin to the date of posting should in future take no longer than two weeks.

The current issue, which will have more pages, will be finalised within a week of the date of this meeting.

He reported that a scanner had been purchased. This would greatly facilitate the processing of the varied forms of material he receives from contributors.

Mike Barker reminded the meeting that the lateness of the last Bulletin prevented members being given a timely reminder of the Wootton Bassett meeting. The Chairman said he would answer any complaints there might be on this score.

Carl reported that he has a new source of secretarial help that he hopes will be more prompt and less expensive.

The Chairman reminded the meeting that advertisers require an exact publication date. The reduction to four issues per year will make this easier to achieve.

Newsletter: Ian Higginbottom, Editor

The meeting asked Ian if he needed any help. Ian said that he did not at the moment. The possibility of extra issues next year may alter this situation in that it is expected that each issue will have a deadline in the matter of announcements of meetings and current news.

Any other business

It was proposed by the chairman and unanimously agreed that since Mike Barker is now doing all the computer work of maintaining the membership details he should be the 'Membership Secretary'. This would streamline the procedures and relieve Gerry Wells of this paper work and it would then give us the opportunity to give him the title that will properly describe his unique contribution to the Society - 'Technical Adviser'.

Gerry informed the meeting that he had commenced his teaching workshops. He can accommodate six members per session. A member can bring two sets to repair.

Mike Barker suggested that there should be a report, at each committee meeting, on the state of the membership and this was agreed. He then gave the following figures

118 not renewed since 1993

358 not renewed since 1994 (these are still receiving a Bulletin)

739 fully paid up.

It was agreed that all those not yet renewed will receive a letter with their next Bulletin telling them that unless they renew it will be the last they will receive.

David Read, Treasurer, reported that subscriptions are still trickling in. He said that some societies specify a date by which subs must be paid. The Chairman said that some charge late payers a premium if they wish to 'come back into the fold'. It was agreed to keep the matter under review.

The Chairman declared the meeting closed and expressed the Committee's thanks to Gerry for his hospitality.



Date of next meeting

Tuesday 3rd October, 7.30pm at the Vintage Wireless Museum.

Dear Editor,

I enjoyed Enrico Tedeschi's excellent little treatise on Japanese shirt pocket Radios in the June bulletin - what a feast of facts and photos on one sheet of A4!

I can add some background information to this interesting period of pocket radio development, as from late 1960 to early 1962 I serviced Sony Radios for the 'Tellux' organisation which shared the same site as 'WS Electronics' in East Acton - (my Employers -who loaned me from the Test Department as someone who normally worked on the valved Emergency Tx/Rx's produced in the Factory, but who 'understood' transistors!).

My first job was to repair a couple of TR620's from the first batch imported to the UK, but this soon became full time involving repairs to Telefunken Radiograms and other Tellux lines in my own Service bay on site.

I can confirm Enrico's comments on the the TR620 receiver - extremely compact using the new generation of sub-miniature components and an innovative design of high quality. I enclose a recent photo of my 620 with contemporary Service Manuals and a rare 'slow motion drive' Standard Micronic Ruby, also mentioned in the text.

The TR620 was extremely sensitive and incorporated ingenious circuit design to handle this. Amplified forward AGC was applied to the mixer, derived from the conventional reverse AGC on the first IF. This worked very well. It also incorporated a novel 'Flying Saucer' type loudspeaker.(Sony's own description) for improved sound quality. i.e. the cone pointed outward rather than inwards, though this made it vulnerable to damage when dropped, as pocket radios frequently were. Overall reliability was very good; however I can recall one occasion when a rare intermittent fault stumped me, causing its irate Scottish owner to write 6 pages of pure invective against the Organisation which failed to protect his £18 investment!

The cabinet was beautifully moulded in a choice of black, white, orange and blue and the whole package included an external aerial as well as earphone, battery, leather case and polishing cloth - A true Rolls Royce in the best traditions of the Radio Industry, never to be repeated with the £5 Hong kong onslaught from around 1963 onwards.

As a final note, Sony actually produced a cheaper version called the TR 623, The circuit was identical, but with scaled down values for 3x M (4.5v) operation. The cabinet however was larger and the loudspeaker of conventional design rather than 'domed'. It neither looked nor sounded as good and only one batch was imported.

So these were exciting times for a portable Radio enthusiast, 'reared' on valves in the 1950's who caught up with transistors by the end of the decade and still enjoys both . My all time favourite Personal radio is actually the Ever Ready model B of 1947 but when it comes to Pocket radios, the TR620 has it!

*yours sincerely
James Duckworth.*



Further Harpenden meetings

More dates for your diary - mark them in now! The auction is coming up on Sunday 26th November, followed next year by a swapmeet with exhibition and restoration contest on the 25th February. An auction will be held on the 9th June, a swapmeet with bring-and-buy and restoration contest on the 22nd September, the year finishing with another auction on the 24th of November 1996.

Other meetings

Mike Barker will be holding the Wootton Bassett swapmeets on the 8th of December 1995 and 30th June 1996.

Alex Woolliams' Portishead meetings will be held on the 7th of January and the 8th of September.

John Howes' Tunbridge Wells swapmeet at the Camden Centre will be on the 11th of February, followed by a Southborough Audio Jumble on the 14th of July and a swapmeet at Southborough on the 13th October.

Reminiscences of Radio

Symposium Records are marking the hundredth anniversary of radio with a cassette tape covering some of the recorded highlights of the history of wireless. The cassette features such items as the arrest of Dr Crippen recalled by Commander HG Kendall of the Montrose, the Abdication of King Edward and Churchill's first speech to the nation as Prime Minister.

The cassette will be available to members at the pre-publication price of £5 including P&P. (offer finishes by end of November) Please send and make out cheques to:

Symposium Records, 110 Derwent Avenue, East Barnet, Hertfordshire, EN4 8LZ. Tel: 0181 368 8667.

Christmas National Vintage Communications fair

The fifth National Vintage Communications Fair will take place in the Pavilions hall of the NEC in Birmingham on Sunday 3rd December, and will feature thousands of rare and collectable vintage technology items with special emphasis on early radios, television receivers, gramophones, telephones and classic 1950s hi-fi. In attendance will be over 300 specialist dealers from the UK, the Continent and the USA.

For further Information please contact:

Jonathan Hill, Organiser NVCF'95, 2-4 Brook Street, Bampton, Devon EX16 9LY. Telephone (01398) 331532.

Bulletin Index

The Bulletin Index is currently available up to issue 20/4 and is a complete cross reference of authors, subject matter and main articles back to the beginning of the society. Please send a large SAE with a cheque for £2 payable to Pat Leggatt at 28 High Park Road, Farnham, Surrey, GU9 7JL. His telephone number is 01252 719081. (Please note that the Garretts Farm address no longer applies as he has moved.

Audio! Audio!

Jonathan Hill's (with technical assistance from John Howes) long awaited book on vintage audio amplifiers and control units: 'Audio! Audio!' Is due out on 1st November this year. The book contains over 850 models from 150 British manufacturers spanning the 1940's to the early 1970's. A must-have book for anyone interested in valve audio.

Price: £10 (plus £2.50 p&p, available by mail order direct from Sunrise Press, total £12.50) Sunrise Press, 2-4 Brook Street, Bampton, Devon EX16 9LY

New Articles

If you have anything interesting to say concerning Wireless, Television, broadcasting etc. please send it to the Editor for possible future publication in the BVWS Bulletin, as the Bulletin is only as interesting as the articles that comprise it. We welcome all suggestions and comments regarding the new appearance of the Bulletin and hope that it is catering towards your needs as a collector / enthusiast / historian. Your article can be just a few paragraphs long as long as you think it conveys its message across to your fellow members.

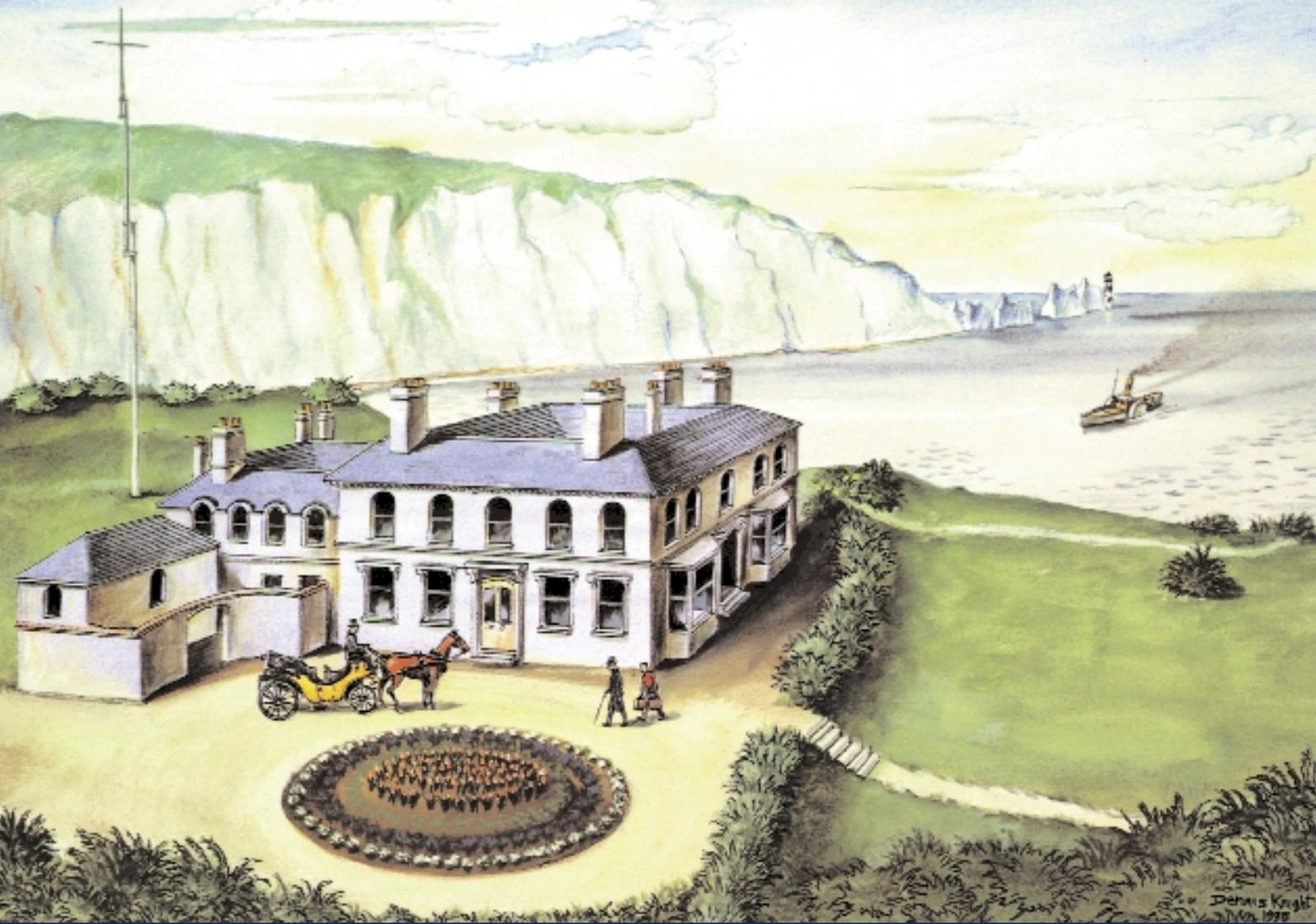
Also if you have any photographic material that would look good in the bulletin, don't hesitate to post it to the Editor.

Please send all articles handwritten, typed, and / or on floppy disc to:

Carl Glover, c/o BSS, 1 Rothsay Street, London SE1 4UD

Honorary Membership Withdrawn

At the meeting of 3 October the committee decided to rescind Robert Hawes' Honorary membership. The decision was unanimous and only reached after much discussion. It was felt that this action had to be taken for the general well being of the Society. Robert Hawes' past contributions to the BVWS over many years, not least as the Editor of the Bulletin, are greatly appreciated and have been publicly acknowledged both by the emergency and by the present committee. It has been our sincere hope that the change-over in May to the present committee would have resolved our past difficulties, but this has turned out not to be the case . Since Robert Hawes seems to be no longer in sympathy with the BVWS, it is felt that a parting of the ways would benefit both him and the Society. The committee wishes Robert Hawes all the best for the future.



In November 1897 Marconi established his wireless station at the Royal Needles Hotel at Alum Bay on the Isle of Wight. The 120 foot aerial he erected in the grounds was stout enough to withstand gales from the Channel and consisted of a lower and top mast that had been purchased in Southampton. The lower mast required ten men and a boy to haul it up the Chine to the top of the cliff. From this station on the 3rd June 1898 Lord Kelvin sent the first paid telegram transmitted by wireless. Marconi transferred his station to another site on the island in 1899 and in 1909 the Hotel was destroyed by fire. The Christmas cards issued with this Bulletin have generously donated by GEC-Marconi Limited and this has been arranged by Gordon Bussey

