

BULLETIN OF THE BRITISH

# VINTAGE WIRELESS

SOCIETY



An early installation of wireless in a motor-car, was the Marconi equipment installed in one of the Lord Mayor's Daimler cars, like this one pictured in The Lord Mayor's Show in London in 1922. The engineer-in-charge is checking that the frame-aerial is pointing towards the 2L0 transmitter. (Photo: courtesy Marconi.)

**BULLETIN OF THE BRITISH  
VINTAGE WIRELESS SOCIETY**

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**Information Exchange:  
A Register of Members'  
Interests**

Members are invited to take part in this scheme, which is designed to provide a sort of clearing-house for information of all kinds between members. You may want to contact other members with similar interests to your own, or to acquire data, historical information, advice on restoration etc. Or perhaps you are willing to share your knowledge with other enthusiasts or to exchange visits? If so, you are invited to send details of your interests and of the help you are willing to offer to others, to the Registrar: (SAE please)

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British Vintage Wireless Society  
Volume 18 no. 3**

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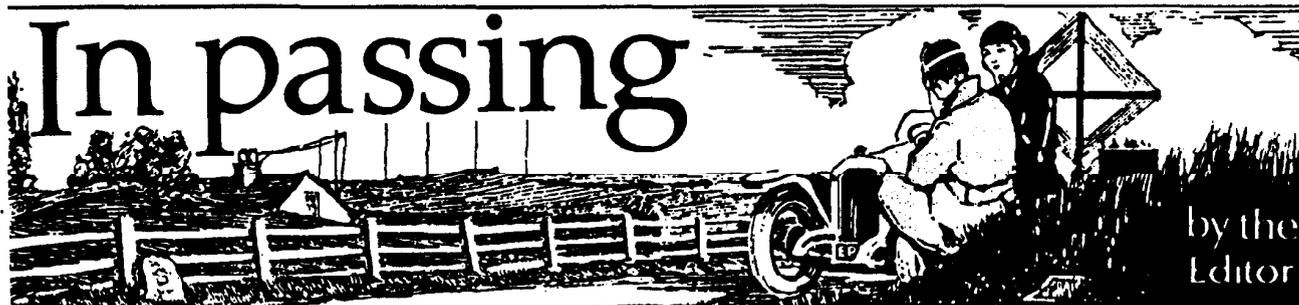
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Inside front cover

**VINTAGE  
WIRELESS  
MUSEUM**



The Vintage Wireless Museum, headquarters address for the British Vintage Wireless Society 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.

## Meetings

The Society now organises some 13 meetings around the Britain during the year and another new one is to be added, so that most members will be able to take part in our activities, even if they cannot travel to our four main events at Harpenden. There are two Swapmeets a year at Harpenden, which include "mini auctions" at the end of the day. Two major Auctions are also arranged there and these also feature a number of specialised stalls.

Our regional events usually take the form of "Swapmeets" with small auctions at the end of the day. The meetings provide opportunities for members to meet and mutually further their interests by exchanging information, equipment and spares

Following the successful experimental meeting at Hedon in March, a second is to be held, on 22nd August. Car parking is good, there are electrical sockets for demonstrations and testing, and the surrounding areas provide attractions like museums, antique shops and markets which could make the trip an interesting weekend. Details can be obtained from the Organiser, Ernie Roberts at 33 Charles Street, Hedon, near Hull, North Humberside HU12 8HT (SAE please) or by ringing him on 0482 898615. Please give him your support.

The next swapmeet at our now well-established and popular Portishead venue is on 5th September. Details can be had by sending an SAE to the Organiser, Alex Wooliams, 11 Norton Road, Knowle, Bristol, Avon BS4 2EZ (Tel: 0272 721 973).

Our next major Swapmeet at Harpenden is on September 19th and our big Auction meeting, mini-swapmeet plus AGM will be held there on 28th November. Enquiries for

these two meetings should be made to the Organiser, Robert Hawes, 63 Manor Road, Tottenham, London N17 0JH (Tel: 081 808 2838).

The next meeting at our friendly Southborough venue is on 17th October and details can be had from John Howes, 11 Crendon Park, Southborough, Tunbridge Wells, Kent TN4 0BE (Tel: 0892 540022).

Our newest meeting, held in July at Wootton Bassett, was a great success and another is planned there for 5th December. If you wish to attend, send your application with an SAE to the Organiser Mike Barker, 2 Cheney Manor Road, Swindon SN2 2NS nearer the date. Mike and Frank Hawkins and their team deserve our congratulations for introducing such a popular and well-organised event which drew a remarkable number of stalls and visitors at its launch.

## Honour

Among five distinguished people from the world of the visual arts on whom the University of Bradford have awarded Honorary Degrees to mark the tenth anniversary of the National Museum of Photography, Film and Television, is Thornton H. "Tony" Bridgewater, an honorary member of the BVWS.

Tony started work in television as an assistant to Baird in 1928, was one of a team which opened the BBC's first television service in 1932 using the Baird 30-line system from Broadcasting House and retired as the Corporation's Chief Engineer in 1968

He was also the first recipient of the new "Television Heaven" Award - in the form of an Angel watching television, made to mark the opening of a unique reference library of classic British television.

Recently, Tony went back to the basement studio at Broadcasting

House where he had begun his career sixty-one years before. He was there to unveil a plaque commemorating the start of BBC Television there on 22nd August 1932. The new plaque replaced an earlier one which perpetuated the error that the low-definition programmes from there were "experimental" rather than the actual start of the service. One hopes that the event will at last kill off the widely believed myth that the BBC Television service began in November 1936 with high-definition broadcasting from Alexandra Palace.

## Exhibitions

An exhibition entitled "Radio Times - from Cats-whisker to Walkman" is on at the Strangers' Hall Museum, Charing Cross, Norwich and will run until 5th February 1994.

The 80 radios on show are part of the collection of Harold Page, a BVWS member whose family have been involved in the radio industry since 1921. He retired six years ago after 40 years in the retail trade and is a past president of the Radio, Electrical and Television Retailers Association.

Part of his collection was on show last year at the Museum of East Anglian Life, Stowmarket but the larger space at Norwich will mean that more exhibits can be shown.

## Video First

Ray Herbert's report on the BBC series "The Long Summer" in our last issue has laid the ghost of the first woman in the world to appear in a video recording.

In his report, Ray drew attention to the replaying during the programme of a 78rpm disc recording made by Baird on 28th March 1928 which

Continued >

## In Passing

> *Continued*

featured a certain "Miss Pounceford" whose identity has remained a mystery until now. Ray was correct in his guess that she was Baird's girl friend, or a "temp" for after the programme the BBC received a letter revealing that the lady in question was Miss Mabel Pounceford, great Aunt and godmother to the correspondent, Mrs. Ann Cracknell, who explained that Baird hired her as a secretary through an agency. "I can recall her telling me that Baird had camp beds installed in the office so that they could work 24-hours a day" she adds.

### The Art of Radio

Vintage wireless has made it to the Royal Academy. In the current Summer Show, which includes much recycled art presented as innovation in a consumerist setting that makes it seem more like a market than a gallery, is a wistful self portrait of the artist Helen Wilks called "childhood memories" depicting a little girl listening to an early post-war set. Among more abstract works is a painting of a television test-card.

### Forces Exhibition

To mark the 50th anniversary of the British Forces Broadcasting Service, which played a vital role in the second World War in keeping the forces informed about what was going on in the UK and has continued ever since, an exhibition is being held in August at the Army Museum, which is next to the Royal Hospital Chelsea - home of the famous Chelsea Pensioners. The Services Sound and Vision Corporation have organised a display of archival material and equipment for the exhibition. The service began in Algiers in 1944 as an experiment and rapidly expanded to cover world-wide trouble spots, becoming BFBS in 1963 and is still going strong.

### Radar

"The Radar Story" is the title of an exhibition from 23rd August to 1st October by the IEE, at Savoy Place, London WC2. Admission is free and the show includes films and

### Buyers beware

Reports of thefts of vintage apparatus reflect its increasing value and scarcity, almost bringing it in the class of fine art objects which feature high in the shopping list of the discerning burglar. There are even suggestions that a mad millionaire in Europe, having tired of Picasso is now employing nick-it-to-order professionals to acquire for him some wireless classics to stash away in his cellar to be slavered over in secret.

### Buyers Beware

Hot on the reports of thefts from the Victoria and Albert Museum, comes news that a Baird Televisor disappeared from a museum in Darlington, a BBC ribbon-microphone was stolen from a house in Surrey where the intruder ignored conventional "valuables", a Bush set disappeared from a London museum and three radios were stolen from a van in a London street. Rare items reported missing in the past and never recovered include a very early Marconi receiver from a private museum and a wartime "Enigma" code machine.

Collectors are advised to adopt security measures and buyers are warned to be careful in their dealings: people who receive stolen property are regarded as being as culpable as thieves, so make sure your sources are above suspicion.

### Long Waves Saved

Having been robbed of BBC programmes on medium waves, vintage wireless enthusiasts will be delighted to hear that as a result of a campaign of protest, BBC Radio 4 on long wave, which was to be abolished, has had at least a temporary reprieve. One wonders whether it might have been possible to save more of the BBC's vintage waves if we had all got together to protest like the 4LW supporters

### Auntie's Bloomers

In a recent BBC radio programme about Morse code, the commentary went: "World-wide communications went by cable under land and sea until Marconi's invention: Radio". One would think Auntie would get it right. Marconi did not invent radio, and he never claimed to have done so. A further demonstration that myth is often more enduring than truth

## Was this the first broadcast Sermon?

by Dave Adams

No, the phrase did not exactly grab me either.

It was spoken by Mr. John Beasley of the Peckham (South London) Society in his talk on the churches of Peckham. This is not one of my special interests; I was there mainly as chauffeur for my wife, who is a 'Peckhamite'. (I have to confess to being an 'Essex man') When Beasley came to complete the sentence - 'on the 30th of July 1922' I sat up and took notice. I knew that the BBC did not begin until the November in that year. I managed to contain myself till 'question time'. I think I got mine in first. In short he told me to 'see him afterwards', hinting that there was a story to tell.

I certainly was not disappointed. He showed me a copy of a contemporary document, which he kindly helped me to photocopy there and then. It was a booklet that was produced by the minister who gave the sermon. He was Dr. J. Boon (a Doctor of Medicine, not Divinity). John Beasley, had obtained it, the last remaining copy, from Dr. Boon's daughter, Dr. Doris Boon (now deceased). The story it told is as follows:-

Dr. Boon was refused a transmitting licence by the Post Office. (He says he was not surprised at this.) He preached the sermon from Burndept's factory at Blackheath just a few miles away. His church, Christchurch, MacDermott Road, Peckham, was fitted out with a three valve receiver and an aerial was erected on the roof using two clothes props. Gramophone records were used for the music. In his sermon he addresses 'listeners in the north, south, east and west of England.' This and his reference, in his introduction in the booklet, to the Hague broadcasts, indicates that he was knowledgeable concerning the capabilities of wireless. He received letters from all these points of the compass confirming his belief.

The booklet gave copies of several press reports beside his own account but they are all disappointingly short on technical details.

I have not come across any reference in my reading to this. I think it was an achievement worthy of recording. If anyone could add to this account or if anyone would like to know a little more detail please get in touch with me.

I should like, here, to acknowledge our indebtedness to John Beasley who, in his researches, unearthed this gem, and for his generosity in passing on his findings.

# Workshop

## A Useful Signal Tracer

by Pat Leggatt

Although the trusty 'finger on the grid' can track down many problems, here's a little instrument which will do just a bit more.

The device will give loudspeaker output from signals large or small, AF or RF. Sensitivity is such that usable loudspeaker volume is obtained with about 100 microvolts of input signal. The reproduction is by no means hi-fi but is adequate for tracking down distortion in a signal chain. The instrument is battery operated and the probe has a high-impedance input so that it may safely be used for checking transistor circuits.

The principle is very simple - a high-gain audio amplifier, with input level control, into which is fed the probe signal. A switch on the probe gives a straight-through connection for tracing audio signals; or via a silicon diode detector for tracing modulated RF.

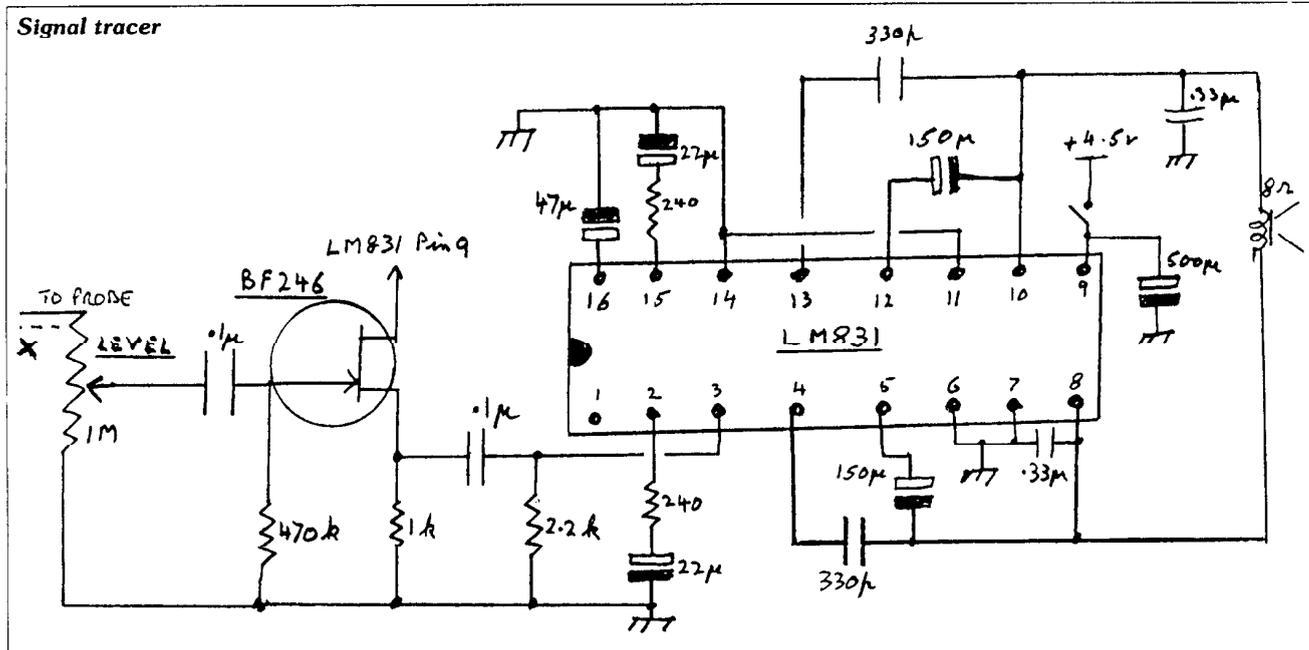
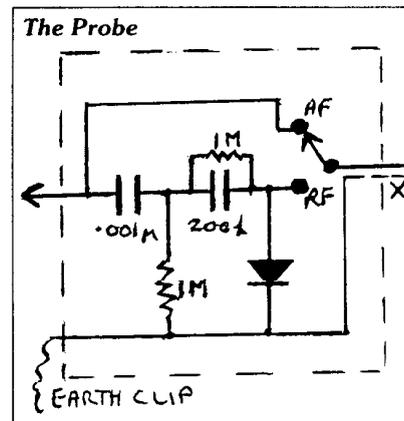
It is convenient to use an integrated circuit audio amplifier chip. I chose the LM 831 (3.95 from Maplin) but others would do equally well. The points to look for are high gain, low power with no necessity for a heat sink, low battery voltage and low quiescent (no signal) current. The LM831 input impedance is 25k, too

excessive loading on the circuit under test, so I included an FET source-follower stage which gives satisfactorily high input impedance: almost any n-channel FET would do for this purpose. The probe includes a 0.001uFd capacitor to protect the detector diode from, for example, HT on an IF amplifier valve anode. With the probe switched to AF, 250V on an audio stage anode would pass only a harmless 250 uA through the LEVEL control.

The mechanical construction can be seen from the photograph in which the case is opened up. A 4"x4"x2.1/2" aluminium box (1.65 from Maplin) houses the circuit board, the 4.1/2V battery and the 3.1/2" loudspeaker (98p from Maplin): a hole is cut in the front to expose the loudspeaker cone for acoustic output. I made the probe from an Edding 33 marker pen: this is a convenient type as the plastic top can be unscrewed, the ink wick removed and a pointed probe made from 4BA studding bolted into the plastic top. With a Stanley knife I cut a slot in the thin aluminium pen body for the miniature slider switch button, drilling two clearance holes for the switch fixings screws: drill gently, as the pen body is very thin. I mounted the detector components on the switch, wrapped them in insulating tape and inserted the assembly into the pen body. With a bit of fiddling I aligned the fixing holes and secured the switch with small self-tapping screws (no chance of manoeuvring nuts inside the narrow tube). The

switch can just be seen below the RF/AF labels on the probe.

Use of the instrument is straightforward; simply track the RF or AF signals forwards through the set until they are no longer heard, and the fault is located. It is useful, too, for sorting out crystal sets - with the probe on RF you can investigate the tuning and aerial arrangements without having to fiddle with the catswhisker; and on AF you can adjust the catswhisker without having to strain your ears for faint headphone signals. Don't forget that some crystal sets may not like as high a resistance as the signal tracer's 1M for the crystal DC return path, so you may need to keep the headphones connected to the set even though you don't want to listen to them. But remember that the 'phones can act as a microphone and that if you place them too near the loudspeaker you may get a howl-round.



## Valve History

# Point-Eight A.C. Valves and their Applications

by Ian Higginbottom

In August 1928 Marconi-Osram launched a short-lived series of a.c. valves, comprising three triodes and a screened tetrode. These were directly heated and thus a backward step for this usually innovative Company, which has marketed the first British indirectly-heated valves (the well-known KL1 and KH1) from January 1927.

Why were these earlier valves so soon followed by a less advanced design? By the standards of the time their characteristics were good, the KL1 having a mutual conductance of 2.0, but clearly they were not an unqualified success, for several reasons.

First, their cathodes were heated by radiation, not conduction. The inefficiency of this can be judged from the fact that a KL1 (tested for me by Philip Taylor) took 1.1/4 minutes to reach peak anode current. The 3.5v heaters dissipated 7 watts, which caused grid emission, and their high operating temperatures shortened their lives, to judge from the few that survive intact. There was no formal heater/cathode insulation, except the surrounding vacuum, and mechanical disturbance made them liable to heater-to-cathode shorts.

To circumvent these problems, Marconi-Osram revived earlier European and American attempts at the a.c. heating of valve filaments, such as those by Metal (1922), RCA and La Radiotechnique (both 1927). The principle was to use thick filaments to help smooth out the thermal fluctuations in emission. An adequate heating current then became possible at an unusually low voltage. The Point 8 series was so called because the filaments were

Year	Type	Filament		Impedance Ohms	Magnification Factor	Conduc- tance
		Volts	Amp			
1927	KH 1	3.5	2.0	30,000	40	1.35
	KL 1	3.5	2.0	3,750	7.5	2.0
1928	H Point 8	0.8	0.8	55,000	40	0.75
	HL Point 8	0.8	0.8	17,000	17	1.0
	P Point 8	0.8	0.8	6,000	6	1.0
	S Point 8	0.8	0.8	200,000	160	0.8
1929	D Point 8	0.8	1.6	21,000	14	0.67

helped to reduce modulation of the anode current by a.c. ripple. Moreover, since the alternating magnetic and electrostatic fields were opposed, this effect could be exploited by the designer to further reduce the ripple.

In use, the grids of Point 8 valves were returned to a centre tap on a potentiometer across the heater winding, but there were major problems in achieving a hum-free detector stage, and for the first (1928) season the indirectly heated KL1 was resorted to for this purpose. However, for the 1929 season a special detector (D Point 8) was announced. It used a still thicker filament passing 1.6a, and having yet more thermal inertia. It was claimed to give satisfactory leaky grid rectification if biased to +1.5v by a dry cell in the grid return.

The Point 8 series were rather poor performers, with mutual conductances ranging from 0.67 for the D Point 8 to 1.0 for the HL and P Point 8. This was blamed on diversion of the electron stream by the magnetic field due to the heavy filament current, i.e. the magnetron effect. Their characteristics are shown in the table, with the KL1 and KH1 for comparison. The P Point 8 was not very satisfactory as an output valve, and commercial receivers tended to use a P625A or PT625 in this stage. These various expedients created some bizarre valve line-ups, needing up to three different heater voltages (e.g. 0.8, 3.5 and 6v) from the special mains transformer, not to mention 5v for the rectifier! So far as I know, these combinations were used commercially only by Gecophone and Marconiphone in their 1928 and 1929 seasons. Gecophone marketed a range of a.c.

alternative battery and mains versions, the latter with a special mains unit as an option. The commercial applications I have identified, with their valve line-ups, are listed below.

*Standard in following:*

1928 Gecophone All-electric 3 BC2934 (KL1, P8, P625A, U5)  
1929 Gecophone All-electric 2 BC3020 (D.8, P625A, U5)  
1929 Gecophone All-electric SG Portable BC 3038 (S.8, D.8, PT625, U5)

*Optional (with special mains unit) in:*

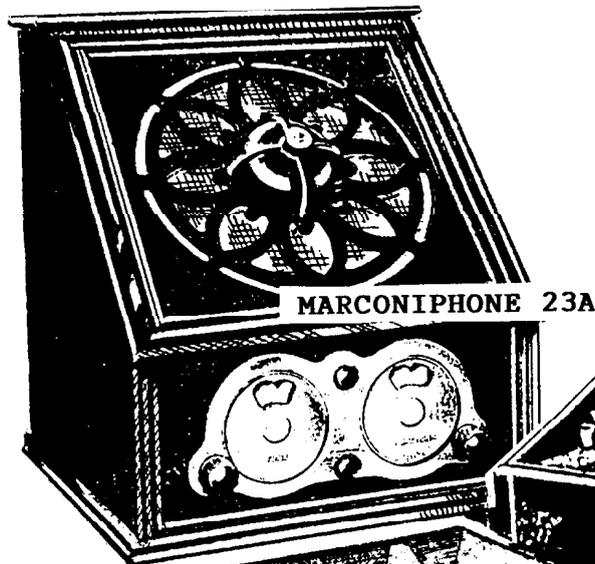
1928 Marconiphone 23 (KL1, P8)  
1928 Marconiphone 35 (S.8, KL1, P8)  
1929 Marconiphone 37 (KH1, HL.8, P8)

*Some of these receivers have been drawn for this article by Norman Jackson, and reproduced on facing page 33.*

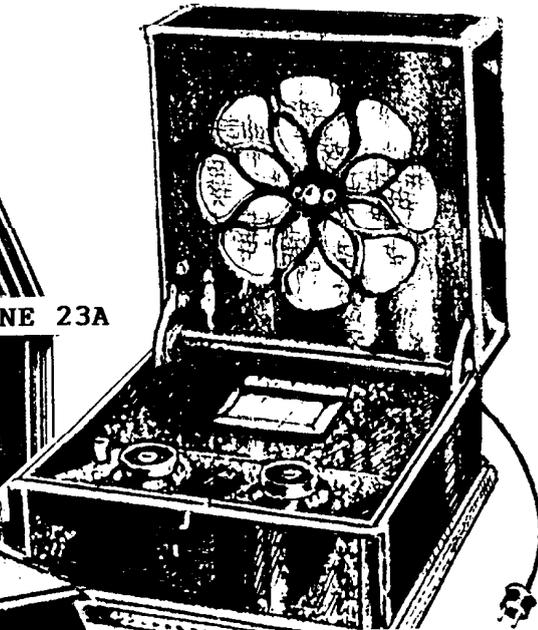
Because the Point 8 series used standard 4-pin British bases, one would imagine the home constructor would have some interest in them for modernising battery sets perhaps, but I have not yet come across a published design for the "home brew" enthusiast. Mains transformers with multiple heater windings were available separately from Marconiphone, for intended circuits using Point 8 and KL1/KH1 valves.

The Point 8 series were no longer used commercially in the 1930 and later seasons but remained available for a while. By 1939 they were listed by Osram as supplied to order only. They are now remembered only as yet another blind alley in the progress of radio technology.

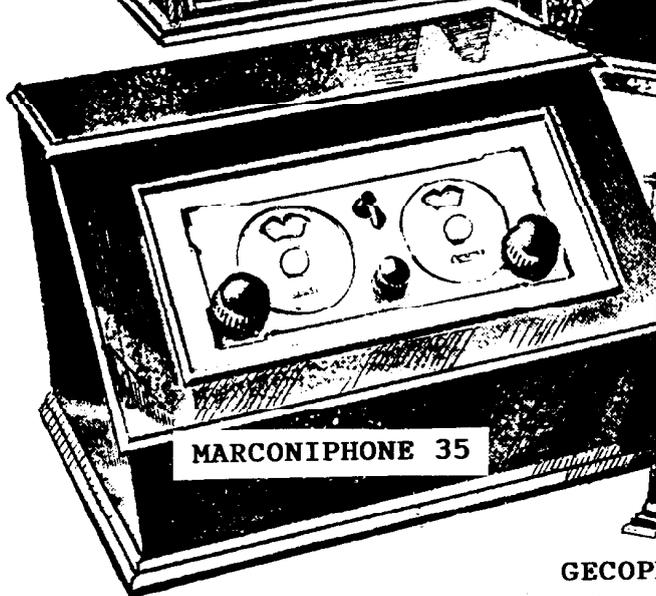
# Valve History



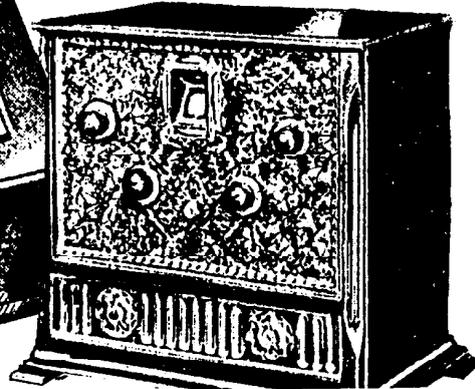
MARCONIPHONE 23A



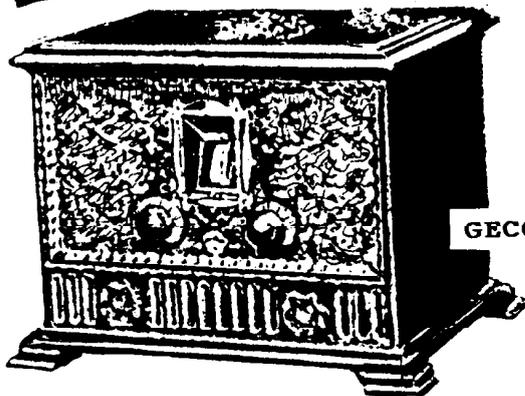
GECOPHONE BC3038



MARCONIPHONE 35



GECOPHONE BC3032 (Mahog.)  
OR BC3034 (Oak)



GECOPHONE BC3020 (Mahog.)  
OR BC3025 (Oak)

## Television History

# Ally-Pally pioneers to record their own history

by Michael Henderson, founder of Alexandra Palace Television Society.

Where do your best ideas germinate? Mine tend to arrive suddenly from my subconscious when I'm consciously lightly engaged in routine, when shaving or showering, but this one popped up while I was driving.

I was listening to Judith Chalmers on Radio 2. She was appealing to any war-time members of a searchlight unit, a couple of whom wanted to hold a reunion. Idly, I thought why have those of us who worked at Alexandra Palace between 1936 and 1952 never had a get-together? Surely the team who were then forming BBC TV, the World's first public Television Service\*, ought to meet again before, inevitably, there are none of us left.

This was in August 1990. By no means all my ideas are any good, so I let it mull for a few weeks and then tested this one on Tony Bridgewater, a pioneer of TV engineering, and Margaret Macklin, my Assistant when I was an O.B. Producer/ Commentator.

With their approval, I achieved publication of a brief letter in the BBC Staff magazine "Ariel" and soon about 40 people contacted me. A request from the editor of "Prospero" magazine for an article followed and this brought more names to my list. Always in the back of my mind however had been the thought that we should aim to be more than an 'old boys' reunion group. Having discovered, during a visit to the BBC's Written Archives Unit at Caversham, that almost nothing was on record about that period of TV history, I realised why young journalists were writing articles about early Television and many glaring inaccuracies becoming perpetuated fact in cuttings files.

With my list of names continuing to grow by word of mouth, we had reached the point where perhaps Historians could be enrolled. Oxford was my old University. Norman Moore, its Professor of Modern History, had over the previous two



Pictured at the inaugural meeting: (left to right) Michael Henderson, Tony Bridgewater, Bill Ward, Yvonne Littlewood, Sir James Redmond, Dr. John Stevenson and Lord Orr Ewing.

TV and Radio. As a stranger risking rebuff, I telephoned him at his home to see if he could advise which University I might approach to collate the research, if our list of members provided the material.

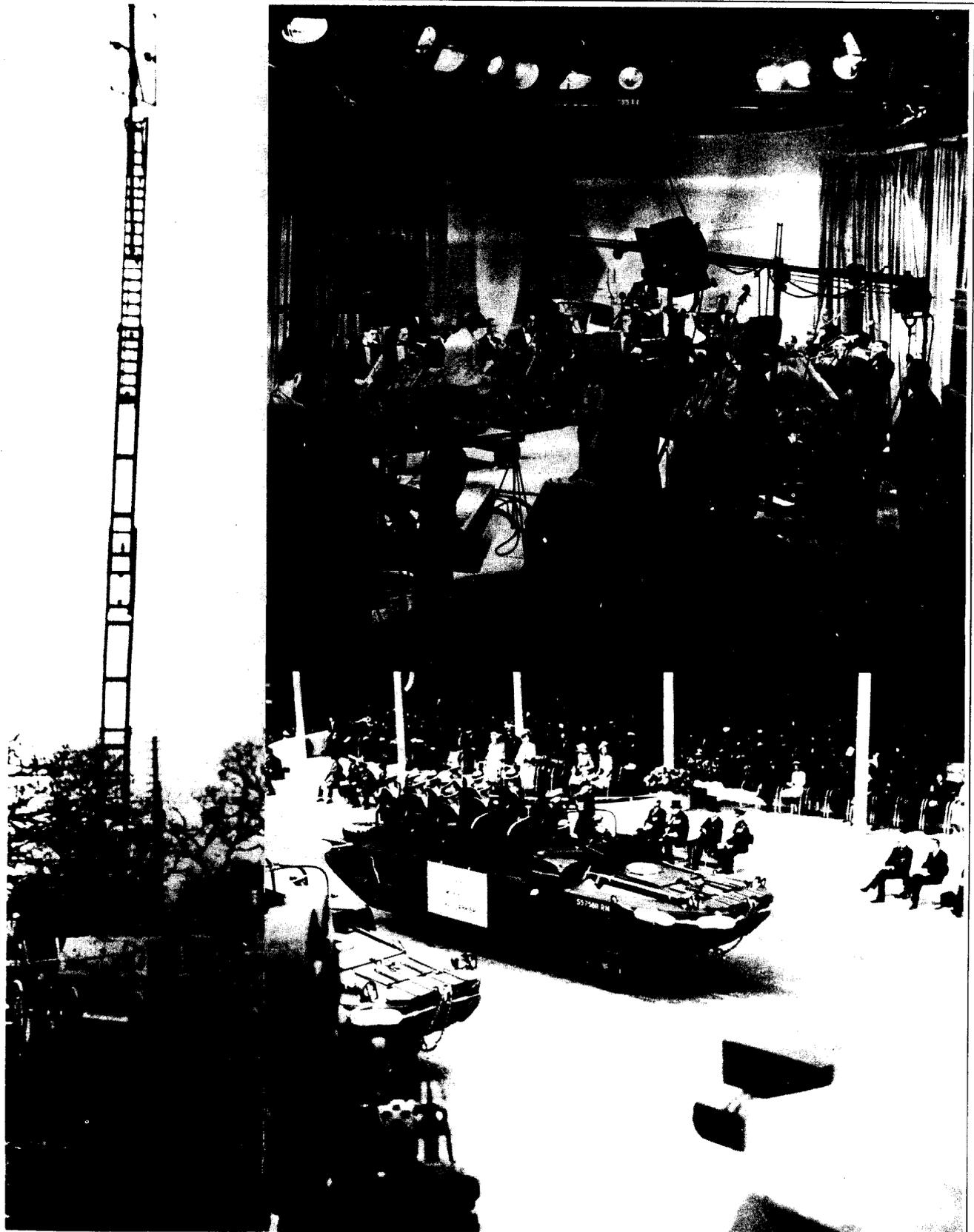
He plied me with questions, then said that Oxford would be pleased to take on the project. He felt that his colleague, Dr. John Stevenson of Worcester College, was the specialist social historian for the job, which has proved to be the case. By the early spring of 1992, with then over 100 names on the list, there was a demand for our first plenary meeting. This was held by chance on St. George's Day at Alexandra Palace, and there were 98 of us, all in our 70s, many in our 80s. Sidonie Goossens, the harpist, at 92 was the eldest present. Dr. Stevenson was there to address us and stressed the importance of getting on record our experiences, calling us 'Living History'. We were an important element in the social history of the 20th Century which was already in preparation. At that meeting, I was able to enthuse a good number of conveners who were prepared to gather small Groups of Alexandra Palace Television Society (APTS) members connected with different aspects of Television Production and Engineering at Alexandra Palace. The first of these groups, 5 people who were at AP for the first programme in November 1936, taped their reminiscences last June. Since then a

steady flow of tapes has reached me. I have just sent Dr. Stevenson a report summarising 18 different Group Sessions, totalling to date 28 tapes, representing almost 40 hours of listening. John is now reporting this available material to his best undergraduates and post graduates with a view to a number of them accepting different aspects of our past work as potential Theses. The ultimate aim is a compilation of these to be published as a Reference Book about what it was like at "the coal face", for the founders of this new medium in which all programmes were live, and there was no money but lots of enthusiasm. It will tell how equipment broke down On Air, how there was nobody to tell you "how to do it".

It should make a good read, with funny stories in abundance to illustrate the progress. Our current 185 APTS members are proving as determined a team today to make the Book a success as they were about 50 years ago when building and shaping very early Television.

\*This statement requires qualification. The world's first public television service was inaugurated by the BBC from Broadcasting House, London in 1932, using the 30-line Baird system (see T.H. Bridgewater's "Just a Few Lines" published by the BVWS in 1992 and still available). The world's first high-definition public television service could be said to have begun in 1936 at Alexandra Palace with a contest between an updated Baird system and the EMI electronic system which won. ED.

# Television History



Left: Telescopic ladder topped by an aerial to send pictures from an outside broadcast to Alexandra Palace, February 1939. Right: A scene in the studio at Alexandra Palace in 1937. Henry Hall and his dance band are on the set. Bottom right: A BBC camera covers the Victory Parade after the war.

## Early receivers

# Butler-style crystal sets

by Ian L. Sanders,

a member of the BVWS, resident in America.

In 1922 H. D. Butler & Co. of Great Dover Street, London produced their well-known Model No. 111 crystal set.

Descriptions and photographs of the receiver are given in the reference works by Gordon Bussey [1], Jonathan Hill [2] and Robert Hawes [3].

Evidently, the design must have been a popular one since an identical model (or at least one with very minor variations) was offered concurrently by at least three other manufacturers. In addition to the Butler model, similar receivers are known to have been produced by Economic Electric Ltd. of Euston Road, London, Henry J. Brewster & Co. of Queen Victoria Street, London and by Wright & Weaire Ltd. also of London.

None of these Butler 'variations' are mentioned in the above references. The models are summarized in the following table:

Manufacturer	Model	Price (1922)
H. D. Butler	No.111	£2 10s. 0d
Economic Electric Ltd.	Polyglot	£2 19s. 6d
Wright & Weaire Ltd.	No. 266	unknown
Henry J. Brewster & Co.	Aerowave	£5.10s. 0d*

\*Price included headphones and aerial equipment.

The cabinets of the four sets appear to have been identical and were constructed of polished mahogany with a drop front and lift-up lid. When closed, the cabinet formed a neat, compact cube, measuring  $6\frac{3}{4} \times 6\frac{3}{4} \times 6$  inches.

Figure 1 shows the Model No.266 set manufactured by Wright & Weaire Ltd., which seems to be identical to the Butler version, with exception of the interleaved WW logo, the designation 'Phone (in place of 'Telephone') engraved on the ebonite panel, and the fact that the BBC stamp is on the drop front rather than

the lid. Like the Butler version, the Wright & Weaire receiver was given the Post Office Registration Number 118.

The detector was of the open cat's-whisker/galena type, and the tuning arrangement consisted of a double slide coil in parallel with a variable condenser of 0.00015 uF, as shown in Figure 2. The terminals and fittings were of lacquered brass.

Based on information provided for the Aerowave, the receiver could be tuned between 200-1650 metres, permitting reception of the Paris Radiola long-wave station. The advertised range for telephony reception was 30-40 miles.

The Aerowave by Henry J. Brewster differs most notably from the other three models in that it was offered with a glass-enclosed detector, although early models advertised in July 1922 - are shown with the open detector. The Polyglot was supplied with Economic Electric's "world-famous reclarite" crystal, which claims to "... surpass any known crystal in sensitivity and stability..." and was "... perfect for speech reception".

The other apparent physical difference between the four models was that the Polyglot and the Aerowave both had telephone terminals placed at the left-hand side of the panel, whereas the Butler and Wright & Weaire has the terminals in the centre.

It is not clear exactly which manufacturer was the first to market their version of the set. Certainly, the assumption that it was Butler is open to question. According to Jonathan Hill, the Butler receiver was not produced until 'late' 1922, while advertisements for the Brewster model appear as early as July 1922. It is also to be noted that the Polyglot by Economic Electric appears in their catalogue dated August 1922. Any further information in this subject would be most welcome.

#### References

1. Gordon Bussey, "Vintage Crystal Sets". Published by IPC Business Press Ltd., London (1976).
2. Jonathan Hill, "Radio Radio". Published by Sunrise Press, Devon. (1986).
3. Robert Hawes, "Radio Art". Published by Green Wood Publishing Co. Ltd., London. (1992).

Comment from Pat Leggatt:

Referring to Ian Sanders' interesting article, it was not all that unusual for a given design to appear in different manufacturing guises. The Burndept Ethophone No.1 crystal set (PO No.114), for example, is identical to the Sterling No.1 even though the latter has a different PO No 130

I have a WW crystal set similar to that described by Ian Sanders. The number in the lower right hand corner of the panel is No.258, as opposed to 266 on Ian's. My set has the date 4/4/23 pencilled on the underside of the cabinet with an inspector's 'OK' mark.

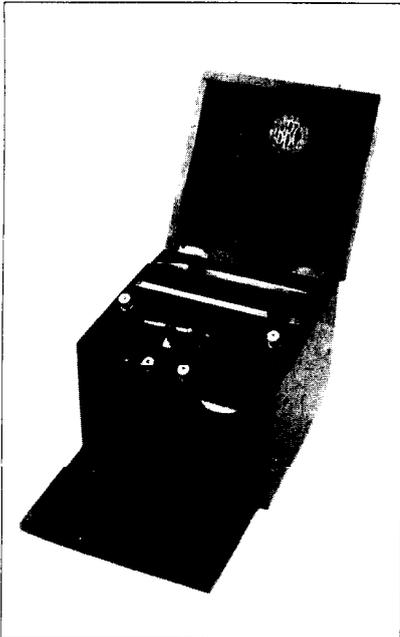
Ian's paragraph mentioning differences between the Butler and WW versions seems to indicate that the BBC transfer is on the drop front of the WW version, whereas Gordon Bussey's illustration shows that it is the Butler version where this applies: indeed my WW set has the transfer in the lid. One other respect in which my WW set differs from the Butler is the crystal cup, which in my WW set has three screws to hold the crystal, unlike the Butler or the Polyglot.

On the EEC 'Polyglot' version illustrated in their August 1922 catalogue, one other difference from the Butler or WW sets is that the tuning knob has some sort of circular feature in the middle rather than being plain flat-topped; and there is panel engraving "VAR CONDENSER" beneath this control. In the EEC catalogue blurb the top left terminal is described as being for the 'Aerial': I hope our Bulletin can match this up-market use of the digraph!

I have not previously heard of the Henry J. Brewster 'Aerowave' version. The only mention of an 'Aerowave' crystal set that I have seen is in a Wireless World advertisement of 12/3/24 where a set with this name (and PO No. 345) is offered by the Birmingham Wireless Company. The picture shows a set quite different from the Butler etc, and is no doubt irrelevant to this discussion.

A final tidbit is that the H.D. Butler company in Great Dover Street had the rather gratifying amateur call sign 2 OK.

# Early receivers



The following is taken from a review of the Polyglot receiver by Economic Electric appearing in the journal Wireless Weekly on 2nd May, 1923.

"Apparatus we have tested"

Broadcast Crystal Set

The tuning range is up to something over 800 metres on P.M.G. aerial. On actual trial with 2LO on such an aerial in the outer suburbs of London, this transmission came in very well; tuning was rather tricky for the uninitiated, but was compensated for by the greater signal strength, which was remarkably good considering the compactness of the instrument and relatively small size of wire used in the tuning inductance.

Signals were also quite good on a single 30-foot aerial. Ships came in strong on 600 metres with a twin 40-foot aerial. The small condenser appeared to be a real refinement in so small a set; its action was smooth and there was a good, reliable connection to the moving vanes . . . The crystal detector appeared to be made for the renewal of the crystal when worn. The "cat's whisker," also, doubtlessly for mechanical reasons, is made rather too thick and harsh.

On the whole, it is a very attractive and effective little instrument, and can well be recommended to those who have ambitions above the single-knob, soulless kind of tuner, and who will take a little trouble to get good results.

## ECONOMIC

Telephone:  
Museum 1055

Head Office: 10, Fitzroy Square,  
London, W.1

## ELECTRIC

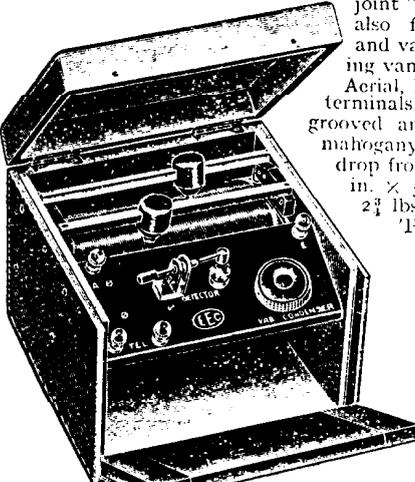
LIMITED

Works:  
Twickenham

### THE "POLYGLOT"

## WIRELESS TELEPHONE RECEIVER

Specially designed for intercepting the broadcast Telephony and Morse signals. A really wonderfully efficient instrument that exactly meets the demand of the moment. Inductance is fitted with two sliding contacts for fine tuning. Special ball joint "Rectarite" detector, also fixed capacity mica and variable capacity moving vane air condenser, with Aerial, Earth, and Telephone terminals. Mounted in a grooved and tongued polished mahogany cabinet, with lid and drop front. Size 6 $\frac{3}{4}$  in.  $\times$  6 $\frac{3}{4}$  in.  $\times$  5 $\frac{1}{2}$  in. high. Weight 2 $\frac{3}{4}$  lbs. Price, **59/6**. Phones extra.



Write:  
To-day for  
36 page WIRE-  
LESS LIST  
Post Free  
4d.

Showrooms:  
**303, Euston Rd., N.W. 1**

EVERY ONE OF THE "AEROWAVE" CRYSTAL SETS EXHIBITED OF OUR STAND RECEIVED THE MARCONI CONCERT WITHOUT AERIAL OR EARTH CONNECTION.

The instrument was simply held by those fortunate enough to get near the Stand. Many names of the listeners were obtained, and we have their signatures in our possession.

**THIS PROVES THE HIGH EFFICIENCY OF THE "AEROWAVE," WHICH IS ESSENTIALLY AN INSTRUMENT FOR THE HOME CIRCLE DESIRING CLEAR RECEPTION UP TO 50 MILES RADIUS.**



Ready for immediate use.

- SPECIFICATION.**
- 1 Polished Mahogany Cabinet with drop front.
  - 2 Sliding Inductance.
  - 1 Glass-enclosed Crystal Detector of improved design, with ball joint so that the whole of the Crystal may be swiftly and easily searched.
  - 1 Specially tested Crystal.
  - 1 Variable Condenser, 00015.
  - 1 Fixed Phone Condenser.
  - 1 Mounted on Sloping Ebonite Panel, engraved and fitted with all Terminals.
  - 1 Pair Best Quality Head-phones, High Resistance, 4,000 ohms.
  - 1 Aerial Equipment.

**Price - £5 10s.**

**HENRY J. BREWSTER & CO.**

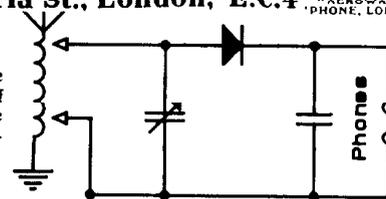
MAKERS OF "AEROWAVE" SPECIALITIES

Telephone:  
CITY 768

**11, Queen Victoria St., London, E.C.4**

Telegrams:  
"AEROWAVE"  
PHONE, LONDON

The Economic Electric Polyglot set is the same as the H.D. Butler set illustrated on the cover of Gordon Bussey's "Vintage Crystal Sets". The same set appeared with the "WW" manufacturer's logo. Both had GPO no.118



## Manufacturing History

# Fallon: the condenser people

A brief history of a family firm

by Maureen Crips

My grandparents Michael and Frances Fallon arrived in London from Dublin in 1911 with their eight year old son, my uncle Edward; two daughters, Molly my mother, and Frances; and young Michael aged two. Later they had three more children, Connie, Paddy and Norah.

My grandfather had many occupations; he worked for the Post Office, was a solicitor's clerk and served in the British Army during the 1914-1918 War.

As Edward grew up he developed a keen interest in the newly invented wireless, in his early teens building sets on the kitchen table and making up his own condensers. My mother used to tell me how they shared a pair of earphones and my aunt Frances remembers hearing the famous broadcast from Chelmsford in 1920 when Dame Nellie Melba gave a 30 minute recital: it must have seemed like magic. Later they got a horn loudspeaker and people came to their house from near and far to hear the wireless.

In January 1922 the family started a wireless component manufacturing business from their home at 230a Hermitage Road, London N4. Edward, then nineteen, was in charge of the production of condensers and my grandfather took care of the business side. He used to buy up goods at auctions and sell them later: in May 1922 he advertised in *Wireless World* "A special purchase of bankrupt stock of Wireless Variable Condensers — Every One Tested".

By the August 26th issue of *Wireless World* he was advertising as "W. J. Fallon & Co. The Condenser People": in my grandfather's signature the initial 'M' looked like a 'W' and must have been misread by the magazine editor. He offered sets of condenser parts for self assembly, or complete units with ivorene scales and mounted in polished mahogany cases. "Buy from the makers and

save middlemen's profits" he said; and the top-of-the-range cased item cost 16 shillings, £30 or so in today's money. In the same issue he announced to the Trade that "Most of the big manufacturers of receiving sets are using OUR skeleton condensers for panel mounting": (the writer would be most interested to know if any reader has come across a Fallon condenser in a manufacturer's receiver).

On March 29th 1923 the Fallon Condenser Manufacturing Company became a Limited Company with a nominal capital of 1000 ordinary £1 shares; my grandfather and uncle Edward were Directors. In June of that year Fallon were advertising their improved All Condenser with adjustable metal-to-metal bearings of which they claimed to be the originators as applied to condensers. Prices ranged from 5/6d to 10/- and for an extra 9d came an aluminium screening disc to avoid hand capacity effects.

The Fallons had a good flair for publicity, stating that they were "The Makers of half the World's Variable Condensers" — a little exaggeration was acceptable, and even expected, in advertisements of the early 1920s!. "Our motto is QUALITY FIRST", they said and there was a prominent warning "Don't buy shoddy sets of condenser parts nigh impossible of assembly, or half assembled condensers merely thrown together. BUY OURS".

In September 1923 they were producing a new alternative case for the AI condenser. At the same price as the mahogany case version, the new case was of transparent celluloid with circular ebonite top and bottom plates.

October 1923 must have been a busy and exciting month for the family. On the business front they revised their trade terms; and in manufacturing they produced two new condenser models and two new products, a variable grid leak and a variometer, all in time for the All-British Wireless Exhibition at White City in November.

The two new condensers comprised a fixed component with moulded case and, more importantly, the 'Duanode' 2-gang variable condenser for one-knob tuning of HF and detector stages. The panel mounting grid leak was variable between 0.5 and 5 Megohms, a welcome

development for the amateur constructor who wished to progress beyond the traditional lead pencil line; while the variometer embodied a very closely coupled rotor coil which ensured a large range of tuning inductance.

At the White City exhibition they had a stand in a good position opposite the bandstand and next to Brown Brothers. My aunt Frances and my mother, then aged sixteen and seventeen, helped on the stand for some of the time; decades later my mother could still recite technical details of the products. The new lines were a great success, in particular the Duanode ganged condenser, one of the first of its kind, which was subsequently featured in both *Wireless World* and *Popular Wireless*.

During the next few months their condensers gained such a high reputation that Harmsworth's *Wireless Encyclopedia* listed 'Fallon Condenser' in its own right as "A trade name for a series of variable condensers for amateur experimental work", and included good sized photographs of two of the products. The Duanode condenser, too, got special mention in Harmsworth and was also favourably reported by Percy Harris in *Modern Wireless* magazine.

Fallon's volume of business grew rapidly and in January 1924 they set up manufacturing plant at the White Ribbon Works, Broad Lane, Tottenham and established their registered office there. The White Ribbon Works is still in existence, a two storey building with a working area of nearly 10,000 square feet. My grandfather and Edward worked there full time, as did my mother Molly doing clerical work in the office. My younger uncle Michael, then aged fifteen, worked on the factory floor for a while.

With extra space and staff, business increased considerably, not only in this country but also with export markets in Australia, South Africa, Sweden and Holland. In particular the variometer sold very well and with increased production it was possible to reduce the price from 15/- to 10/-. A photograph in the *Wireless* and *Allied Trades Review* shows five young men at work in the variometer assembly department. The variometer was specified in a 1924 *Modern Wireless* design for a 1-valve receiver for the medium wave band and for long waves in anticipation of the proposed BBC 5XX transmitter.

## Manufacturing History

By September 1924 they had established a wholesale facility in Farringdon Road, London and additional depots in Manchester and Glasgow, while the Head Office was maintained at the White Ribbon Works. A new product at this time was the Fallon Square Law Condenser, recognising the popularity of this solution to the problem of wavelength crowding at one end of the tuning range. All this indicated a successful expanding company, but an October advertisement perhaps hinted at problems in saying "If your dealer cannot supply WE WILL". Nevertheless a further Fallon depot was opened in Belfast in December.

However, during the first two months of 1925 things began to go seriously wrong. Turnover seems to have dropped dramatically and in February advertisements the Trade were instructed to contact the White Ribbon Works direct, and only the Manchester and Glasgow branches were listed. My grandfather did a survey of local retailers and found that Fallon condensers on display were priced below his factory gate prices.

The last Fallon advertisement I have found is a very small one in *Wireless World* of March 4th 1925. Five days later a decision was made to voluntarily wind up the company and appoint a Liquidator: the company was finally wound up on August 22nd 1925.

In the family, the general consensus on why the company failed seems to be that the difficulties lay on the business and marketing side, since the products were technically sound, in line with current technology and not over-priced. With the additional complication of long wave, perhaps many erstwhile home constructors turned to manufactured sets: and on the business side perhaps the company found itself over-committed in establishing their own distribution and wholesale outlets at the same time as opening their factory. Furthermore there were many difficulties in finding reliable and scrupulous export agents to expand business overseas.

As a footnote, Edward Fallon gave up his wireless activities in later years, but lived next door to a radio amateur who encouraged Edward's young son



Top: *The works.* Centre: *Variometer assembly.* Bottom: *Michael, Edward and Paddy.*

John to take up the hobby. One day John was holding a condenser and remarked to his father that he reckoned he could make one. Edward told him that it had already been done — he had made condensers years ago and they were called Fallon Condensers!

But the Fallon name lives on in wireless today. Paddy's son Michael

has the call sign G1YPN in High Wycombe, and John in Plymouth uses his father's old call G3SGV.

#### Acknowledgements

I would like to thank BVWS members Chris Price, Pat Leggatt, Robert Hawes and Ed Dinning for much help, and members of my family for sharing their memories with me. Thanks also to my husband Dennis and the staff of Birmingham Reference Library for valuable help with my research.

## Technology

# Which?

by Geoffrey Dixon-Nuttall

"Wireless World" used to have a series of "Test Reports" on commercial receivers. In these they were careful not to offend actual or potential advertisers, so that faults were either glossed over or merely hinted at. This was before the Consumers' Association started "Which?", after which things were never the same. It is interesting to speculate what the Test Reports would have been like if C.A. had been around in 1930. Recently I have been comparing early mains sets and the results may be of interest.

The sets concerned are:

### Marconiphone 47

Four valves, metal cabinet. £24

15.1/2" x 10" x 8.1/2"

### Philips 2514

Three valves, metal and plastic

cabinet £23

14.1/2" x 7.1/2" x 5.1/2"

### Pye 350C

Three valves, wood cabinet £25

17.1/2" x 13" x 13"

All sets have Gramophone sockets but no dial lights, and all are T. R. F. with reaction.

### Features

The **Marconiphone 47** is in a metal cabinet, grained to resemble stained oak. It is adjustable for mains of 110 or 230 volts.

Controls: Tuning

Waveband (Marked "Short" and "Long")

Aerial coupling

Reaction

Aerial trimmer.

Mains on-off.

Removal of the top cover disconnects the mains.

The **Philips 2514** is in a metal cabinet with plastic ends. The metal is covered in Rexine leathercloth.

Controls: Tuning (two)

Reaction

Waveband (Marked I-II-III).

R. F. Gain.

Removal of the valve cover disconnects the mains.

The **Pye** is in a mahogany cabinet

Controls: Tuning (two)

Reaction.

Waveband (Marked "Short" and "Long")

Volume

Mains on-off

The set is adjustable for mains of 200-230 volts.

### Performance

The performance of these sets is, for their time, very reasonable. They may possibly have aged since they were made, but if so it doesn't show. The differences are mainly in what would nowadays be called the ergonomics.

The **Marconiphone** has only one dial, but the errors are such that the aerial trimmer moves from "full in" at one end to "full out" at the other. The aerial coupling and reaction controls work by moving coils, and these are controlled by levers. Unfortunately the position for maximum does not come at the end of the slot. Even with minimum coupling and no reaction there is too much volume on Long Wave Radio 4.

The **Philips** covers from 200 to 2000 metres in three bands. The two tuners get badly "out of step" on the two M.W. bands, and this takes some getting used to. The R.F. Gain control works well. The tone seems shrill in comparison to the other two- **Philips** used to see "Tone Correctors" which went between the set and the speaker, and one of these would probably be a good idea. The tuning is by knobs, which I find easier than the edge dials of the other sets. Not having a mains switch may be a nuisance if it means feeling along the skirting for the plug.

The **Pye** has two dials, but these are marked (fairly accurately) in metres. The volume control is a variable resistor across the intervalve transformer - this works smoothly but means that strong signals overload the front end. **Pye** recommend detuning to remove the distortion. The reaction control has "hysteresis" or backlash, probably due to the odd circuit used. The mains switch is on the back, which is not very convenient.

A factor which is more important nowadays than at the time of manufacture is selectivity. A test of this is to separate LBC from Radio Three (62 kHz difference) alas, no more! The **Marconiphone** has problems, the **Philips** is O.K. with careful tuning, but the **Pye** does it clearly. The choice of aerial sockets helps, but on the **Marconiphone** these are too similar in effect.

As mentioned the **Philips** has tuning knobs, but the **Marconiphone** has one edge control with no slow motion and the **Pye** has two edge controls with slow motion or direct action.

So which would I buy? Quite a large factor is the opinion of the lady of the house. The **Philips** is very small (about one third the size of the **Pye**!) but is frankly an ugly little thing. I don't think she would go for the fake wood of the **Marconiphone**, but the rather florid cabinet of the **Pye** is certainly impressive- most of it is solid mahogany.

Two other factors at the time these sets were made were the snob value of the extra valve in the **Marconiphone**, and the fact that the **Philips** was made in Holland. In fact the extra valve replaces the intervalve transformer used in the other two, and confers no other benefit.

I think today I would go for the **Philips**, mainly because of its ingenious design, but in 1930 my choice would be the **Pye**. It would cost me £25, which is probably equivalent to £400 nowadays. If I keep mine until 2000 it will probably be worth that again!

There is a sting in the tail. All these sets had the original valves in them, and these were quite good except for those in the 2514, which were worn out. The reason for this is that the other two sets developed faults which prevented their being used, whereas the 2514 went on and on until the valves came to the end of their life. Quite a lot had to be done to the **Marconiphone** and the **Pye** to get them working, but the **Philips** worked nicely after replacing the valves. I gather they usually do! But of course this would not affect my choice in 1930 who wants a wireless set that lasts for nearly sixty years?

*Alas, no more!*

# Receiver Techniques of the 1920's

## Part 8

by Pat Leggatt

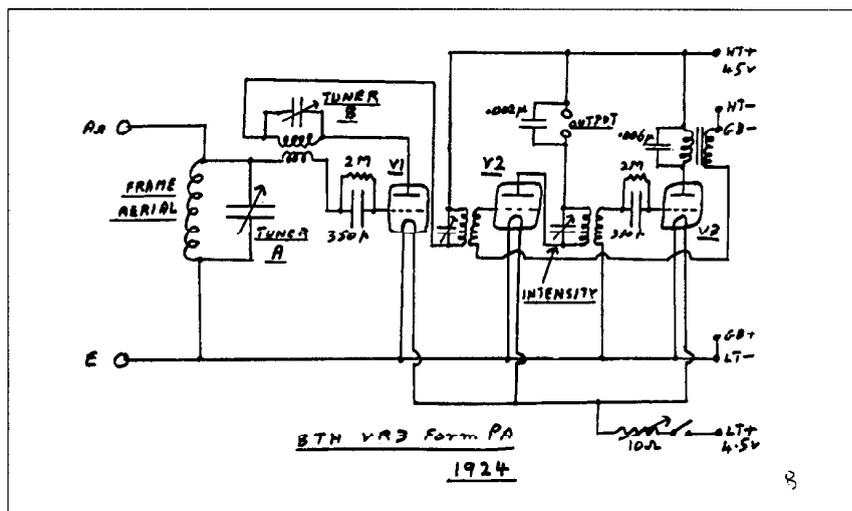
Here is number 8 of a series of short articles by Pat Leggatt reviewing the circuitry and other features of wireless sets of the 1920's. Each article will outline a particular aspect of sets of this period. Back number of Bulletins in which earlier parts appeared can be obtained from The Editor.

### The Superhet: Act 1

It is generally said that Armstrong in America invented the superhet principle in 1918. But Schottky in Germany had patented the idea six months before Armstrong; and Lucien Levy in France has preceded them both with a superhet patent dated August 4th 1917. Nevertheless to Armstrong must go the credit for developing practical superhet circuits for general reception purposes.

The difficulties in producing triode HF amplifiers with reasonable gain and stability have already been touched on. Accordingly, thoughts turned in the mid-1920's to the superhet in which virtually all pre-detector amplification could be carried out at much lower frequencies where the effects of inter-electrode capacitances became insignificant.

Intermediate frequencies as low as 45kHz were employed, with intervalve coupling by means of broadly-tuned or aperiodic IF transformers feeding a leaky-grid detector. At this sort of frequency useful stage gains could be had from triodes with little unwanted feedback through anode-grid capacitance. The flat-tuned IF stages gave little selectivity; and with very low intermediate frequency, image rejection was almost non-existent. But it is important to realise that the superhet configuration was used at that time purely to achieve large pre-detector gain so that the detector would receive a great enough signal for efficient operation: and with relatively few powerful stations on the air, selectivity and image rejection were not of crucial importance.



The frequency changer, or 'first detector', was indeed a conventional anode bend detector, usually with a separate local oscillator triode injecting into the first detector grid circuit. Thus the radio frequency and oscillator signals were additively mixed and applied to the anode bend non-linearity for production of the required difference frequency: the sum frequency was of course ignored. To reduce local oscillator radiation a tuned frame aerial was employed, this constituting the only tuned circuit in the receiver with any appreciable selectivity. A Hartley form of circuit was often used for the local oscillator and for the first detector input circuit; and reaction was applied round the first detector to give improved selectivity and sensitivity.

A less expensive superhet dispensed with a separate oscillator valve, using instead a self-oscillating mixer or 'autodyne', in which case of course the aerial was connected directly across the oscillating circuit (Fig 8). With 45kHz IF, the oscillator frequency was itself within the broadcast band and owners of such sets cannot have been very popular with the neighbours!

With independent aerial and oscillator tuning controls these superhets were rather confusing to operate, especially since the low IF meant that many stations could be received at two places on the oscillator dial, not to mention spurious responses due to oscillator harmonics and second channel (image) interference. Nevertheless, they were sensitive enough to give satisfactory performance on a frame aerial, much more convenient than a 100ft wire slung from a pole in the garden.

This generation of superhets endured for three or four years<sup>(9)</sup> up to 1928 when their justification was largely undermined by the appearance of a new type of valve.

#### References

9. Alfred T. Witts: "The Superheterodyne Receiver": Pitman 1935.

#### Looking Back . . .

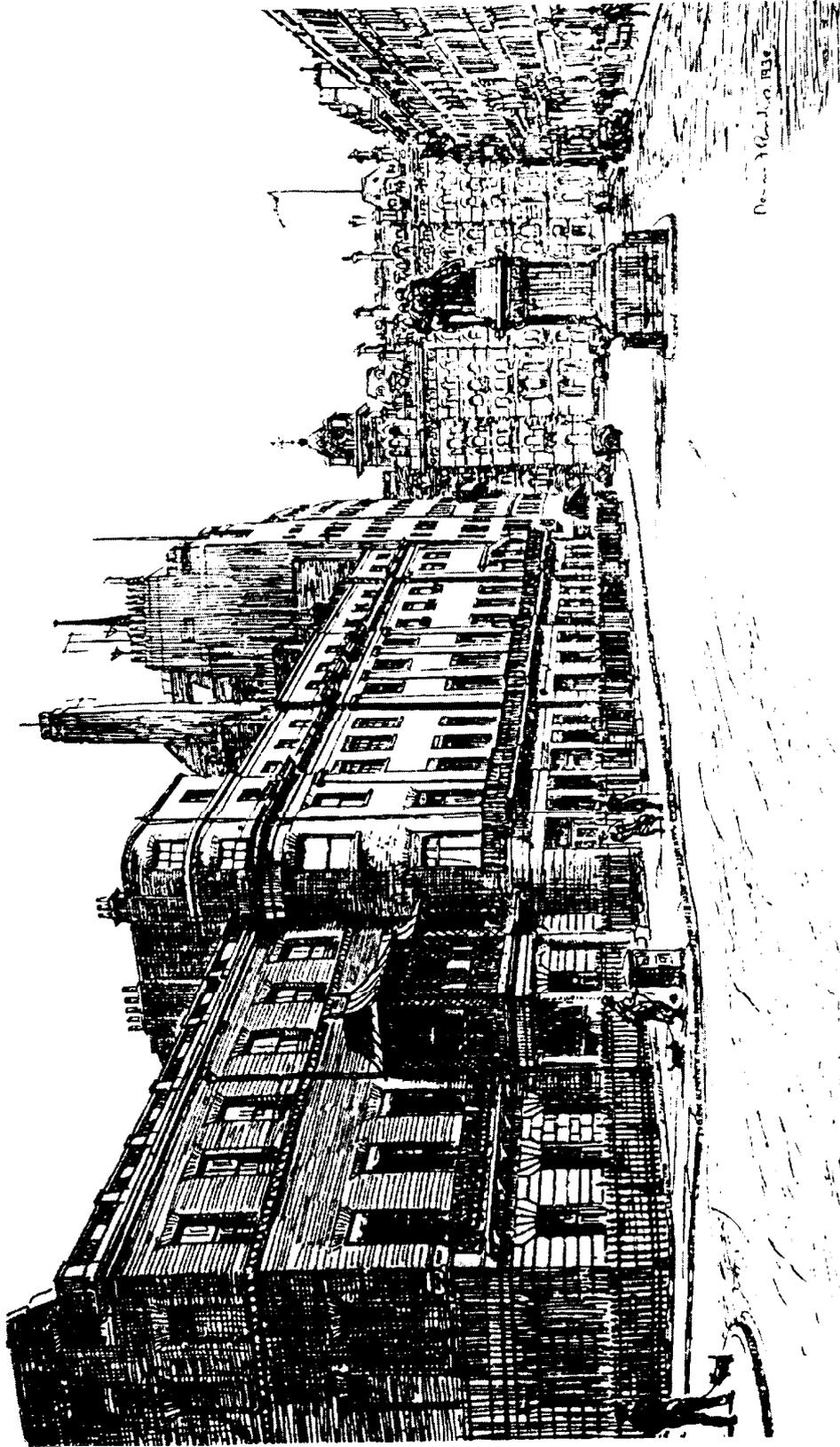
From Wireless World, 9th February, 1934, "Unbiased" by Free Grid.

#### "The Original Carton"

The other day, when wandering through one of our great departmental stores in an endeavour to study human nature in roar as well as in the raw, I witnessed a mass of my fellow creatures struggling for possession of a few yards of coloured calico which an enterprising, but unscrupulous, departmental manager had advertised as being specially manufactured for speaker frets and being sold off at enormous sacrifice.

The tasty morsel was, I saw, merely groundbait to lead the uninitiated into wasting their money on a lot of year's-old junk in the shape of once-costly sets that had been reduced to a fiver.

This sort of thing nearly always attracts buyers; perhaps a student of psychology can tell me why. The fact that a set sold at seventy guineas years ago and is "still in the original carton" (that bit is sure to fetch them) is no guarantee that it is worth seventy pence now. It is not necessarily even worth while buying for its components, which are probably quite unsuited for modern conditions. Would anybody give good money for a 1904 car even if it was "in the makers original carton"?



This rare picture shows Portland Place, London, as it was in 1934, looking towards the Langham Hotel in the background. In the left, is one end of Broadcasting House which was then new. It was there in the basement that BBC Television began, but the studio was soon moved to number 16 Portland Place, in the middle of the terrace of houses shown on the left (which have now gone), remaining there until September 1935. (Picture by courtesy of Mr. T. H. Bridgewater)