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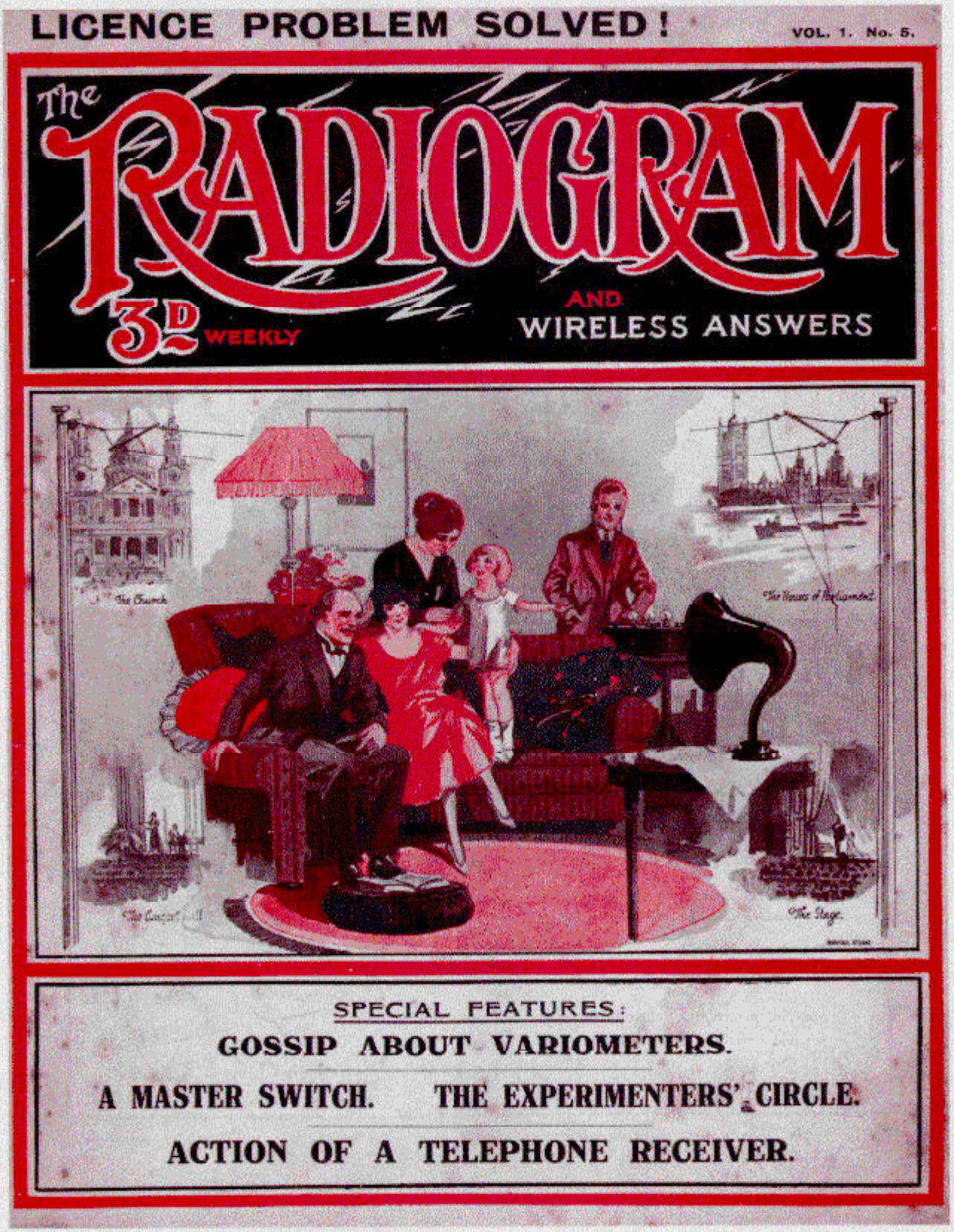
BULLETIN OF THE BRITISH

VINTAGE WIRELESS

SOCIETY



BULLETIN OF THE BRITISH
VINTAGE WIRELESS SOCIETY

Editorial enquiries should be made to the Editor, **Robert Hawes**, 63 Manor Road, Tottenham, London, N17 OJH. Tel: (081) 808 2838.

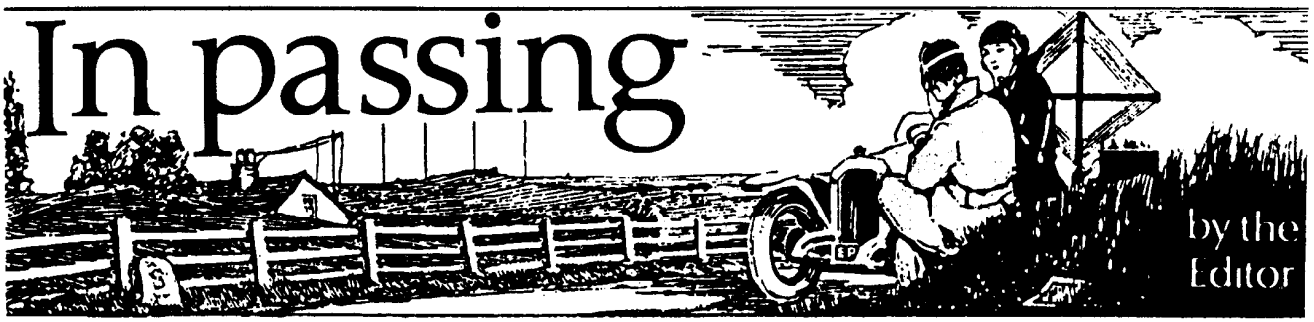
Layout and design: Robert Hawes

COVER STORY: Our front page picture is of the cover of "The Radiogram" (nothing to do with radio-gramophones, which had not yet been invented), of 18th April 1923. Little is known about this short-lived popular wireless weekly which appeared with a plethora of similar publications at the start of British broadcasting. They all covered much the same ground – and it is clear that when the sudden excitement for tuning-in and home-construction had passed its peak, there would not be room in the market for them all. In this issue, the Editor supported the RSGB in demanding licensing changes, suggested the (then) British Broadcasting *Company's* shares should be thrown open to public subscription, advocated the end of "bonuses and royalties" and called for improvement of "broadcast entertainments". He also complained that he was being unfairly denied advertisement revenue by a decision to limit extension of advertising by participating manufacturers. Since advertising is the life-blood of most publications, these restrictions may have killed off the magazine. If anyone can help with further information, the Editor would be grateful to have it. Did the BBC intentionally kill off one of its critics?

Contents: Bulletin of the British Vintage Wireless Society Volume 19 no. 3. June 1994

VINTAGE WIRELESS MUSEUM

The Vintage Wireless Museum, the London meeting-place of BVWS members, is at 23 Rosendale Road, West Dulwich, London SE21 8DS. Telephone: (081) 670 3667. The Curator is Gerald Wells, whom visitors should telephone before visiting the museum.



Correspondence for the Society's Bulletin should be addressed to The Editor, Robert Hawes, 63 Manor Road, Tottenham, London, N17 0JH. Telephone: (081) 808 2838.
Issue June 1994

Meetings:

Society meetings to come are: our regional event at Wootton Bassett on 3rd July, our West Country meeting at Portishead on 4th September, the major Swapmeet at Harpenden on 25th September, our Southern regional swapmeet at Southbrough on 16th October, another Wooton Bassett meeting on 20th November and our major Auction at Harpenden on 4th December.

All meetings are members-only events and the organisers are: Robert Hawes (081 808 2838) for Harpenden; John Howes (0292 540022) for Southborough; Alex Woolliams (0272 721973) for Portishead and Mike Barker (0793 536040) for Wootton Bassett.

Royal Listener

Princess Anne tuned-in to a vintage-style crystal set constructed by broadcast consultant Ralph Barratt, when she paid a visit the recent Edinburgh Science Festival recently.

Ralph, who is a member of the BVWS, designed and constructed the receiver as a "do-it-yourself" project for visitors – mostly children. It employed simple household materials, included a variable condenser made from cooking-foil and required no soldering.

The Princess seemed very interested and asked about the design, commenting that she still owned a vintage set – a Roberts.

Ralph produced a hundred kits for Festival visitors to construct and all of them were successfully assembled and made to work by by entrants young and old. The Editor has asked him to provide details of his design for a forthcoming Bulletin article.

Princess Anne listens-in to a crystal-set made by Ralph Barrett – see "Royal Listener".

Talks

Readers may be interested to note in their diaries that Ralph is giving two talks on radio subjects later in the year. The first, on 12th October at 7pm, is at Fairfields Hall, Croydon and is entitled "Marconi – a dramatised enactment"; and the other is on 2nd November at 6.30 pm at the IEE, Savoy Place, London, is "Popov and Marconi – the Centenary of Radio".

Television Exhibition

A range of pre-war and post-war television receivers, part of the collection of BVWS member Michael Bennett-Levy of Edinburgh who recently published an illustrated guide to them, is to be shown at Sotheby's, 34 New Bond Street, London W1. from 1st to 11th August.

Continued on next page >

In Passing: news, views, comment

This recently discovered photograph shows the famous Marconi 2MT studio at Writtle in 1922. It shows singers H. L. Kirke and Nora Scott accompanied at the piano by a Mr McLachlan. It differs from the one in the Marconi archives which is more familiar, because it shows an extra figure: the man leaning on the piano top. As he looks just a boy, there is a possibility that he is still alive – or that somebody might recognise him. We should be glad to have any information. The reproduction is poor since it comes from a 1936 newspaper – the original has not been traced.

continued from previous page

Eckersley Documentary

A documentary about Capt. Peter Eckersley, who pioneered broadcasting from Marconi's experimental "Two Emma Toc" station in Essex in 1922 and became the first Chief Engineer of the BBC in 1923, is to be broadcast on BBC Radio 4 on 7th July. It is part of a series called "Radio Lives", which has mostly featured broadcasters rather than engineers.

The Society's Editor was asked to help with research for the programme and took the production team to Chelmsford Museum, where the Curator, Dr Geoffrey Bowles is tackling the enterprising task of re-creating the scene in the Marconi hut from which the famous Eckersley broadcasts were made. This old army hut, a relic from the first world war, had been moved from its original site – a field in Writtle – to a Chelmsford school and used as a sports pavilion but is now re-assembled permanently in a museum building. Dr. Bowles hopes to be able to collect together enough original equipment to re-create the old interior. Anyone who can offer suitable items or information about the old station and transmitter is asked to contact the Editor.

The BBC team recorded a commentary in the hut about Eckersley's activities there in the early days, illustrated with gramophone records of the music he used in his programmes. Taking part in the documentary is Myles Eckersley, the wireless pioneer's son, a member of the BVWS, who is hoping soon to publish a biography of his father.

Crystal Palace broadcasts

Ray Herbert, the authority on early television, is researching the history of "Outside Broadcasts" from Crystal Palace from 1928 to 1936 for a special edition of the Journal of the Crystal Palace Foundation and would welcome any information readers may have on the subject. It is known that lunchtime band and organ concerts were televised, but there may have been other such broadcasts too. Ray, an honorary member of the BVWS, can be reached on 081 657 1126.

The Metrovick E.A. Unit

(or How Long is a Piece of Wire?)

by Pat Leggatt

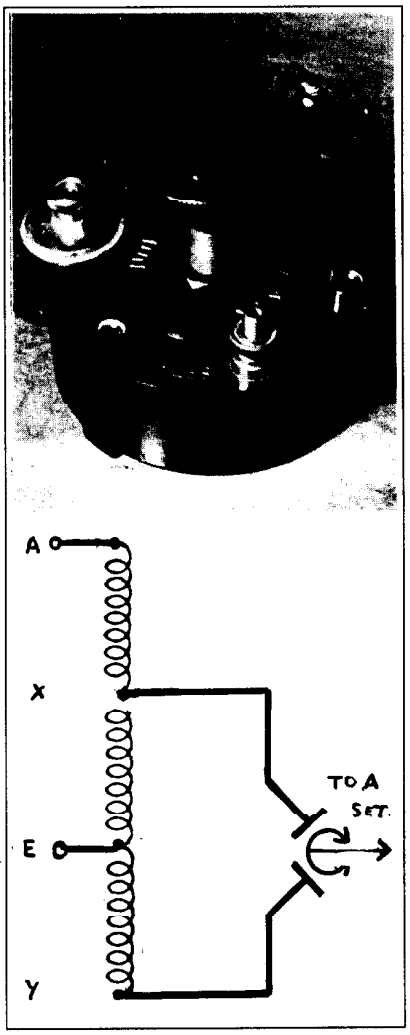
The device shown in the picture is simply labelled E.A. Unit, and for a long time I had no idea what it was for, nor did the internal circuitry offer much enlightenment.

But one day I showed it to Committee member Ian Higginbottom who can usually be relied upon to identify the most mysterious things. True to form he said "Oh yes, it's an Elastic Aerial Unit: I've got one of those". A day or two later he sent me a copy of a description of the thing in the Wireless World Show Guide of September 19th 1928, so now I can get to grips with it.

It is in fact an aerial attenuator, for use when a strong incoming signal might overload your set. The coil section X-Y is centre tapped to earth, so signals at X and Y are balanced about earth and are in antiphase with each other. When the rotor of the differential condenser is central, equal and opposite signals cancel out and nothing is passed on to the aerial terminal f the receiver. Other settings of the condenser result of course in controllable levels of signal passed to the receiver.

So if the device is just an attenuator, why the Elastic Aerial name? The Wireless World write-up explains that the effect is to "continuously vary the electrical length of an aerial from a few inches up to its normal length, to allow any degree of selectivity". A short aerial will be more selective than a long one, they say.

But this does not seem to me to be correct, since a short aerial is not in itself more selective. It may indeed give less damping on a receiver input tuned circuit and thus improve the 'Q' and hence selectivity, but this effect could equally well be obtained with a simple series condenser rather than the complex arrangements of the E. A. Unit. In any case the Unit does not really alter the effective length of an aerial, so I think the 'Elastic' part of the designation is a misnomer.



There is, however, a feature of the Unit which could not be obtained with just a series condenser: as the differential condenser is turned, the phase of the output signal changes through 180°. This effect could be used to cancel, at least partially, any signals picked up on the coils and wiring of an imperfectly screened receiver, and thus I suppose improve selectivity in the sense of reducing interference from an unwanted near-by station.

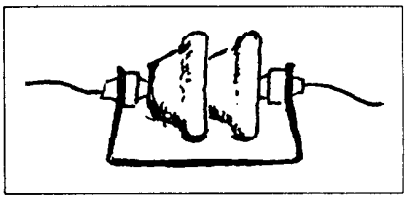
Restoration Tips

Screws:

Watch out for the people who will put British screws in Phillips Chassis. Metric screws are easily available nowadays, so there is no excuse! Most of them are M3. Surprisingly, metric screws were used in E.M.I. sets quite often, too. Note that the screws that hold on the knobs in old E.M.I. sets with split spindles are self-tappers not woodscrews! These are too soft (GDN)

An Odd Component

by Geoffrey Dixon-Nuttall



If you ever meet one of these, bad luck; I didn't know what it was when I first met it, either, but it turns out to be a pair of bias cells. This was a form of semi-permanent bias battery which was used by some misguided American manufacturers in the late 'thirties.

The most common use of these was as delay or bias voltage supplies in A.V.C. networks. They were, of course, connected so that no current was drawn from them.

That, however, was sixty years ago, and by now they have lost the first flush of youth, to put it mildly. So what does one do?

There are many shades of opinion on restoring radios, and how far to go, ranging from re-filling wax paper capacitors to throwing the whole chassis away and fitting a transistor set instead. I usually like to keep as much of the original as possible, but what does one do with these things?

I suppose you could fit a battery box and a couple of U11s, but they would get neglected and cause corrosion. The only possibility as I see it is to re-design the circuit and get rid of the batteries. I am assuming that they are Leclanche cells, and give about 1.5V per cell. It is not usually very difficult to arrange things in a more elegant fashion.

I wonder, in fact, why they used these devices at all? A battery in a mains set is surely a denial of the old phrase "all-electric", although there was an Ambassador set in the 'forties which had a torch battery built in. It would probably give quite a long life; my "Everyman Four" still has the original bias battery! I suppose that the collapse of the bias cells was caused by the capacitors developing leakage.

Has anybody got any information on these things? They must have been very cheap initially, as they offer no practical advantage except as a "get out" for a sloppy circuit designer. Unfortunately they have no curiosity value; but I shall keep mine just in case.

Workshop

The GEC 'Fan-heater' radio

by Gerald Wells

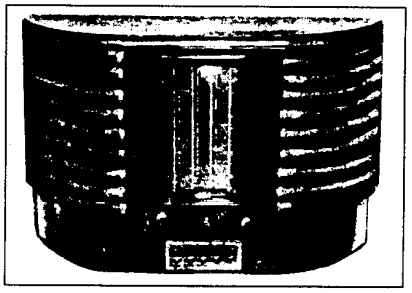
The Harpenden auction this year was an interesting one. There were 411 lots. Quite a few interesting sets turned up, as did a lot of familiar faces.

I spotted a GEC "fan-heater" radio (so called because that's what it looks like), and I thought to myself "I hope that that set doesn't find it's way down to my workshop". It did!

There is one golden rule that collectors of old radios should remember, and that is that "the bigger the manufacturer, the worse their domestic products". As I don't wish to end up in court I won't name them, but I will state that the more power stations, ships and military installations they are responsible for, the nastier their wireless sets are (come back Hunts and Mazda, all is forgiven). One firm is famous for producing a set that caught fire on the shop counter, and another one made a colour T.V. set that caught fire after it was switched off and unplugged. However, I digress. Let's get back to the "fan-heater".

It looked quite nice and the cabinet was in very good condition, although the front glass was missing. I did all the usual things after taking the back off. I removed the rectifier valve, checked that the mains was set for 250 volts and plugged it in. Bang! went the fuse on my power board. I took the chassis out, and soon realised that a Wally had been in there first. He had put the mains lead across the 200-250 volt taps on the transformer. This I put right and plugged in again, this time the dial lights came on but the valves didn't light up. Also, hot wax came spurting out of the mains transformer.

I removed the already quite hot transformer and tried to replace it with a standard 6 volt 5 volt & HT type, only to find that the hole in the chassis was not quite big enough. After quite a lot of filing, I managed to get it mounted on the chassis and wired up. I plugged in again and



The GEC model 4750.

found that the valves still didn't light up. I soon found that Wally had forced all the valves into their octal holders the wrong way, at the same time managing to un-rivet the holders. With the aid of a pop-rivetter I managed to re-fix the holders without too much trouble. I put all the valves back in the chassis after checking that there was no short circuit on the HT rail. I then plugged in and switched on; everything lit up. Soon there was a very loud mains hum.

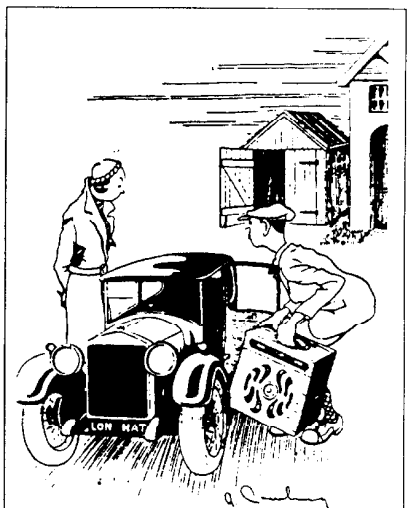
I don't believe in changing every condenser in sight, it's much more fun to diagnose which one has actually gone and replace it. It's a waste of money to change .1 cathode bypass condensers, they already have about 300 ohms across them, and even Ferranti can't beat that.

On this set I changed all the electrolytics and tried again. This time it started to show signs of life. The volume control crackled nicely and the tone control decided to smoke. This was put right by changing the condenser in the tone control circuit. On trying to press the wave change keys on the front I found that they wouldn't move. They had run out of WD40, as had the volume control. This I took care of and at the same time gave the tuning drive system a good seeing-to.

I switched on again, this time lots of oscillation. Wally has lost the screening can and base clip of the IF valve. The can clip was rivetted on to the chassis with the valve holder. I then drilled out the pop rivets that I put in earlier and replaced the can and switched on. This time, much better. I pressed the long wave button and was able to tune into the shipping forecast and the Frenchman who never stops talking. I then tried the short wave, and got all the usual bubblies. The medium wave too seemed to work very well.

However, there was a certain amount of distortion. After having made sure that the loud-speaker was OK and that Wally hadn't tried to poke the music out of it with a screwdriver, I checked the coupling condenser and found that it was leaking badly. This I changed and the quality of sound was vastly improved. In fact it sounded rather nice, especially on weak stations, but on strong stations it sounded like a transistor radio, There is only one thing that can cause this effect and that is a lack of AVC on the front end valves. This is usually caused by the AVC bypass condensers leaking like mad. I replaced these and the set performed very well on all stations. The only thing was that when I turned up the volume control the signal got weaker instead of stronger. The cause of this is that the rectified negative voltage from the detector was getting on to the top end of the volume control and biasing off the triode section of the DH63. Changing the .01 condenser corrected this fault. The condenser passes on the LF signal from the detector to the top end of the volume control so that advancing the volume control increased the negative voltage onto the grid. Many sets use this circuit and this condenser always seems to leak.

After replacing the missing glass and putting it back in its case, I tested it out for a while and was pleased with my morning's work. Fortunately there are not many of these sets left, most of them blew up before the Coronation.



'Which shall we take, the car or the wireless set? We can't take both.'

The Filadyne Detector Circuit

by Pat Leggatt

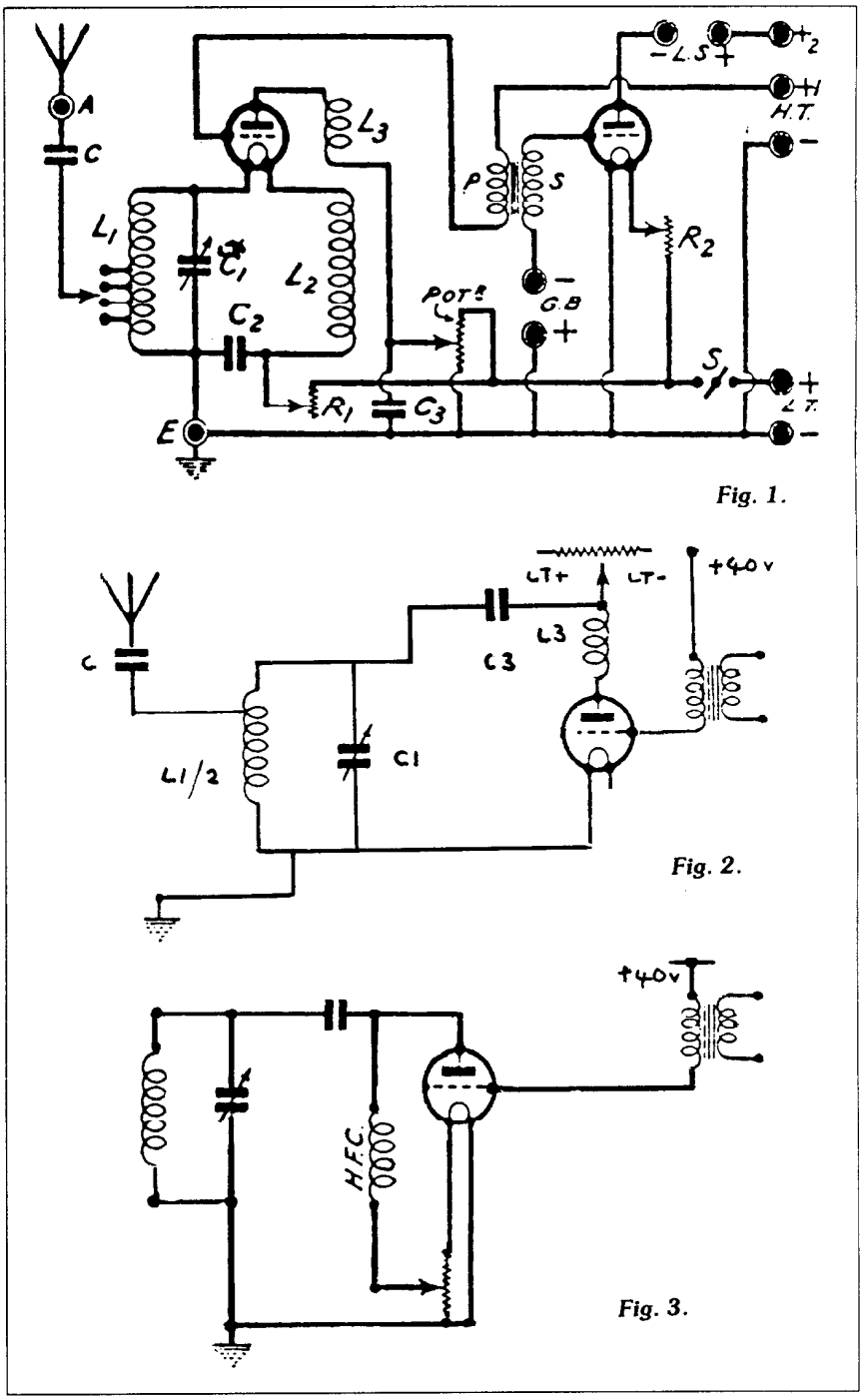
BVWS member D. J. Morris recently wrote to the Bulletin enclosing a circuit diagram of the Filadyne, published by Popular Wireless magazine in 1929. Mr Morris asks for an explanation of how this circuit works.

Looking at the original circuit diagram in Fig.1 it certainly looks rather puzzling. But things start to become clearer if the detector circuit is re-drawn as in Fig.2 - note that we can put the earth connection wherever we like, and I have chosen to earth the valve filament. The two tuning coils L1 and L2 are effectively in parallel and accordingly are now drawn as one.

Re-drawn in this way, the circuit can be seen to be almost identical to the detector circuit of the Marconiphone 81 'Straight Eight' receiver, reproduced as Fig.3. This receiver, from 1925, was excellently described by Ian Higginbottom in Bulletin Vol.3 No.1.; but I go over it again here for members without access to a 1978 Bulletin. The arrangement was devised by H.L.Kirke of the Marconi Company (later head of the BBC Research Department) as a high quality detector and was known colloquially as the 'Kirkifier'.

Referring to Fig.3, the RF signal is applied to the anode of the valve, which acts as a diode detector. The anode has an applied positive potential of about 2 volts, while the grid of the valve is raised to a fairly high potential of about 40 volts: this lifts the valve off its bottom bend and gives the anode/filament 'diode' a linear characteristic, making for a distortion-free detector.

The current to the positive grid is modulated by the effect of the RF on the anode, and audio output can be taken from the grid. Taking the audio from the grid, rather than the anode, avoids damping the input tuned circuit with the audio transformer loading.



Going back to Fig.2, it can be seen that the only real difference in the Filadyne circuit is the inclusion of a reaction winding L3 in the anode circuit. Certainly there will be positive reaction feedback into the input tuned circuit; but I find it difficult to see how there can be appreciable gain from the valve connected in this way, such that reaction could be effective. But the reaction is certainly said to have worked, so some gain there must be!

This is one more example of Popular Wireless's habit of re-presenting known circuits as something startingly new, but it is not on record that Kirke complained of plagiarism.

Round the Museums

Dots, dashes... and Dials

A new exhibition at the Scottish Museum of Communication

by Chris Gill

With this year's exhibition the Museum of Communication has gone back to the very early days of long distance communication.

They start in 1796 with the Murray Optical Telegraph. This metre high working model of "wire-less telegraphy" uses six swivelling shutters to create patterns for different letters. A chain of these stations using twenty foot high apparatus transmitted information from London to the south and east of England during the Napoleonic wars.

This leads on into the first electro-magnetic telegraphy with another working reproduction, the Cooke and Wheatstone five needle telegraph from 1839.

Morse is well represented with a range of keys and other equipment. There is a progression of cables and a part the first successful sub-Atlantic telegraph cable.

Wireless telegraphy is included with a 1911 coherer automatic wireless morse receiver. Following on the experiments of Heinrich Hertz it became obvious that to increase the distance achieved by a transmitter a more sensitive receiver than a spark gap was needed. Experiments by Edouard Branly and Oliver Lodge led to the invention of the "Coherer". This is a glass tube containing metal filings between contacts. In the Coherer Wireless Receiver they closed a relay which started an inking device on a clockwork recorder. A bell-arm then knocked the coherer making it ready for the next signal picked up on the metal plates known as 'radiators'.

Amongst the keys is a 1907 McGeough and an Admiralty pattern 1939 heavy duty key. In wireless telegraphy, the most interesting key is probably the 1912 Junkers naval key. This was salvaged from the wreck of the scuttled

German capital warship "Grosser Kurfurst", which went down in Scapa Flow in 1919.

All keys were supposed to have been removed from the ships on internment by the R.N. authorities but this one had been hidden and was sub-sequently recovered when salvaging took place.

The exhibition is interactive with plenty of working, 'hands-on' exhibits. The 1920's Boy Scouts practice key has both a buzzer and a light facility on its neat wooden base while the other larger, practice key has a higher pitched sounder.

When busy the exhibition is no place for those who like silence, not at all like the old style of museum. In the telegraphy room there is the click-clack of the optical telegraph shutters, the click-click of the tilting mirror in the Aldis lamp, the bleeping and buzzing of the practice morse keys and the constant background clacking of the 1920's railway morse sounder.

The quiet working exhibits are the Cooke and Wheatstone telegraph and the set of semaphore flags.

If all this is too much there may be the bell ringing on the Field telephone! At the other end will be someone in the Telephone Room.

There are fewer working exhibits in here. A range of Telephones and handsets from 1890 onwards, a demonstration of how a telephone works and a demonstration of what the hand magneto does. All very quiet. Then the Strowger automatic demonstration exchange is used and once again the decibels rise. It is guaranteed to keep the kids occupied for ages. Once they are shown how to dial...!

To round things off, there are a range of batteries and cells from 1836 onwards and a 1928 facsimile machine. The Fultograph Picture Machine worked by receiving a signal on a domestic wireless set from a BBC transmitter. After passage through an amplifier the voltages were applied to a needle which ran across a paper wrapped on a cylinder, like the first phonographs. The chemically impregnated paper was darkened by the current to reproduce a picture. The original picture had been scanned by a light pencil, reflected onto a photocell and the amplified output modulated for the BBC Transmitter.

Although not a working exhibit, the Fultograph is a working artifact in the collection having been just one of the items restored by Museum of Communication Foundation members. Foundation members are on hand to guide visitors around, answer and explain and always pleased to learn something new from knowledgeable visitors.

The Museum is open from 2pm to 5pm; Saturdays and Sundays from May to September, or by arrangement by phoning 0506 823424 or 0506 823560.

Address: 58 Union St. Bo'ness, West Lothian, Scotland.

Location: By entrance to SRPR Steam Railway Station.

Here is the final part of a series of personal reminiscences

Super-inductance, and all that

Early days with Philips at Mitcham Works.

by Carl Van der Meulen

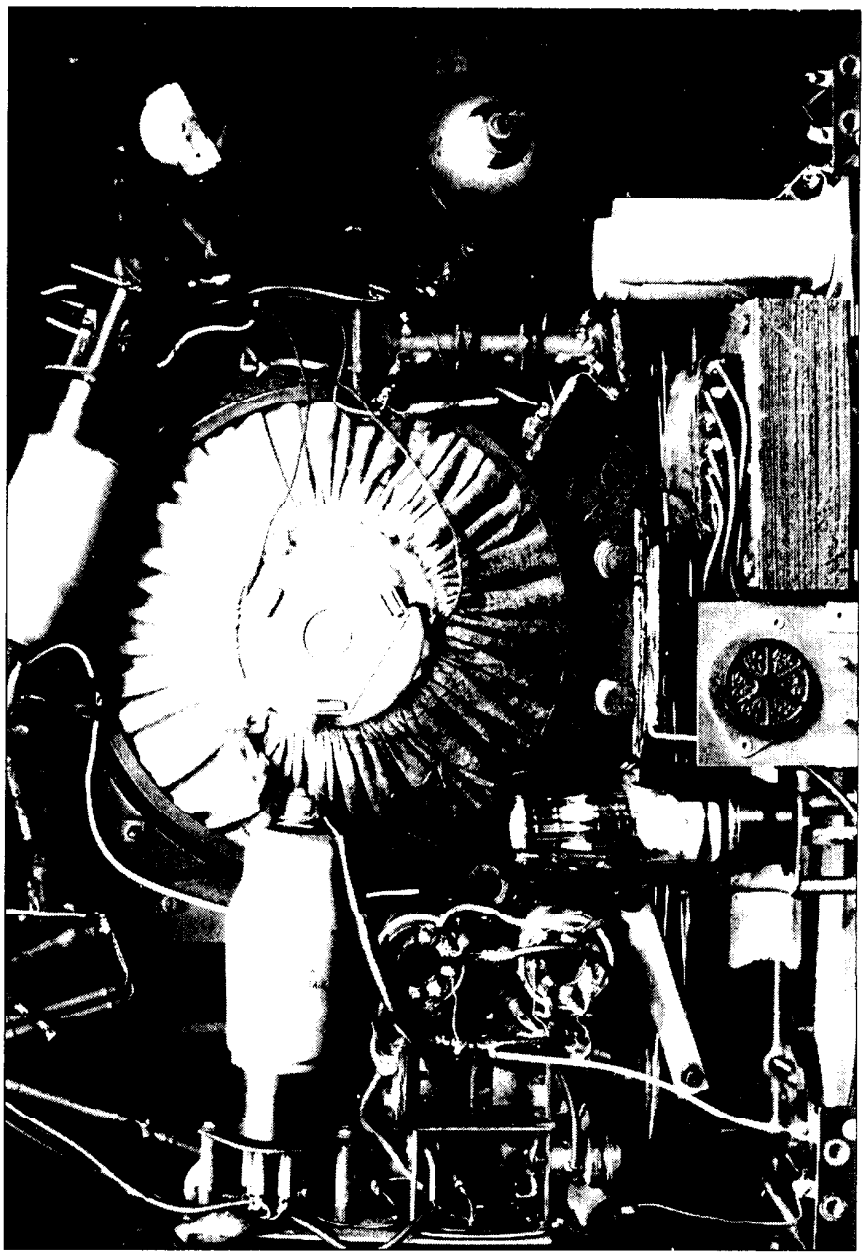
Always something new

And here we were, the set makers, as purveyors of brains to the bemused. In particular, Philips had not lost its genius for capturing the domestic market by producing something 'different' for a public that was moving from wireless sets as a novelty to radio receivers as a way of life. Let Ekco, HMV, Pye, McMichael and the rest of them carry on serving up the same sort of stuff; Philips had learned that visual distinction was the key to success, – not aural discrimination. Hence the 'Monoknob'. Something in the lounge that the eye would lock on to, – "We must get one of these, George".

On the surface this looked like a good idea, – something simple to use. A central tuning knob which also had freedom of movement some seventy-five degrees in any direction to control volume in vertical mode and tone in horizontal mode. Concentrically mounted was an annular moulding with finger slots with four click-stop positions, LW/MW/SW/GRAM. A mains ON/OFF switch was inset on the side of the cabinet.

All very neat and simple. Except that there was now embodied a further eye-catcher the retracting escutcheon, a design masterpiece which housed the illuminated scale and cursor, the magic-eye, and the band-switch position indicator. Mounted at the top-front of the cabinet this escutcheon assembly could be set manually at any angle from 'fully retracted' to almost upright. It takes little imagination to deduce that displayed movement of any Monoknob function must be conveyed via a variable axis. Solution. Bowden cables.

Cyclists will not be unaware of the peccadilloes of Bowden cables and their dislike of kinks and dents. Had it been possible to mount the escutcheon on to a light frame forming part of the chassis, the vulnerability of these cables to handling stresses in the later stages of assembly and inspection would have been much reduced. As things were, however, it became rather a challenge between Belts to find ways and means to firstly avoid mishandling leading to hang-ups and undue friction, and secondly to adopt acceptable 'tricks' to de kink deformed cables, in such a way as to restore their original freedom of action – permanently.



The "works" of the 1935 Philips V7 – which caused merriment born of incredulity.

Sometime in 1934 sideways promotion came my way following the transfer of a Belt chargehand, Bob C. to another post in the Planning Office. I was afforded two hours on a Friday afternoon to acquaint myself with the new roles to be assumed on the following Monday. This allowed Saturday morning to hand over to my successor.

Bob C. did his best to indicate the key functions of the job and what he felt were the main constraints. Fortunately his Belt was producing the same model as the one with which I was familiar, and his faultfinder and myself were on very good terms which auguered well for

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Set Manufacture

Continued from previous page >

my debut. I sought all the support I could get to justify my new remuneration of £2.75 per week (old money), which was a three-and-sixpence per week improvement on my faultfinding rate. I would now also grace my white coat with a red collar.

Being now faced with supervisory decisions rather than technical activity was no bad thing because I was able to influence the impact of one upon the other. In particular I felt that the advancing technology required a combination of working practices which straddled the entrenched pattern of demarcation between assembly and inspection. Adjustments of certain electro-mechanical features demanded a combination of dexterity with judgement which was available for development in certain experienced assembly operators who had already proved their above-average range of skills and versatility. Adoption of this arrangement, which carried a modest financial advantage for those concerned, proved a success.

The next fashion to arrive was again concerned with customer-appeal in the shape of fewer knobs to twiddle. (The dyed-in-the-wood knob twiddler had by now become disenchanted with sophistication and hoisted his gear up into the attic out of sight of the lady of the house). Philips developed two approaches to pre-set tuning. Firstly the use of push buttons to activate a motor-driven conventional variable condenser tuning system with pre-set stops. A muting circuit avoided the nuisance of transient reception during traverse.

The second approach became a reality in the shape of one of the most successful why-didn't-I-think-of-that developments ever to come out of Eindhoven. This was the 3-gang in-line variable condenser using concentric intermeshing fixed and moving vanes. This design, which led to the famous Philips concentric trimmer, depended simply on setting lead screws to control the position of a thrust plate fixed to the common shaft of the moving vanes. The head of the lead screws was easily accessible by removing celluloid windows from the press buttons. Up to six stations could be so pre-set each having been manually tuned in turn. Properly adjusted, this rugged system provided a backlash-free spot-tuning facility of high reliability for six settings and was of course interconnected with a conventional manual drive for free tuning. Its only disadvantage was probably high unit-cost of production.

Probably the most dramatic decision by Philips circa 1935 was to launch the V7, which initially caused much merriment born of incredulity. Those cynics who recalled the 830/630 adverts thought it should be promoted as "Built like a Butterfly". Whether figuratively it was inside-out or back-to-front was a matter for debate because instead of the cabinet being just a container it also served as the main chassis and was therefore the first 'component' to be fed on to the conveyor belt (in a padded carrier frame) to which all functional components and sub-assemblies were to be attached.

All frills had been eliminated e.g. the two I.F. transformers were quite naked and nestled in specific depressions in the moulding secured with slow-setting adhesive. Their alignment was by manual adjustment of 'wind-off' trimmers. The 'front-end' was contained on a small sub-chassis mounting a twin-gang, two canned coils, an FC4 and associated components. There was a simple cord-drive to the illuminated tuning scale which was housed in a bevelled skirt at the front-base of the cabinet and exceptionally easy to read. The speaker was conventional as was the output stage and its feed which occupied another bracket sub-chassis as also did the power module.

The cabinet was a masterpiece in bakelite moulding with the additional complication of many profiles and tapped holes set in strengthening columns and stub extrusions for the location and attachment of the 'works'. Designed for rapid production, the V7 placed a heavy flow demand on Ekco who made the cabinets.

Performance was exceptional for its austerity, the only inherent weakness being a tendency to drift off-tune with temperature change. On the other hand it was lightweight, neat, easy to use, reliable and cheap. The main production problem was handling-damage exacerbated by the sheer quantity of receivers moving about at any one time. Pockets of sets could quickly build up if a particular operation was only temporarily out of action and thus the incidence of accidental damage to cabinets would rise. Minor scratches and bruises could be invisibly mended but depth injury demanded a 'cabinet change'. At first this was a major operation but a special repair team of two experienced ladies, with their own little hide-away, soon proved its worth. Most of their time was spent working separately but as each reached the 'critical' dismantling stage the other would provide the two additional hands to lift all the 'organs' simultaneously out of the defective cabinet and into a prepared replacement. Everything would then be re secured (only about seven soldered joints were involved apart from some twenty c/h screws and adhesive) and the set would then be re inspected and re aligned if necessary.

In common with other wireless manufacturers. the least elegant of Philips' designs was its car-radio (illustration in 'Setmakers', p.209). Unlike the dainty and unobtrusive devices we have today. the need to use conventional valves and not-yet-miniaturised components without the advantage of printed circuitry was in conflict with the layout of the average motor-car. In other words the 'works' had to be located where it would cause least obstruction to the driving function and minimal injury to nylon stockings, but yet be controllable.

So back to Bowden cables, this time rather more sturdy and connecting the set to a remote controller for which a convenient gap could usually be found.

The need for H T was the problem which delayed the debut of car-radio until the invention of the vibrator about which the least said the better, except to excuse the inventor on the grounds of 'needs must'. Nevertheless, when everything was properly earthed and the aerial properly sited, the equipment provided excellent results, especially when the engine was switched off and there was no other traffic in the vicinity. Universal ignition suppression was a long time coming.

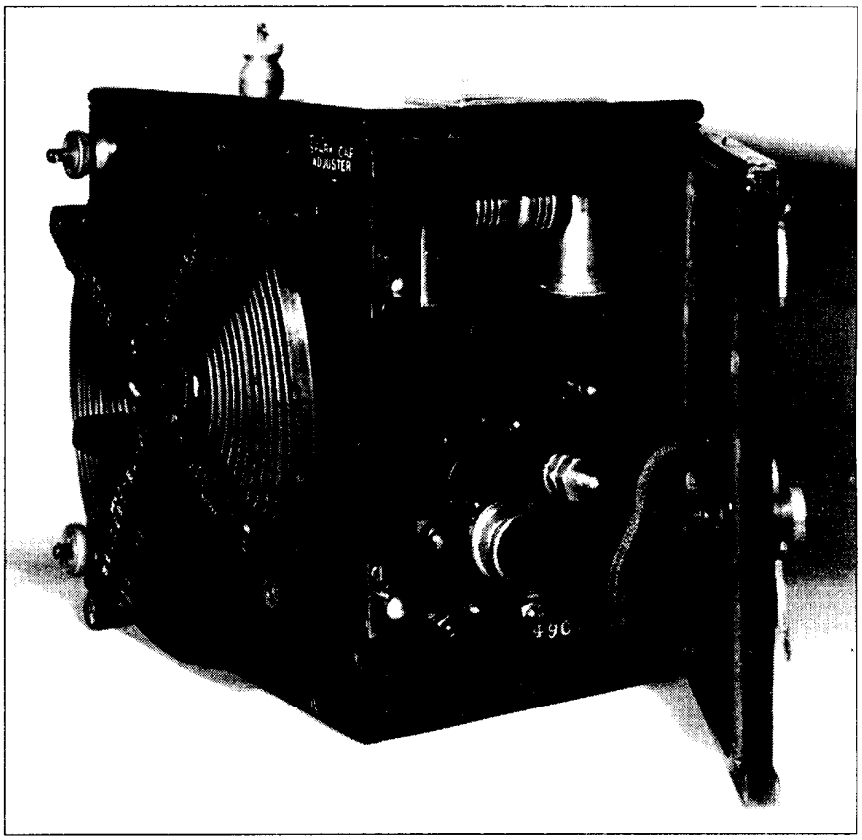
Microphony was not unusual due to the integral speaker and exceptional confinement of everything in a cubic metal container. One also had to be prepared to accept a tuning tolerance of about + or - 30-40Kc/s at mid-scale on MW due to lost motion in the tuning drive cabling. Otherwise a major step forward. Or was it?

The foregoing has attempted to portray a miscellany of events, things and circumstances which were typical of life and work with Philips at Mitcham in the 1930's. How nice it would be if it were to trigger the memory of one or more of my long-lost contemporaries there who may have had the patience to read it, and perhaps amplify or refute anything I have recorded, – just for old times' sake.

Airborne Wireless

Many of the early experiments with airborne wireless equipment entailed the uplift of bulky transmitters, so heavy and cumbersome that they could be installed only in the larger airships. Obviously power supplies were required for this equipment, so incurring more weight and space penalties

Despite all the improvisations, many of the early 'Heath Robinson' conglomerations worked exceedingly well. For instance, the installation that Captain Lefroy put into the airship Gamma in 1912, incorporated an old magneto, driven by a belt connected to one of the ballonet motors, and Moscicki jars (a type of accumulator invented by a Polish gentleman of the same name). The aerial arrangement consisted of an 'earth' of wires strung along the bottom of the airship, and a double trailing aerial wound out through the floor of the cabin. Very satisfactory results were obtained.



The 'Sterling' Spark Gap Transmitter. Purchased by Harry Arnfield from Leslie Dixon (Electradix) in 1929.

Captain Lefroy also carried out trials on various methods of providing the electrical power for the wireless installations. In another experiment he connected a generator by a bicycle chain to the engine crankshaft of an early B.E. aircraft.

By 1913 the Marconi Company had two aircraft sets on offer for military purposes. They were advertised as:

Type	Use	Power	Range	Weight
L	Air	.04kW	12	50 lb
L1	Air	.5kW	80	200lb

It appears that the weight problem was gradually being overcome but the size of the equipment was such that it just about filled the observer's cockpit. The dimensions were reduced in stages until a compact lightweight installation became available.

The Sterling Telephone and Electric Co Ltd of London produced a transmitting set based on a design submitted by Lieutenant Binyon, RN, and advice from Captain Lefroy. It became the standard fit, and was known as the 'Sterling'. Accumulators (giving 10V maximum) provided the power. The transmitter's output of 30-40 Watts fed to the 120 feet of trailing aerial gave it an operating range of 8-10 miles. The aerial of stranded copper wire with a 3lb weight on the end was wound out through an insulated gland in the floor.

Aircraft engaged in long range reconnaissance used developed versions of this transmitter. Power supplies for those sets were from wind-driven alternators and later in the war, wind-driven generators giving 600 V.

The 'Sterling' was a spark gap transmitter of simple, but robust design. The tuning of it was straightforward, the aim being to obtain a 'good fat white spark' and maximum aerial current.

The operator in the aircraft had no receiver, so had no idea when others were transmitting and frequently simultaneous transmissions occurred, causing jamming. A device known as a 'Clapper break' was fitted to the transmitters to produce a variation in the tone of the received signal, so that the operators on the ground could differentiate between the various aircrafts' transmissions.

Early type receivers tried out in aircraft had not been a success due to the weak signals being swamped by a variety of factors... ignition interference, engine and slipstream noise. Eventually those problems were overcome. Ignition leads were screened, flying helmets incorporating headphones were produced and amplifiers developed which could amplify the small output of those early (crystal) receivers. A gentleman by the name of Brown seems to have played a part there.

Certainly many aircraft were being fitted with receivers towards the end of the First Great War. These were Tuned frequency (Tf) 3 valve receivers capable of receiving spark or continuous wave (CW) transmitters, and were developed at Cranwell in 1917.

The 'spark' transmitter was replaced at about the same time by a valve transmitter known as the T21. This was a simple feed back oscillator using two valves in parallel with coarse and fine tappings on a coil for tuning. A windmill generator produced the desired HT of 1200 V.

This combination of transmitter and receiver was used into the 'Thirties', giving an operating range of 200-300 miles with ground stations and about 40 air to air.

We should like to thank Harry Arnfield for his work in having the photograph specially made for us.

Manufacturing History/Reviews

Problems of the early setmakers

by Dave Adams

No, this will not be about the 'big six' who set up the BBC. They were then the broadcasters and manufacturers and they organised the industry very well in order to ensure a return on their investments.

Broadcasting in the USA was proving to be a financial success but no control was being exercised in the setting up of stations and conditions were chaotic. The BBC plan was for a monopoly of broadcasting but allowing some freedom in manufacturing. This was an untried concept and therefore had an element of risk. But the 'big six' were not risking as much as the hundreds of small businesses that were allowed to enter the market. Had the 'big six' failed, they, with their greater resources, would not have gone under as many of the little ones eventually did.

'Control', then, was the order of the day. Every manufacturer, large or small, had to meet the stringent requirements of Marconi, the General Post Office and the BBC itself.

Let us start with Marconi, holder of most of the patents.

He required them to have a 'licence to use and exercise certain British Letters Patent' and he gave insurance against any claims should they infringe any other patents.
For this the manufacturer had to:

(1) Pay a deposit of £50.

(2) Pay twelve shillings and sixpence (the price of a bottle of whisky at that time!) on every valve in every set sold. Quarterly returns and payments were required. And in addition:

(3) No export was allowed. Diagrams and/or samples had to be supplied on request. No valves except those of the Marconi Osram Valve Co. could be sold.

Next, the GPO required a manufacturer to:

(1) Submit a sample of every set for testing. It had to be tunable from 350m to 425m with aerials from 30ft to 100ft long. And:

(2) Reaction would be allowed only if there was no possibility of radiation, i.e. there had to be a non-reacting, RF stage before the detector. Also there had to be a safety factor of 30% increase in normal HT voltage without causing radiation.

"Approved" sets had to bear the BBC trademark and the GPO number allotted. All accessories had to carry the BBC mark; and a prototype had to be kept available for testing and comparison with production models.

The BBC required:

(1) The purchase of at least one share in the BBC by manufacturers.

(2) A £50 deposit.

(3) Payment of royalties. These were scaled thus - a crystal set seven shillings and sixpence, a two valve set one pound fifteen shillings etc.

(4) Returns and payments to be made monthly.

(5) Audited quarterly statements.

All these requirements added up to a considerable financial and administrative burden. The royalties could amount to fifty per cent of the retail price. In the contemporary advertisements there was great variation in the way the total costs of a set were presented. Some gave an inclusive price while others announced the royalties separately in the 'small print'. There was also the matter of valves, batteries and speaker which were sometimes quoted separately. One needed to be fairly knowledgeable concerning the situation in order to be able to ascertain and compare prices.

I do not think there is much doubt that there were many 'pirate' manufacturers just as there were 'pirate' listeners. I remember that the crystal set we had at home had been 'made by a man' for us. This was illegal in that while the making of sets at home was allowed they could not then be sold or even given away!

These conditions lasted for about two years (1923/24) before there was any relaxation. This period is, however, of great interest to a wireless historian. It is, of course, the period of 'Post Office Numbers'. Our chairman, Pat Leggatt, has worked hard at gathering and maintaining the list of those so far found. You will see there are still many gaps. If one assumes that all of those numbers were actually used then we are forced to the conclusion that the number of manufacturers of which we have knowledge is only a fraction of the total. I am guessing there were several hundred officially registered.

Several of us have searched in archives for the original list but without success. We would be grateful for any further information.

Criticism of this article is welcomed too!

Magazine review

by Ray Herbert

"Q Five"

This is the quarterly journal of the International Angry-Nine Association the name being derived from the United States military radio set AN/GRC9. Q5 is from the old radio amateur Q code and means "Very good, perfectly readable".

The issue for December, 1993, comprises 48 pages in A4 format with large, clear photographs. Dutch and English is used for the text which deals mainly with WW2 military radio equipment and also that used later in more localised actions. The WS48, 9, 109 and the Canadian 52 set are fully described with illustrations and the articles are given added interest as the authors have included details of production dates, areas of military usage and installation information.

Many of the members use their vintage military equipment in the amateur bands and they can be heard during the IANA net every Sunday at 0900 UTC on 3707kHz using amplitude modulation. For those who prefer morse (CW) another net operates also on Sunday mornings at 0815 UTC on 3530 kHz.

Further information may be obtained by writing to IANA, PO Box 3170, NL 3502 GD, Utrecht, The Netherlands.

Letter:
from Brian Pethers
What's in a name/Ariel's wire?/Quiz

Firstly, I recently noted that two venerable names from radio history adorn a sign outside a modern factory on part of the old Woolwich arsenal site – itself an area of some historic interest. The names are Burndept and Varley.

What their product range is, I do not know. Try sending them your "Ethodyne" to refurbish – or your Varley L.F. coupling choke to rewind! Still, it's great to see the old names living on.

Secondly, I recently bought some brass picture-wire called "Radio" from my local branch of Robert Dyas. It is fun to speculate on whether they once made "patent low-distortion" aerial wire, isn't it? Note that it is quarter-wave on the 30 metre band! Incidentally brass picture wire can be obtained with or without a steel core in different weights. It might be worth trying as wire "drive-cord". Strands can be taken off to make it more flexible.

Finally, a query, not about equipment, but radio programme material: two monologues used to be heard on 40/50's Childrens Hour. Who spoke them and were they from commercial recordings? The first was the one about the train noises – "kiddly-da, kiddly-da etc" – remember it? The second was the one about the animals coming down to drink at the pond "surrounded by the three trees – there, there and there" – to an accompaniment of musical chords.

Letter:
from Gordon Bussey
"An invention that changed the world"

I was surprised to read in "The Birth of the Transistor – Part 2" (Vol.19, No.2) that the author is doubtful of the date given for the picture on page 345 of "The Setmakers" (by Keith Geddes in collaboration with Gordon Bussey) of an experimental transistor radio made by GEC Research Laboratories. He states "It would be interesting to have confirmation of the date since it seems unlikely that GEC could have reached this stage in 1951: 1952 or 1953 seems more credible...".

I can confirm that the experimental transistor radio in question was made in 1951. My source for this date is page 73 of the GEC Journal for January 1952.

Naturally a large and forward looking company like GEC would put great store by research and their Hurst Research Laboratories at Wembley were indeed famous. Thus their achievement was perhaps not surprising.

Letter:
from M. Roberts
Hare valves?

Has any member made up successful solid-state (pin-for-pin) replacements for valves?

I am currently renovating a German-made Telefunken receiver and some of its valves have no replacement British or American equivalents. Used types I have located are very costly. Maybe somebody could market "Universal" plug-in replacements, say for frequency-changers, amplifying types for RF and IF and output valves?

Letter:
from Geoffrey Dixon-Nuttall
Undercover story/valve tests

Regarding the picture of the one-valver on the cover of Bulletin 19/1, I note that mother and daughter have to share a pair of headphones, while father has a pair all to himself! Typical chauvinism. And why are they using four bell batteries? I know carborundum crystals need polarising, but 6 volts?

If I can add my ha'porth to valve testing, ECH 11 should be 642 371 450 (The settings given can cause destruction!) And:

EL84 441 230 605
EL86 441 231 665
D63 028 190 310

Editor's note: The cover picture was of a Westinghouse one-valver and was incorrectly described as a crystal-set, as Geoffrey suspected.

Letter:
from C. A. G. Herbert
Radio parable

Re: Brian Pethers' reminiscences, I think that the last Dictaphone was sold just before the salesman called to see a prospective customer with whom he had left a "demonstration" machine, only to be told: "Well, it's alright, but it talks back wit an hawful haccent".

Feedback: readers' letters

"The Talking Telegraph Pole"

In our issue Volume 19, No.1, Eric Westman wrote an amusing piece about the phenomenon of a telegraph pole situated outside his house, the wires of which "rang" and apparently gave out muffled voices. It has provoked much interest and several members have written to describe similar experiences and have given explanations.

Letter:
from Anton Fitz-Gerald
Sounds Perculiar (1)

Eric Westman's article - 'Talking Telegraph Pole' (Vol 19, No.1) - reminded me of a similar incident which had occurred during my early teens. It was in the early fifties when my interest in electricity and sound was just developing and so I was often inspired into conducting weird and wonderful experiments.

Whilst cycling with a school friend in the quiet country, we stopped for a rest where we leaned our bicycles against a telephone pole. After a while we became aware that the pole was producing strange sounds; fuzzy, yet peculiarly similar to speech. This set my mind to work with thoughts of magnetic interaction between two current carrying conductors, and the principle of the stretched wire of a tin can telephone. I was anxious to demonstrate this phenomenon during a session in our school's science club. My teacher insisted that there was little point in setting-up my experiment unless I could replicate all conditions that existed at the time of my original observation. He also gave consideration to the low forces acting between the widely separated overhead wires. However, if I wished to satisfy my curiosity, then I was to go ahead with my 'futile' exercise.

I was an obstinate devil and curiosity had indeed got the better of me. With the help of a chum, I suspended some 20 swg galvanised steel wire between two wings of the school building over a distance of about 30 metres to form a parallel pair separated by about 150mm. One leg of this was anchored firmly at each end to the structure of the building and its returning leg threaded through a small hole in the centre of a diaphragm of thin plywood, and pegged. Its tension was taken by a length of sash cord tied to a heating pipe on the opposite side of the room. Pulses of current from a 2 volt accumulator were then discharged into the wire. This produced faint "twanging" sounds in the diaphragm. Music from the output of an amplifier was then fed into the loop, resulting in a rather stifled, squeaky reproduction. I deduced that my set-up was of course, frequency doubling.

Judging by the weak results of this experiment, we considered that perhaps the Post Office Telephone services used a signal booster for their long cable runs, but we never got around to confirming it. Unfortunately there was insufficient time to run a performance analysis, so it was then a wrap. The experiment, though purely academic, demonstrated a principle which had satisfied my curiosity.

Of course the most intriguing thing of all in Eric's observation, is that the pole serving his house was sounding voices not heard at his receiver. With my limited knowledge of telephone systems, I would hazard a guess that the pair of lines overhead were carrying a stray signal, but with both conductors phased equally (therefore balanced), and leaking to earth at its point of termination, the balanced signal then being cancelled out in the receiver whilst the unbalanced signals would continue to be heard in the normal way. Line interaction as described above, may well take effect, but with a balanced signal it would be in opposition. (Like polarities repel). I would be interested to hear the opinion of any engineers familiar with the old split-line system, regarding this possibility.

Letter:
from David Rudram
Sounds Perculiar (2)

I read Eric Westman's article "The Riddle of the Talking Telegraph Pole" with interest. As a retired GPO/BT engineer with experience of maintaining overhead telephone lines from 1949, I thought I might be able to come up with a good explanation. Alas, no! I have showed the item to several old colleagues, some with experience going back to the '20s and '30s, and none had ever come across this phenomenon. We could all relate experiences of subscribers hearing radio programmes on their telephones, due to partially made connections, corrosion etc. forming a rectifier, and acting as a detector. The long overhead line made a good aerial. In extreme cases, it has been known for a jointing sleeve on copper wires to form such a good copper/oxide rectifier, that it allowed a call to be set up, and then when the line current reversed on the call being answered, it didn't conduct and the call was lost.

But back to Eric. He didn't say if he was the only member of his family to hear the 'voices'. Also I wonder what joints, if any, there were on the pole outside his house, on the wires going on to the suspect source of the voices, the house at the end of the line? If we assume Eric was hearing a sound wave, something must have been moving to produce it. The normal current in the line during conversation was probably around 50 mA, as they were out in the 'sticks' on the end of the line from the exchange. The variation in current due to speech from a telephone with a carbon microphone would be very small, but just suppose due to some freak condition, a bad connection had formed as a crystal, and the piezo-electric effect produced the sound? I don't really think any line fault would have remained constant over a period of ten years. It would either have got worse and eventually put the line out of order, or been cleared when the engineers overhauled the route.

Incidentally, all we old telephone men nostalgically recalled the beautiful sound of the wind setting up musical vibrations in routes of overhead wires, particularly in cold weather, when the wires were more taut. Indeed, I can remember as a child putting my ear to a pole to hear the people 'talking on the line'. In later years, I often had to try and deaden these vibrations in wires attached to houses, as the noise could be really loud at times due to resonances in chimneys and facia boards.

Maybe Eric lived on a windy hill, and the old lady up the road had an ouside bell, the sound of which carried when the wind was in a certain direction?

More letters on the following page about the Talking Telegraph Pole, under "Sounds Peculiar".

>Here is another letter on the subject of "The talking telegraph pole".

Letter:
from J. Grant
Sounds Perculiar (3)

The "singing" telephone wires were a common feature of bygone days. I well remember, as a child in the 'forties, listening to the poles on the A63 Leeds to Hull trunk road at Halton. Many lines were. of course. carried on this route and the sound was a musical cacophony, punctuated from time to time by the unmistakable BRR - BRR of a ringing tone.

In those days, communication was by land-line only, the signals being conveyed by single bare copper wires, mounted on ceramic insulators secured to battens, and stretched taut between the poles.

The wires carried a D.C. component, inducing a magnetic field, and as the adjacent wire was the return circuit, there was mutual attraction between the two taut wires. This varied with the audio signals, causing the wires to vibrate (very feebly) in sympathy. The pole with its wooden battens acted as a "sounding board", hence the "talking pole".

Speech is unintelligible by this means, but not so the morse signals of the telegraph era.

In that shameful episode of our history, the Indian Mutiny of 1857, vital information about the disposition and movement of British troops fell into the hands of the opposing forces, simply by their listening to the telegraph poles. This breach of security led to the en-coding of sensitive information.

It may, or may not, have been the world's first electronic espionage, because in the language of some of the indigenous peoples of North America, their name for the telegraph translates into English as "the whispering wires". Perhaps they too had broken this nasty new rod of the oppressor.

P.S. I have chosen my words re the Indian Mutiny with care. Even after 137 years, it is still a sensitive issue in India and among the many people from that country who now live here.

Letter:
from Dr. Ian Macwhirter
The David Read V24/DEV 'mystery'

Without having an opportunity to make my own examination I cannot be sure, but the symptoms described by David Read in "Reflex Circuits" (Bulletin Vol.19, No.2) are readily attributable to the effects of contact potential. The effect of the phenomenon was as well known in the 1920's as it is today amongst engineers who were brought up in the measurement of valve characteristics.

For readers unfamiliar with contact potential, here is a brief description:

If an electron is to escape from a surface and reach another, energy has to be expended to leave one surface and surrendered on arrival at the other to preserve the equilibrium. The amount of work depends upon the nature of the two surfaces. It is measured in volts and was commonly known as the *work function*. Other names given to it included *electron affinity*.

In a triode used for grid current detection, two such surfaces are the filament (or cathode) and the grid, acting as anode. The latter may be made of molybdenum and the former of plain tungsten, doped tungsten or an oxide coated metal. The electron stream forms part of the conductive path and the copper wires provide the remainder.

The magnitude of the effect could amount to a volt or so. In a triode, the effect could materially affect the amount of required grid bias to ensure the onset of grid current in detectors. Because the reverse applies to *avoid* grid current, it seems possible that this could explain the need for different bias in the linear h.f. amplifier of David's receiver depending upon the filament type even though the electrode dimensions were the same.

The work function is also affected by unwanted impurities in the emitting surface, for example oxygen increases it. Other gases have a reverse effect. It is sheer conjecture but decades of gas release in a bulb, even minute, may well affect the characteristic of the valve compared with it in new condition.

It is so good to hear of the systematic measurement of the characteristics of the old receivers and their valves in the BVWS. The more one investigates the greater one realises the outstanding application of theoretical and applied physics used in those early wireless days.

I append a list of text books in which reference can be made to the effect applied to valves.

Contact Potential References are to be found in:

The Thermionic Vacuum Tube and its Applications, Van der Bijl, McGraw Hill 1920
Wireless, L. B. Turner, University Press Cambridge, 1931
Radiotron Designer's Handbook, Langford Smith, Amalgamated Wireless Valve Company Pty., Ltd., 1953

Of the three, the book by Turner is probably more helpful on the subject as far as its applied effect is concerned.

Important announcement

BVWS membership numbers

– a note from our Chairman Pat Leggatt

We have decided that it would be useful to allot a number to each BVWS member. Society meeting organisers need to know that those applying to attend are paid-up members. and it will be requested in future that you enter your membership number on the meeting application form, starting with that for the Harpenden meeting on September 25th.

It would be unduly expensive to issue membership cards, but we shall print your membership number at the bottom of the mailing labels used to send your Bulletins. So please look at the label on this or your next Bulletin envelope and make a note of your number in a diary or elsewhere; the number will be repeated on every Bulletin envelope you are sent.

Everyone's membership number will change each year. So for example the envelope containing the Bulletin due out in February 1995 will be labelled with your new number for that year.

Feedback: readers' letters

Letter:
from Eric Westman
The Melody lingers on...

Geoffrey Dixon-Nuttall's interesting description of the 1929 Cossor "Melody Maker" brought back to me the mid-1930s when my mother decided that I shoud learn to play the violin. I was a singularly inept pupil and when after eighteen months she found I hadn't progressed beyond page 3 of the Tutor, the lessons were abandoned. But the time wasn't wasted as far as I was concerned. My teacher was a keen wireless enthusiast, and after a preliminary scrape at "Bluebells of Scotland" we spent the rest of the half-hour in discussing wireless. I occasionally bought a few old components from him for pennies. His great pride was a Melody Maker that he had converted into a short-wave set by removing about two-thirds of the vanes from the tuning condensers and replacing the coils with home-made ones wound on the bases of defunct 4-pin valves. He offered to sell it to me for "three half-crowns" but I couldn't raise 7/6d in those days. It was over 20 years before I owned a Melody Maker: it cost £1 and I didn't despoil it.

Letter:
from Jonathan Coppersmith, assistant Professor, Texas A&M University
Give me the Fax

I am writing a history of the Fax Machine from its origins in the 1840s to the present. One interesting aspect of a fascinating history is the radio-broadcast facsimile newspaper of the 1930s-40s.

If you and the Wireless Society have any information or leads about British attempts, I would be most excited to learn about them. Through Burn's paper, I know about the attempt by Wireless Pictures, Ltd. in the late 1920s to obtain BBC backing.

Letter:
from Peter Robinson
Radio parable

With theory gleaned from library books, my career in radio began with days in the local wireless shop charging accumulators and fitting new springs into HMV and Columbia portable gramophones, preceding my advent as a ship's wireless officer. From this point the study of production techniques and industrial design ran concurrently with days in the television trade and my own craft shop as an amateur setmaker – TRADradios and BARBECUE family gramophones. Today, a visitor to my home will spy a number of valve sets and transistor portables which suffer from a variety of electrical and mechanical faults."That one" I explain "is good on Radio 4" or "that's fine – good all rounder but it's stuck on R2 – needs a new dial drive". As a friend remarked ". . . rather like the cobbler's sons". "Cobbler's sons?" I asked "yes, fine craftsman – made beautiful shoes but all his sons went barefoot".

Letter:
from Chris Price
Crystal sets

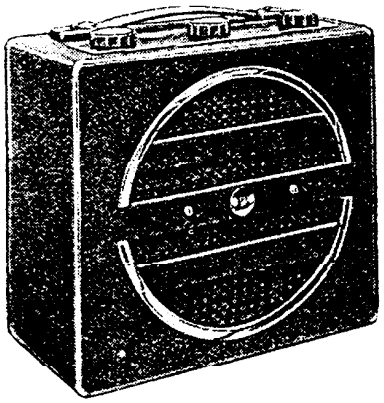
Thanks for the very interesting Bulletin – from which some points arise.

In the list of GPO numbers there is an entry 4276 (S.J.Wilkes) crystal set. Mr Wilkes made other wireless things. Some years ago when I was showing an H.T. eliminator – which is rather primitive – and an old boy looking at it said "Yes, Wilkes made these and other things in a place behind the Swan at Yardley" (Birmingham). I gathered that he had worked for Wilkes at some time.

I remember when at school in the shadow of the Malvern Hills (where Ally Pally could then be received) I made a rather peculiar crystal set with three crystals and a grid bias battery which worked a loudspeaker. (unfortunately it was confiscated!). Perhaps the world of wireless would have changed had I had it long enough to know how or why it worked. Or was it a freak? This was 1939.

"Cover Story in 19/2 Issue:"

Geoffrey Dixon-Nuttall has written to identify the radio carried by the lady in the rowing-boat as a "Beethoven"; and Sid Watkins confirms this and has sent the advertisement printed below, which comes from Currys 1937 catalogue. The blurb indicates why the lady chose the set: it's waterproof! Another reader thought our cover "somewhat tawdry" and if it offended we apologise. It was meant to give the "atmosphere" of the Thirties and was offered as a document of wireless social-history; depicting the dawning of an age of male-chauvinism when women began to be used as eye-catchers in advertisements to attract the male who was then exclusively in charge of the purse-strings and was assumed to have the intellect to make choices about such things as the purchase of radios. Hadn't BBC Chief Engineer Capt. Peter Eckersley said that before wireless could really become popular it would have to be made simple, so that anyone could tune it – "even a woman"? – Editor.



Beethoven
BRITISH-MADE RADIO

MODEL No. P.101.

The BEETHOVEN "BABY" PORTABLE

The "BABY" Portable with a full size performance. The Portable that is suitable for every occasion—for it is so small, measuring only 9" × 8½" × 5", and weighs only 10lbs. The single knob for tuning operates a pre-alignment rubber mounted air spaced tuning Condenser while the scale plate is calibrated in wave lengths and station names for simple tuning. The case work is in blue leathercloth with chromium-plated fittings, and it is mounted on a ball-bearing Turntable. No aerial, earth or any external connection whatsoever are required. Although this instrument is so small, its performance is well up to that of most Receivers of two or three times its size, and several times its weight.

£6 6 0 complete. Waterproof, baize lined, carrying case, with shoulder strap. **9/6**