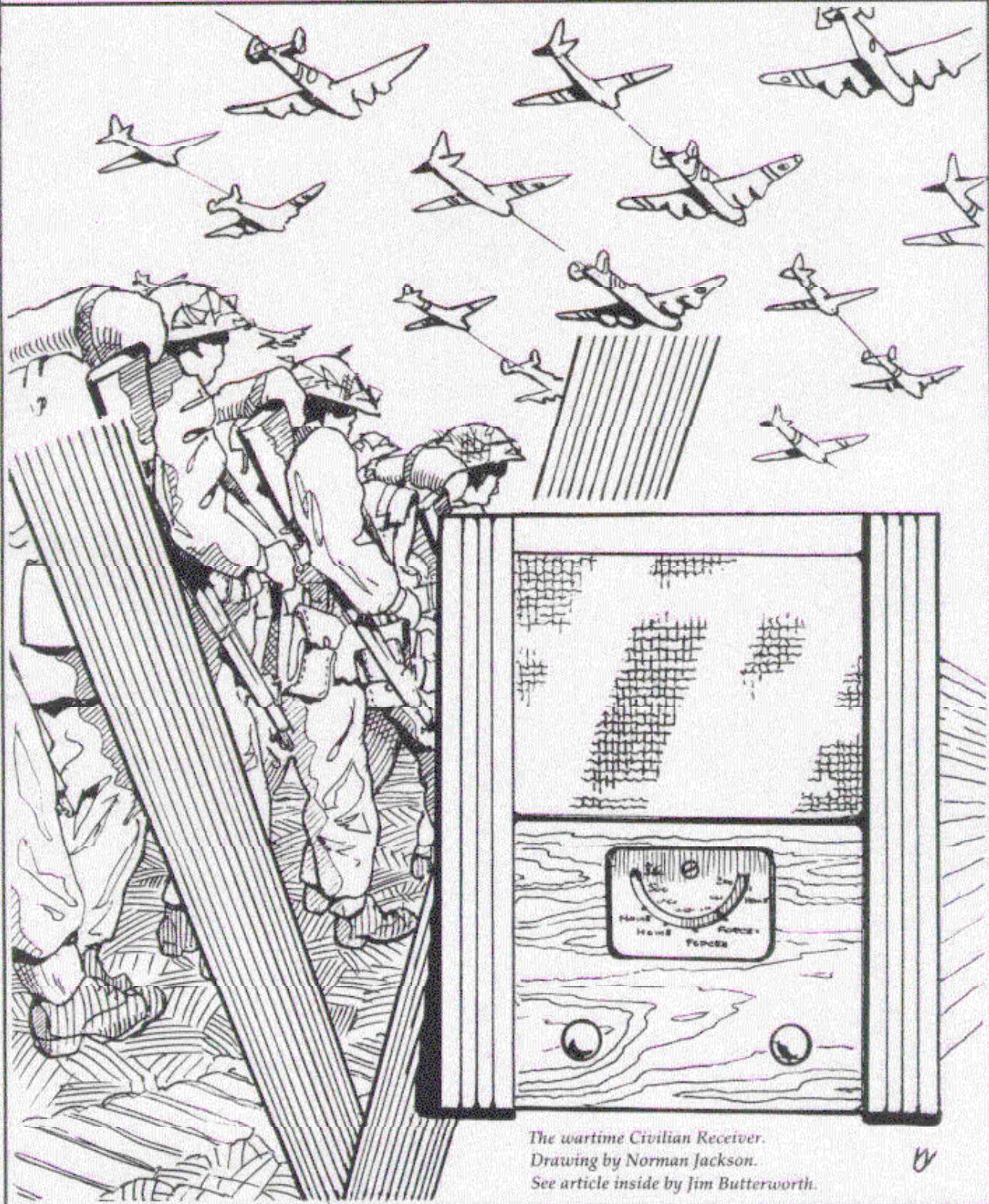


BULLETIN OF THE BRITISH

# VINTAGE WIRELESS

SOCIETY



The wartime Civilian Receiver.  
Drawing by Norman Jackson.  
See article inside by Jim Butterworth.

6

BULLETIN OF THE BRITISH  
VINTAGE WIRELESS SOCIETY  
VOLUME 15. No. 1

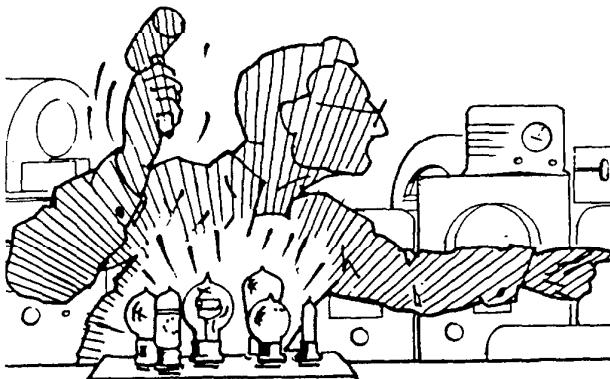
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Editorial and advertisement enquiries should be made to the Editor, Robert Hawes, 63 Manor Road, Tottenham, London N17 0JH. Tel: (081) 808 2838. Editorial Assistant: Pat Leggatt.

Layout and design: Robert Hawes  
Cover drawing: Norman Jackson

BRITISH VINTAGE WIRELESS SOCIETY

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**BVWS AUCTION:**

Proceeds to the Society from the auctions have exceeded £500 since sales started. From this financial booster, all members benefit; that's nearly a £1 a head towards Bulletin quality or a facsimile catalogue, for example.

You surely have on a shelf or in a cupboard or drawer some unwanted 'bygone'. Please donate it to the Society. Every little helps and a lot helps a lot more; 'many a little makes a little' for your Society. Suitable non wireless items such as a Van Gogh or some Elgin marbles will be just as acceptable to the auctioneers as a 'Melody Maker'.

**POSTERS:** depicting wireless 1922-1956 £4 per set of 3 to members. Cheques 'BVWS' to R. Hawes 63 Manor Road London N17 0JH allowing 14 days for delivery

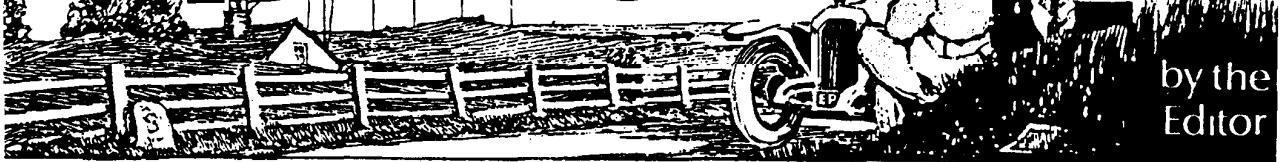


# VINTAGE WIRELESS MUSEUM



The **Vintage Wireless Museum**, headquarters address for the British Vintage Wireless Society is at 23 Rosendale Road, West Dulwich, London SE21 8DS. Telephone: (01) 670 3667. The Curator is Gerald Wells, whom visitors should telephone before visiting the museum.

# In passing



by the  
Editor

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

## Meeting Dates

Members may like to make a note of the confirmed dates of some of this year's meetings of the Society. The Harpenden Swapmeet will be on Sunday June 17th, preceded on the Saturday by Gerald Wells's Garden party at the Vintage Wireless Museum, West Dulwich, London. Application forms for tickets to attend these two events are being sent out with the current Bulletin. The South Eastern area Swapmeet is on 20th May, to be held near Tunbridge Wells, and is being organised by John Howes, from whom tickets will be available. A limited number of stalls is available and applications should be made to John at 11, Crendon Park, Southborough, Tunbridge Wells, Kent, TN4 0BE (Tel: 0892 540022 after 7.30pm). The South Eastern Swapmeet after that will be on 12th August.

Society meetings are for members only and tickets must be obtained in advance. Stall accommodation is always limited due to heavy demand and members are asked not to request stallspace — even to share — unless they really have some items to sell. The time between admission of stallholders at meetings and admission of later-ticket holders has now been reduced to the minimum of about twenty minutes and stallholders are required not to trade before the official opening time, so there is no advantage in booking stallspace to "get in early". Members are requested to observe the few rules which are suggested and to avoid arriving too early and causing congestion or taking part in illegal trading outside the hall. Entrance and stall prices have again been pegged despite inflation, so that maximum value for money is given to members in return for their subscriptions. Donations of items for the auctions at meetings which help our funds, are very welcome, of course.

## Colour Supplement

Thanks are due for the Colour Supplement in this issue of the Bulletin, to the Royal Television Society, its Journal Editor Tom

Singleton and writer Ray Herbert, who kindly gave permission for us to reproduce this important contribution to the history of Baird's television work. The feature appears in the Bulletin exactly as prepared for the RTS Journal and as it was published as a booklet for the Glasgow Baird exhibition. Baird's colour television achievements are virtually unknown, mainly because much of the work was carried out during the war when newspapers had more important things to report; and most books dealing with early television have ignored the 1939-45 period. Included in the Supplement are some rare colour photographs of Baird and unique stereoscopic photographs taken direct from the receiver screen, which show how good they were.

## Contents: Bulletin of the British Vintage Wireless Society Volume 15 no. 1.

### Information: inside front cover

**In Passing:** news, comment by the Editor ..... 1-2

**Wartime Civilian set:** by Jim Butterworth ..... 3-4

**Marconi's 1901 experiment:** by Pat Leggatt ..... 5-6

**Colour Supplement:** Baird ..... between pages 6-7

**Coil repairs:** by Ray Whitcombe ..... 7

**Round the Collections:** Ray Leworthy ..... 8-9

**Reviews:** D. Thackeray, R. Hawes ..... 10-11

**Feedback:** Readers' letters ..... 11-13



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## Baird Exhibition

This year Glasgow is the Cultural Capital of Europe and Strathclyde University have organised a travelling Exhibition called "Jam, Socks and Television" as one of a number of events. Dr. Malcolm Baird performed the opening ceremony on 23rd February and the official guests included Ben Clapp and Ray Herbert. The Exhibition sets out to display in an interesting way the early days of television. On show were the classics — Percy Packman's prototype Televisor, the Baird-Bush mirror drum receiver and the 1928 Model B receiver known to the Baird staff as the Noah's Ark. Other items included Norman Loxdale's replica of the scanner used at the Selfridges demonstration in 1925, a good simulation of 30 line pictures and the T5, mirror lid, dual standard television receiver. Rare photographs and documents provide a fascinating reminder of those pioneering days. A series of eight cartoons specially drawn for the occasion by Barbara Scott are available as coloured postcards and depict some of the events humorously described by Baird in his autobiography. The catalogue is particularly well presented with many illustrations and a section explaining TV jargon with descriptions of some interesting experiments that can be carried out with a television set. The exhibition ran at the Collins Gallery until Saturday 24th March then went on tour. It will be at the Springburn Museum, Glasgow from 7th-30th April; Dick Institute, Kilmarnock from 2-30 June; Swansea Maritime & Industrial Museum in July, August and September; Hamilton Museum from 6 October-4 November; Milton Keynes Exhibition Gallery from 15 December-26 January 1990/91; Smith Museum, Stirling until 20th April; and at Hartlepool Museum from July-August 1991.

## Opinions

Readers are reminded that opinions appearing in the Bulletin are those of the individual contributors and not necessarily those of the BVWS.

• continued on next page

## In Passing: news, comment, continued

### TV Talk

Members are invited to a talk entitled "Baird television history at Crystal Palace" on 17th May at Anerley Town Hall, South London, near the site of the television pioneer's high-definition laboratory. Organised by the Crystal Palace Foundation, it will begin at 8pm and the distinguished speakers will be Ben Clapp, Tony Bridgewater and Ray Herbert who will illustrate their contributions with slides. Tickets will be available at the door for £2.

### Irish Exhibition

The Irish Vintage Radio and Sound Society, which is affiliated to the BVWS, presented their first exhibition, entitled "Wireless in Old Dublin" during March at Dublin Civic Museum and it attracted much interest. It was opened by Minister of Labour Bertie Ahern, who commended the year-old Irish society on their contribution to history by preserving and maintaining wireless equipment and other sound equipment. He said broadcasting had been an important part of the cultural tradition of Ireland since 1926, when the first Dublin station 2RN began broadcasting. At that time there were 4,000 licensed wireless sets in the country and probably twice that number which were unlicensed, most of them simple crystal sets costing up to £3 each at a time when the average wage was about £3 a week. He added that it was hard now to imagine the incalculable effects of the introduction of wireless, which overcame personal and local isolation and made variations in customs and language well known for the first time. Irish radio pioneered radio sport journalism when they broadcast a hurling match — the first field game in Europe to have been treated to a broadcast commentary.

Congratulations were given to Vincent Farrell, Gerry McKeever and the members of the Irish vintage society on organising a fascinating exhibition which included crystal and valve sets from the early 'twenties and late 'sixties, as well as phonographs and gramophones, plus some military and American equipment. The exhibition was widely reported in the Press and on radio and television. BVWS members who are interested in the work of our Irish friends should contact Vincent or Gerry at 39A Lower Drumcondra Road, Dublin 9. They would very much appreciate donations of equipment, data and ephemera concerning Irish broadcasting history which would help to make their collection more representative and comprehensive prior to establishing a permanent museum.

### Great Wireless

#### Bores of today

##### number 3: Mr. Fixit

*"If it ain't broke, don't fix it" — Paul McCartney in a radio interview 21.1.90.*

Fred Fixit hasn't heard of this maxim. He's a chap who has little knowledge of repair and restoration but who will persist in his nasty habit of trying to mend old wireless sets. If he acquires a wireless that won't work he will change round all the valves and twist every screw in sight with a large screwdriver, poke in all the slugs he can see, then take the resultant wreck to an experienced repairer to whom he offers the advice "It's probably only a valve". If his new set works but blows fuses, he installs increasingly large amperages until the time comes to call the fire brigade. If the set works but not well, he attempts to "improve" it by stepping up the mains voltage, packing the loudspeaker with gluey cotton-wool or attacking it with blunt instruments. If none of this works, he will either rip out the original chassis and install a transistor set that does work, or he will pass on the hideous mess to an unsuspecting "punter".

Sometimes he will restore a set to life, by accident: "I bashed this Bush on the bottom and it's been going ever since. But Philips sets are trickier: sometimes you have to creep up behind them unawares and give them a sharp poke at the back with a knitting needle. Bakelite ones are the best because they polish up well and only need a squirt of WD40. Forget the wooden ones: they've always got too many loose wires at the back and always blow up, whichever wires you choose to stick a mains plug on".

### Philips centenary

As part of their 1891-1991 Centenary celebrations, Philips propose to mount an exhibition called "100 years of advertising", initially in Eindhoven, Holland and later in other European venues. They are seeking, on loan, advertising material like posters and sales literature on radio, television, home appliances and lighting. Items offered will be collected, returned and fully insured. Initial details should be sent to their UK historian Gordon Bussey at 64, Pampisford Road, Purley, Surrey CR2 2NE.

### Amberley Museum

Amberley industrial history museum, established some years ago at what used to be called "The Chalk Pits" near Arundel in Sussex, and which has a good permanent vintage wireless exhibition, has re-opened after a winter break. It will remain open from Wednesday to Sunday, plus Bank Holiday Mondays, from 10am until 6pm, closing down again on 28th October. As well as the communications exhibits, it has family attractions including a nature trail, narrow gauge railway, vintage bus rides, a riverboat trip and working exhibits in a variety of old workshops. For details send an A5 SAE to the museum office at Houghton Bridge (the almost on-site railway station), Amberley, Arundel, West Sussex, BN18 9LT.

### Chairman's Notes

**Cricklade Meeting:** Our thanks to Geoff Williams and his willing helpers for organising the recent meeting at Cricklade, which went successfully, attracted a good attendance and made a welcome contribution to Society funds.

**BVWS Seminars:** About 30 of us attended the February Seminar at Gerry Wells' Museum. We are most grateful to the speakers who gave us such lively and wide-ranging talks, making an enjoyable day for all. Thanks also to Gerry for accommodating us and to his helpers for excellent catering.

**Bulletin Supplement:** This seems to have been well appreciated in view of the numerous favourable comments received; and we are already starting to think about another issue.

There are a few corrections to make to the first Supplement. Tony Bridgewater, OBE, a television pioneer first with Baird in the 1930's and finally as Chief Engineer of BBC Television, notes that on Page 9 it is implied that camera lens turrets preceded the first zoom lenses: in fact lens turrets came later and were superseded only when zoom lenses with ranges much greater than 2:1 became available. Furthermore, referring to Page 10, Mr Bridgewater points out that the very simple 1947 film recording was only experimental and that the Mecha system was used in practical service soon after.

Lastly, on Page 16 centre column, the reference to the FE1 valve should of course have said that the screening grid was inserted between the control grid and anode, not between control grid and filament.

## Technical Research

# Some notes on the Wartime Civilian Set

by Jim Butterworth

Initially written as a collation of information for my files, this short article will raise more questions than it answers. However, there is enough knowledge 'out there' to complete a dossier of information such that no-one in the future will be unaware of the full history of these simple, but so reliable, sets. When did you last see a genuine unmodified 2-knob set with its single coat of varnish and a little gold label on top?

**Why ever was this stark set produced? Simply: out of necessity**

By 1942 it was estimated that there were millions of sets throughout the country which were silent because spare valves and other components were unobtainable. The situation was urgent since the wireless set was a highly important factor in keeping the public informed and entertained. The Government therefore decided to ask the wireless industry to produce a large quantity of cheap and basic civilian receivers. Examples of the set were made by over 40 British manufacturers with only very slight circuit divergences. Stamped on the back of each set was the manufacturer's identifying code number.

The first sets rolled off the production lines in July 1944. They were made in two versions: an a.c. mains set (175,000 produced) and a battery model (75,000 produced). They were distributed through normal trade channels but as the sets were produced by the co-operative action of the industry they did not bear the names of the actual manufacturer, only a label saying: **Wartime Civilian Receiver, produced by the radio industry under government direction.**

Both sets covered the 200 to 560 metre waveband and the dial showed the positions of the Home and Forces



programmes only. Their stark appearance gave rise to them being called 'Utility' sets. Wireless World of August 1944 did not agree with this description, saying that as the receivers were liable for purchase tax, the popular practice of referring to them as 'Utility' was incorrect; they preferred the term 'war-time Civilian Receiver'.

So many of these sets were in use throughout the country at the end of the war that there was a popular demand for them to be updated when long-wave broadcasting resumed with the re-opening on July 29th 1945 of the B.B.C.'s new Light Programme on 1,500 metres. Despite some medium-wave coverage, Civilian Receiver owners were generally deprived of the new programme.

One solution was to use a 'Long-Wave adaptor' which plugged in to the first valveholder of the set; another to fit a switch in the spare central hole in the chassis with additional long wave coils inside the set. This latter course required a friendly service engineer and it has to be said that some conversions were better than others. In order to shift stock-piled sets, several manufacturers modified sets in the factory and these in general were more satisfactory – some also sported dials with both medium- and long-wave calibrations in an attempt to ward off the 'converted' look.

Technical details of these sets and the manufacturers' codes are adequately covered in Trader Sheet nos. 688 and 690. A wartime director of McMurdo can remember seeing Civilian sets at the factory, and indeed sent me a speaker assembly which he had – but their name is not on the list. Were there any American imports? McMurdo were certainly importers of American

sets and had exhibited the McMurdo Silver at the pre-war Radiolympia exhibitions, however I feel this could be a red herring. It may have been that McMurdo were owned by one of the other companies on the list – can I be enlightened?

### Provisional Listing:

#### Finish:

Generally one coat of varnish, but some seen with very thin paint on side mouldings. Quality of wood and fit of parts very variable between sets.

#### Wavelength Scales:

All basic versions identical, fawn with black markings on a metal baseplate. Some mounted with integral brackets to project scale out from chassis in front of tuning capacitor drive; some flat, with stand-off spacers from the chassis. Medium wave marking only, with wavelength (metres) on the inside of the semi-circle and on the outside of semi-circle, tuning positions for three Home and two Forces programmes, i.e. a set made for a specific purpose in dark days – perhaps the 'smiling' dial was intended to lighten the darkness? Note the necessary absence of the Droitwich Long-Wave transmission. The signal coming from only the one transmitter site, it would have been used as a direction-finding aid. The multiplicity of medium-wave stations sharing wavelengths could be (and were) turned on or off at will, confusing any direction-finding equipment, but generally allowing the listener to continue hearing the programme, albeit from a more distant transmitter if the local one shut down.

#### Control Knobs:

Every set appears to be different: is it reasonable to assume that manufacturers used their own style knobs which were to hand – or were standard knobs prescribed? Most three-knob sets seem to have matching knobs, suggesting factory fitting as original equipment, or tidy-minded owners. The sets with odd knobs might be assumed to have been an after-sale conversion.

#### Survival Rate:

These sets were small and reliable, functional but not very attractive in the post-war home. Many were consigned to spare room/workshop/garage in good working order at an early stage in their lives; because of their crude appearance, paint splashes and scratches did not disfigure in the same way as they would have a polished set and the relatively limited use meant that they survived better than many of their contemporaries. They were the only set capable of amateur 'improvements' by varnishing or painting – the personal input being another reason for not disposing of unwanted sets.

• continued on next page

## Technical Research continued

Listed below are the five sets currently in my ownership:

### Basic Versions:

(1) Mairis two-knob version; chassis manufacturer U40 (AEC Radio Limited)

This is the basic model, having a vertical aspect (i.e. speaker above controls and dial). Two knobs; volume, tuning. Mains on/off toggle switch inconveniently at back of chassis (necessitated by non-availability of combined volume/on/off controls during the war). Entirely conventional circuitry apart from Westector detector (was this a Post Office item and therefore easily available in the absence of the conventional EBC33 and EBL31?).

(2) Mains three-knob; chassis manufacturer U13 (Central Equipment Limited)

A Long-Wave conversion of the basic model and by far the most numerous of the surviving sets. Conversions were carried out to customers' sets and to shift unsaleable stock at the end of the war when Droitwich Long-Wave 1500 metres reopened. Many conversions were very poor, the worst having only a parallel capacitor to enable the existing M.W. Aerial tuning coil to tune down to long wave; some slightly better employing a parallel capacitor for oscillator coil for the same reason. These crude conversions provided inferior sensitivity/selectivity (but nonetheless, the ability to provide a form of long wave reception!). Some highly competent conversions have been found: see (4) and (5).

(3) Battery version; chassis manufacturer U3 (A.C. Cossor Limited)

Horizontal aspect (i.e. speaker to the right of controls and dial). Three knobs - volume, on/off, tuning. Surprisingly had entirely different circuitry and construction, apart from having a similar 'Utility' finish. Four valves gave selectivity/sensitivity much better than the mains version, but caused a heavy drain on the filament accumulator (500 mA at two volts). Now relatively rare since most areas had mains electricity by 1944 and were therefore of limited practical use once mains sets were purchased. There are no known long-wave conversions of this model.

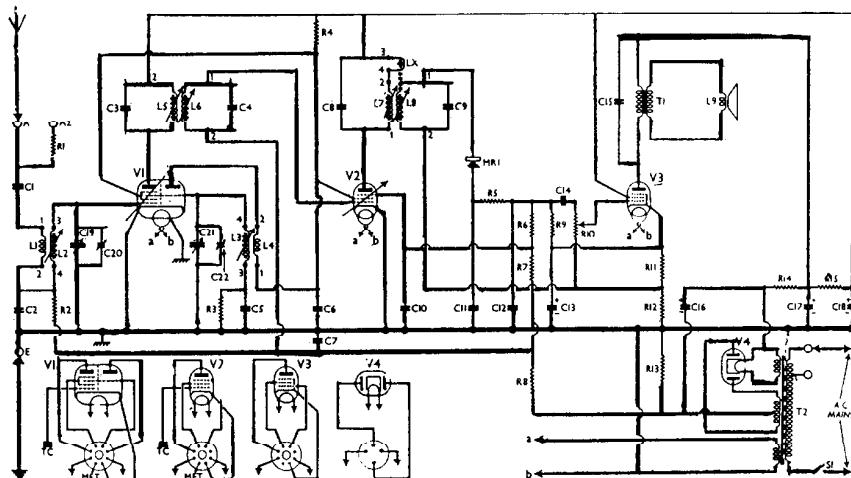
### Variants found:

There were very few variations other than the minor electrical ones introduced by the multitude of manufacturers; the extension speaker and F.M. versions seen recently are totally unoriginal and to be ignored.

Some professional variations, however, might just be worth mentioning, in that they could have been part of a facilitating exercise by a manufacturer, wholesaler or dealer to shift outdated sets in his warehouse. I have not personally come across a long-wave adaptor, though I did have a box of 'conversion units' which comprised a new oscillator coil (on a wood former) and toggle switch mounted on a small panel - Droitwich could just be heard in the Westcountry with a 50 foot aerial!

(4) Chassis Manufacturer U6 (General Electric Company Limited):

Has L.W. conversion, with separate L.W. coil on Aerial tuning assembly and padder to tune oscillator coil down to l.f. Professionally marked scale has yellow lettering on black background (i.e. the inverse of normal scales), i/o less than ten wavelengths marked simply 'BBC'; medium wavelength markings on outside of semi-circle; long wavelengths on (shorter) inside semi-circle. Colour of



tuning disc appears to have been originally fawn, overpainted gold but is now repainted white, probably at same time as drive cord replaced. Centre knob is an 'odd one out' suggesting this to have been an after-sale conversion. Wooden side fillets have grooves painted black. Additional coat of varnish has been added to exterior and non-original (though not immediately obvious) mains transformer has been fitted.

(5) Chassis Manufacturer U9 (Pye Limited):  
Has L.W. conversion, with separate L.W. Aerial and Oscillator coils - a fully conventional arrangement which appears to have been professionally, probably factory wired. Three knobs are identical, but could have been changed at any time. Scale markings of standard form but with added (in red) long-wave station names, though not wavelengths. Long-wave stations marked are: O.S. (Overseas?), LIGHT, LUX/G, A.M. (Air Ministry?). Tuning disc turned by all-mechanical drive using large intermediate split disc drive instead of more common cord drive; scale plate flat, mounted off chassis on threaded spacers. Cabinet completely sprayed in high quality cream paint with side fillets all-over gloss brown. Overall effect very good, though probably non-original. Scale viewed through perspex secured to inside front of cabinet (by drawing pins!) enhances 'up-market' look.

I am indebted to the two books 'The Cat's Whisker' and 'Radio! Radio!' by Jonathan Hill for much of the background information and have copied paragraphs from the books by kind permission.

This article started as a few words 'for my own information' - how can one write so much about such a simple set - and still only gloss over the surface of the subject! It would be fascinating to

know how the idea was conceived, how the performance was specified and whether there was a 'common parts bin' for any of the components - for example were all those so similar scales made by each of the contributing manufacturers, or by one or two? - and how about the supply of boxes (cabinets is too good a word!) and chassis' - there are too many similarities for these to have been the individual products of 40 factories.

I also have a wartime 'German People's set' of horizontal aspect and covered in swastikas, with a large M underneath. It was made by Sigma-Radio in Prag (Prague?), model Bohemia-U; date on double electrolytic (one above the other) September 1941. Octal valves UF21, UBL21, UY1N Short/medium/long wavebands; single gang tuning capacitor. Three knobs: tune, wavechange, reaction/on/off.

**Can anyone add to this; circuit, product information?**

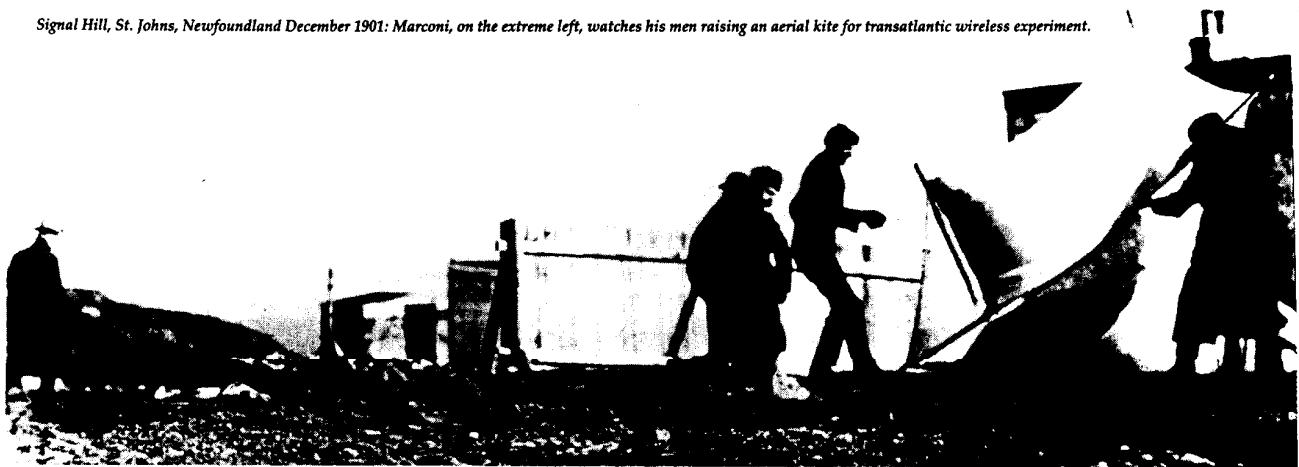
Readers wishing to have a photocopy of the Trader Sheet on the set should send an A5 SAE and 30p stamps to the Editor, 63 Manor Road, Tottenham, London N17 0JH.



## Historical

*Signal Hill, St. Johns, Newfoundland December 1901: Marconi, on the extreme left, watches his men raising an aerial kite for transatlantic wireless experiment.*

*Photographs: Marconi, through the courtesy of Roy Rotherill*



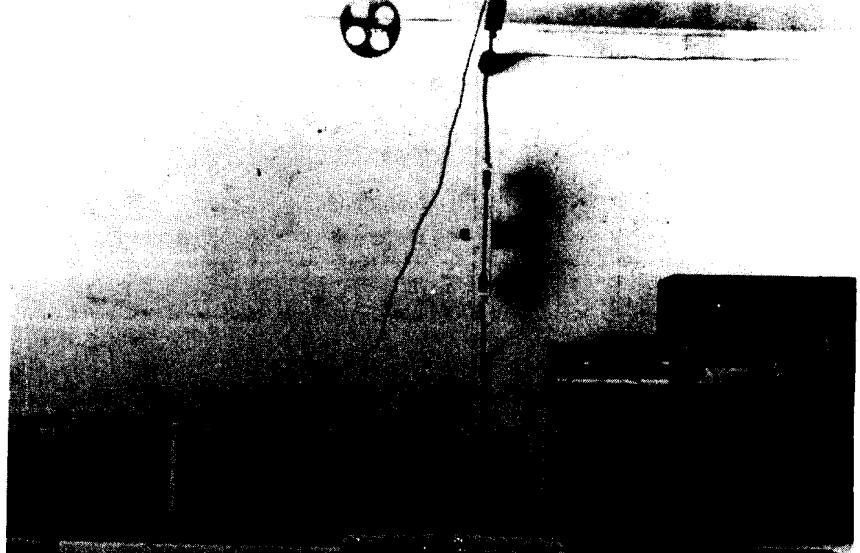
## Marconi's 1901 transatlantic transmission

by Pat Leggatt

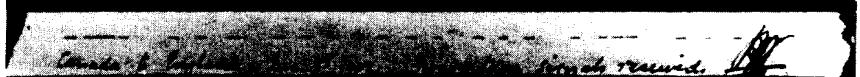
Some members may have seen the Times article of January 11th on Marconi's first transatlantic transmission and my response printed on January 15th, both reproduced here. Angus Taylor's original article appeared in the "Morsum Magnifica" magazine in 1987 and expertly summarises the technical background. Despite the slant of the Times piece, Mr Taylor states in fact that he does believe that Marconi heard the famous three dots in Newfoundland.

On the other hand there are those who find it hard to believe that signals could have been received across the Atlantic in daylight from a transmitter of a few kilowatts operating on a frequency thought to be in the region of 800 kHz. But these doubts are carefully considered in Mr Taylor's article and had also been ingeniously answered in a 1977 article by G. R. M. Garratt, late of the Science Museum, on the following lines.

Virtually all the energy in a spark signal appears in the first two cycles of the heavily-damped wave train. If the fundamental frequency of the oscillatory circuit is 800kHz and if the spark repetition rate is 20 per second, then simple arithmetic shows that the power of the transmitted spark pulse will be about 20,000 times the average power of the transmitter. Sir Ambrose Fleming has stated that the Poldhu transmitter power was about 10kW, so that the instantaneous power of each spark pulse could have been as much as 200 megawatts!



*The apparatus at Poldhu, Cornwall, used for receiving the first transatlantic messages (as opposed to the original signals) in December 1902.*



*Except as a note in Marconi's diary, there is no record of his 1901 reception but here is a photograph of the first recorded signals across the Atlantic on 5th December 1902.*

Turning to the transmitted frequency, a spark transmission is by no means a pure sinewave, and is very rich in harmonics. A considerable proportion of the radiated megawatts would have appeared as higher harmonics up to 12MHz or so; and a daylight propagation path across the Atlantic would certainly have been open at some frequencies in this range.

At the Newfoundland station, Marconi abandoned his syntonic (tuned) receiver because the plunging of his kite-flown aerial in high winds continually altered the aerial capacitance and hence the tuning. He used instead a completely aperiodic arrangement which of course would respond to all incoming signals, including any Poldhu harmonics reaching Newfoundland. His detector was a mercury/iron 'coherer' which

was not really a coherer in the accepted sense, but was in fact a rectifying semiconductor junction formed by an oxide layer on the mercury surface: for its time it was a very sensitive device, especially when used with earphones.

So to sum up, there seems to have been adequate radiated power; a range of transmitted frequencies of which some would find a transatlantic path during daylight; and a broadband receiver capable of scooping up whatever signals did get across. All in all there appears little justification for supposing that Marconi and Kemp were mistaken or lying.

### Acknowledgements

Thanks to Angus Taylor for allowing reference to his article; and to Tony Smith, Editor of "Morsum Magnifica", to whom enquiries can be addressed at 1 Tash Place, London N11 1PA.

• continued on next page

## Historical continued

# Was Marconi hearing things in 1901?

By Nick Nuttall  
Technology Correspondent

Did the father of radio, Guglielmo Marconi, go to his grave carrying an embarrassing secret about what he claimed were the first transatlantic radio transmissions?

According to Mr Angus Taylor, a licensed amateur radio expert, it is not certain that Marconi's 1901 transmission to Newfoundland from Poldhu in Cornwall actually took place.

Writing in *Morsum Magnificat*, a journal for enthusiasts of low-powered radio, Mr Taylor, aged 70, claims that Marconi was in serious financial difficulties at the time of his ambitious attempt, because both of his stations had been wrecked by storms.

Mr Taylor, a former marine officer in the merchant navy, says that research shows that only three people were

working on the project, and that one was deaf, another could not read a Morse code transmission, and the third was Marconi himself.

Mr Taylor is not claiming that Marconi was a fraud, but that he may have been a little hasty in claiming to have made the world's first transatlantic broadcast as early as 1901. Mr Taylor believes that the weak signals Marconi received may simply have been static, and says that Marconi was somewhat secretive about the operation.

The first reliable transatlantic radio service was not set up for a further six years.

Mr Dexter Smith of GEC Marconi in Chelmsford, Essex, said that the claim was news to him. "Even if these wild speculations were correct, there is no suggestion that Marconi was not the father of radio," he said.

The inventor first transmitted a radio

signal over 1½ miles in 1895. The following year, he gave the first public demonstration of the properties of radio, and took out the world's first telegraphy patent on the use of Hertz waves.

In the same year he presented a public lecture and demonstration on Salisbury Plain.

He followed these successes with a transmission from the Isle of Wight to Bournemouth in 1897, and in 1899, with the agreement of the French government, he transmitted the first official cross-channel message, from Wimereux, near Boulogne in France, to South Foreland in Kent.

Mr Taylor says he is not questioning Marconi's position as the father of radio, but merely suggesting that he may not have been entirely honest about the events surrounding 1901.

"It is one of those controversies that may never be fully resolved," he said.

The Times 11.1.90

The Times 15.1.90

Marconi's diary, in which he recorded the reception of the "S" signals on 12 December 1901.

### From Angus Taylor G8PG

The "Times" piece was obviously rather sensationalised. There is no mention of the possibility that reception could have been hf harmonic rather than the mf fundamental. I am sure that your publication will report on the matter in a much more balanced way, bringing out the vital technical points, and I have no objection to it being used in "Vintage Wireless".

The point raised by Mr Leggatt about the "Philadelphia" tests is interesting but needs clarification. Page 32 of the January 1990 "Radio Communication" is relevant in this respect. Here Pat Hawker says that it was during this

voyage that C. S. Franklin, who was working with Marconi on the tests, "became the first to notice the difference in the range of radio waves at night". This is a crucial point. The Newfoundland tests were not carried out over an all dark path. The information that we need to evaluate these tests is thus not just the geographical position of the ship, but the times at which reception took place. I believe that these would show that the 2,000 miles range was obtained over an all dark path, quite unlike that used for the Poldhu/Signal Hill tests. As anyone who has operated mf in the

did not care to risk publicly-known failure and so kept his transatlantic intentions under wraps. For just the same reason he is most unlikely to have risked a false claim to a success which could not be repeated, since this would have undermined public confidence in the company to the point of financial disaster.

In fact objective verification came three months later when Poldhu signals were recorded on paper tape on the SS Philadelphia 2,000 miles from Cornwall. The tapes were signed as authentic by the ship's captain.

A commercially reliable transatlantic radio service had to await development of more sensitive receiving apparatus, and the more powerful transmitter at Clifden on the west coast of Ireland which opened in October, 1907.

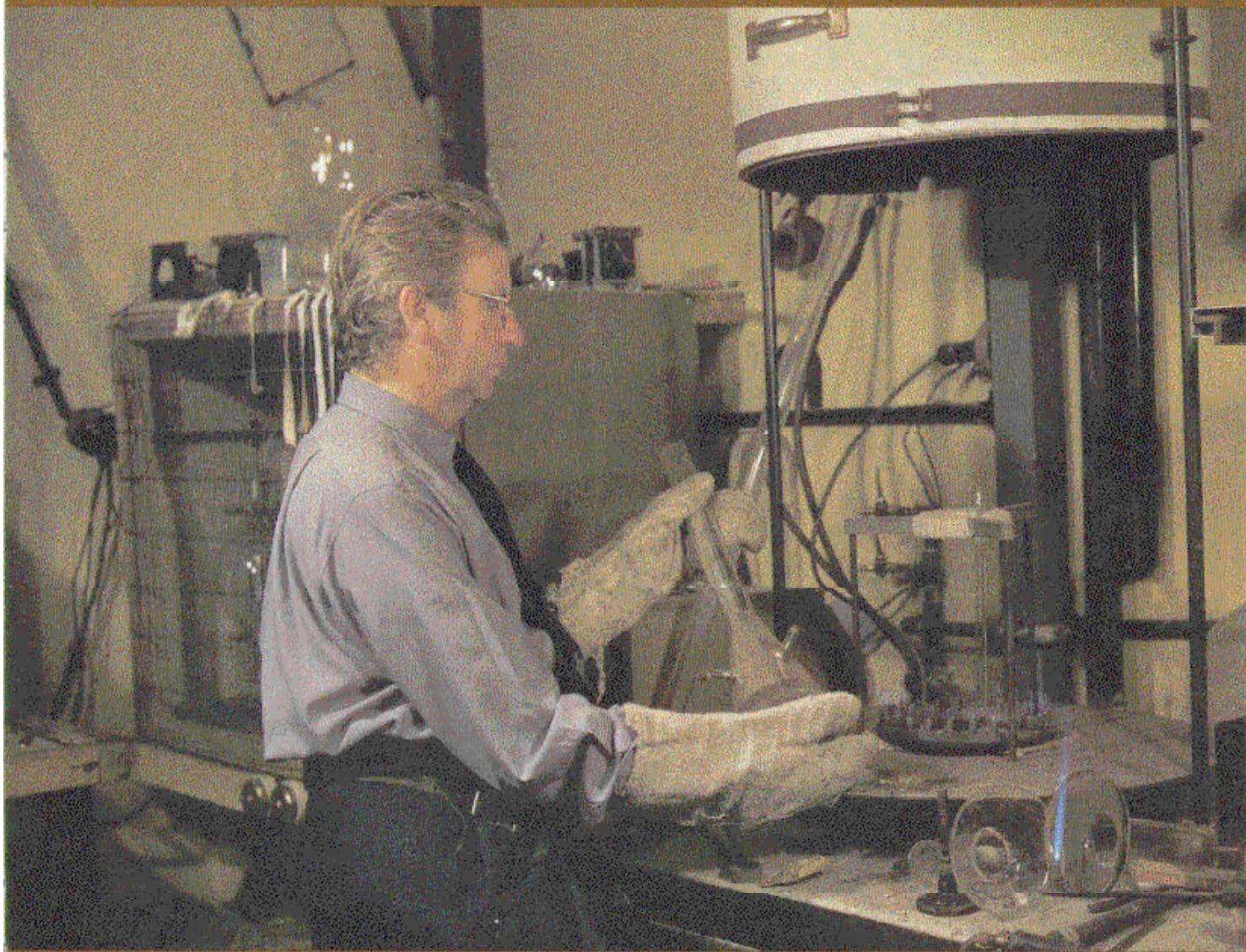
Yours faithfully,  
PATRICK LEGGATT (Chairman,  
British Vintage Wireless Society),  
Garrett's Farm, Pankridge Street,  
Crondale, Farnham, Surrey.  
January 11.

Atlantic will know, night is as different from day as chalk is from cheese.

May I make one further point. Even if Marconi did "fake the log" on Signal Hill, it would still have been the most courageous and far seeing decision of his whole life. To have announced failure would have put wireless progress back half a century. To announce success, then spend several years achieving such success, meant that the art of wireless communication would have a sure and ever-expanding future. Whether he did or did not hear Poldhu, he was still a very great man, and we owe him an immense debt.

Ray Herbert

# J L Baird's colour television 1937-46



It is nearly 50 years since John Logie Baird demonstrated high definition (600-line) colour television on a closed circuit in his private laboratory at Sydenham in December, 1940. During the ensuing war years he went on to produce stereoscopic television pictures in colour using an all electronic arrangement. No detailed accounts of this important work have been seen since the technical press reports provided at the time.

It was a remarkable series of achievements, especially so when it is remembered that from late in 1939 he financed the entire operation out of his own pocket and had the help of only one assistant from 1941 until the end of the war.

# The first steps

The first colour television images to be seen anywhere were demonstrated by Baird in July, 1928. He used a Nipkow disc with triple spirals of holes having red, blue and green filters to scan the object. The receiver employed an identical disc in conjunction with modulated light sources and the appropriate colour characteristics were provided by neon and helium-mercury gas discharge lamps. A detailed account is given in the June and July 1934 issues of *Television* by J C Wilson who carried out the development work.

From 1933 Baird had his own private laboratory in a converted stable adjoining his home in Crescent Wood Road, Sydenham, and he operated entirely independently from Baird Television Limited, then under the technical direction of A G D West. The assistance of specialists was always available to him for glass blowing, photocell work and the maintenance of the television transmitter.

#### **The Dominion Theatre demonstration**

Following the successful demonstration of interlaced, 120-line monochrome television pictures on an 8ft x 6½ft screen at the Dominion Theatre, Tottenham Court Road, in December 1936, Baird ambitiously set out to establish yet another first, a public demonstration of colour television on an even larger screen. After a press preview in December 1937, he achieved his goal at the same location on 4 February 1938, when colour pictures were displayed on a 12ft x 9ft screen and introduced as a surprise item to an audience of 3,000 people at the evening performance.

The vision signals were transmitted to the theatre on 37MHz from the Crystal Palace South Tower, which had survived the disastrous fire of 1936. Baird had to use a small studio at the bottom of the spiral staircase because it proved impossible to put these higher definition pictures down the telephone lines from his main studio in Crescent Wood Road.

The colour camera mounted on a four wheeled dolly could be trundled through a convenient gate near the studio for televising the red trolley buses in Anerley Hill.

Outdoor scenes could be reproduced as these demonstrations depended upon the floodlight system as distinct from the flying spot arrangement used for the public television service between 1929-35.

A 20 facet mirror drum revolving at 6,000rpm reflected the object to be transmitted through a lens system on to a slotted disc fitted with colour filters running at 500rpm, which presented the scanned image to a multiplier photocell. This provided a 120-line, interlaced, two-colour picture when projected on to the theatre screen using a 150amp arc lamp. A Kerr cell modulated the light beam and the scanning methods were identical to those in the camera.

Mirror drums for the projector and camera were manufactured by B J Lines Limited, who also supplied most of the other hardware to designs provided by Baird's staff. There were only five of them, P V Reveley the project leader, E G O Anderson, R Vince, A E Sayers and C F Oxbrow.

Lest it be thought that Baird was pursuing outmoded mechanical techniques it must be mentioned that the vast resources of NBC and the Columbia Broadcasting System in the USA could do no better. Even in 1940-41 they were still using mechanical components in the form of rotating colour filters.

Never before had colour television been demonstrated in a theatre, or indeed transmitted by radio link – a double first for Baird.

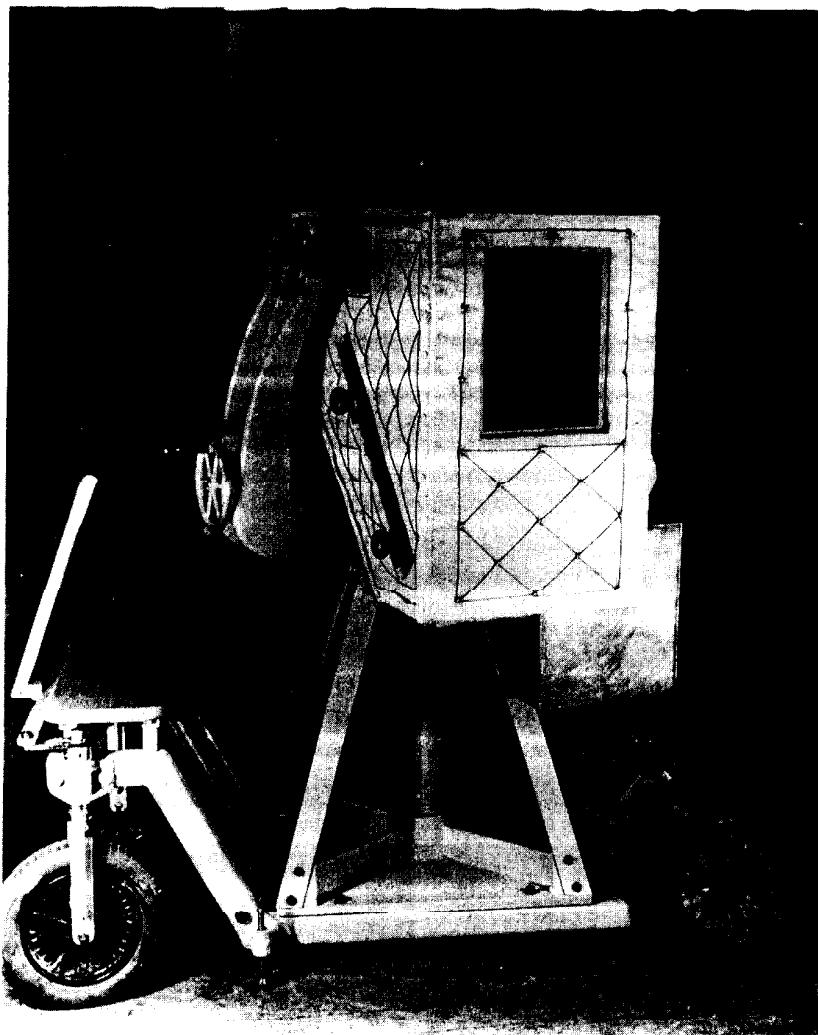
#### **High definition in colour**

Shortly after the outbreak of war Baird Television Limited went into voluntary liquidation and re-emerged as Cinema Television. John Baird, who held the position of President from 1938, had his contract terminated but he resolved to keep going with the colour work by paying the technical staff out of his savings. With the armed forces having priority on demands for electronic components and other resources, the circumstances were altogether unfavourable for embarking upon a colour television development programme in competition with the USA heavyweights.



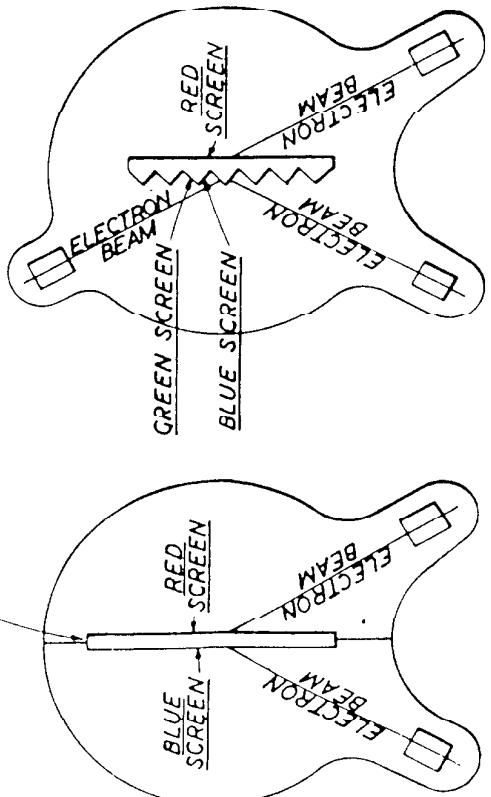
Above: This equipment produced stereoscopic television pictures in colour. The field lens is in the box in front of J L Baird, December 1941.

Left: The 1937 mirror drum colour camera. Quilted material was used to reduce the mechanical noise





THIN MICA SHEET



## The Telechrome tube

The race was on to devise a fully electronic colour system, but after the USA entered the war television development came to a virtual standstill. Baird, undeterred by worsening health, the problems of component shortages and with only one assistant remaining, carried on with his experiments. Paradoxically, although for so long associated with mechanical television he became the first person in the world to design, build and demonstrate a multi-gun colour television tube.

No stranger to the art of improvisation, he overcame the difficulty of obtaining specialised glass-ware by adapting a mercury arc rectifier bulb to his needs. The conversion work was carried out on a part-time basis by Arthur Johnson, a skilled glass technologist who had many years' experience in the production of television tubes while working for Baird Television Limited in the Crystal Palace Runda.

The Telechrome tube used for demonstrations to the press on 15 August evidently gave impressive results and a

New Chronicle reporter described this latest achievement in the issue of 17 August 1944, under the headline Baird Gives Television Colour and Depth - As I stood by the camera I saw my own photograph flash on the television screen across the room. The image was in colour as natural as any colour film I have ever seen. The light wood grain on my pipe stood out clearly, a head of perspiration on my forehead was highlighted and the book in my hand was pictured so plainly that the coloured title could easily be read.

### Postwar activities

Throughout his life Baird had the loyal support of an old school friend, Jack Buchanan, the well known actor and film star. He put up the funds to launch a new company, John Logie Baird Limited, with offices and laboratories at 4 Upper Grosvenor Street, London, and the colour experiments continued from this new location. However, Baird had now moved to Bexhill and with increasing health problems he left technical matters in the hands of Edward Anderson.

J. L. Baird died in June 1946, leaving the colour work unfinished. Who knows what further achievements would have resulted had he enjoyed better health and the backing of a large organisation. Regrettably this most valuable and unique contribution to the progress of colour television has received little publicity or recognition.

### Acknowledgements

The author wishes to thank P V Reveye, A E Sayers and G C Berrard, all members of Baird's personal technical staff at various times, for their assistance with first hand information. The colour television pictures taken direct from the screen were first published in *Electronics and Television* and are reproduced with the permission of the proprietors Morgan-Grampian Limited.

Photographs taken at Crescent Wood Road and the Telechrome picture is from the collection held by the National Museum of Photography, Film and Television.

Left: J.L. Baird holds his Telechrome colour tube. Above: two sketches which appeared in the original press release in 1944, indicating (left) the two-colour Telechrome tube and (right) a suggested arrangement for three colours



Baird set his sights on a much higher definition of 600 lines, accepting that this would mean abandoning any form of mechanical scanning. It was back to the flying spot method, but this time using a large projection tube similar to those employed at the Marble Arch Pavilion for the big screen demonstrations.

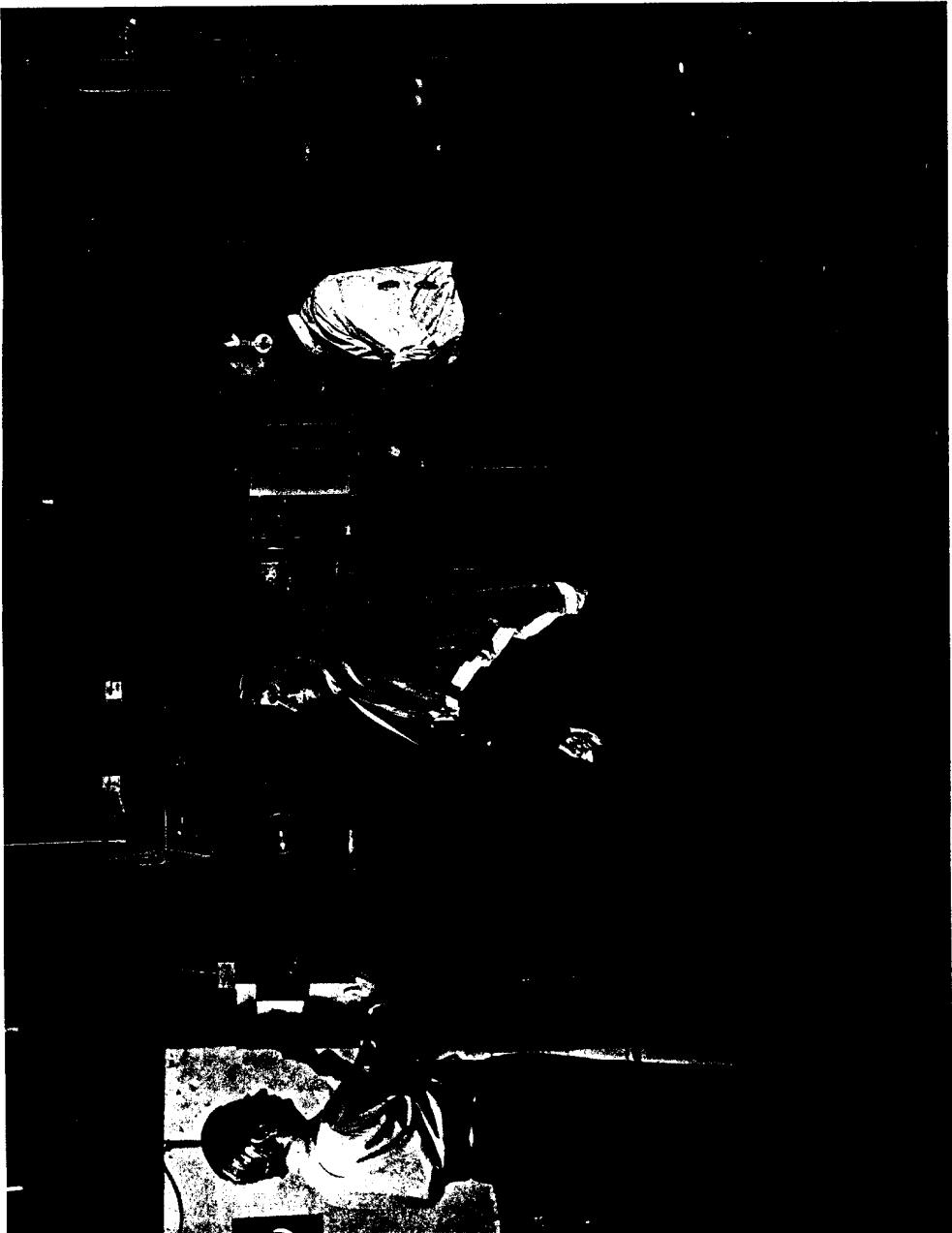
By December 1940, with only three staff remaining, an improved colour system had been designed using 600 lines. The projection tube in conjunction with rotating colour filters provided a brilliant picture on a 2½ ft x 2 ft screen.

The results were recorded on Dufaycolour film and a colour plate of Paddy Naismith, one of the visitors to the press demonstration, subsequently appeared in the April 1941 issue of *Electronics and Television, Wireless World*,<sup>10</sup> given to effusive reporting, commented 'The demonstration can only be described as a very considerable success. The colour picture was of more than adequate

brilliance, being also both pleasing and restful to watch. The various tone values

were produced with a degree of truth comparable with the Technicolor films which we are now used to seeing at the cinema. A notable point in connection with viewing the colour pictures is an apparent stereoscopic effect which makes the picture stand out to a remarkable degree. The effect was quite apparent when still pictures were used as the subject, but became even more so when the place was taken by a girl with red hair; the tones and sheen of which were reproduced perfectly.'

**Stereoscopic television in colour**  
Baird first demonstrated stereoscopic television in August 1928, and returned to



Above: J L Baird (at left) with F G C Anderson and Eustace in the Crescent Wood Road laboratory, September 1943.  
Top right: A photograph of Paddy Naismith taken direct from the screen of the 600-line two-colour receiver in December 1940.  
Left: An off-screen photograph of the stereoscopic pair, December 1941.



the subject at the beginning of 1941. He set out to find a way of displaying stereoscopic images which would dispense with the need for the viewer to wear coloured spectacles, and successfully demonstrated such a scheme to the press on 23 December 1941.

The definition had been changed to 500 lines with a frame repetition rate of 150 per second. The studio set-up involved the use of an electronic flying spot scanner as previously described, but with the addition of a three-colour revolving disc and a means of splitting the optical path by an amount equal to the separation of the eyes.

At the receiver the stereoscopic pairs of images were reproduced sequentially and projected on to the field lens. A rotating shutter provided alternate right and left eye perspectives, the combined effect being a stereoscopic picture in full colour. This arrangement had the disadvantage that the viewer had to be in a fixed position, otherwise the stereoscopic effect was lost.

#### The static disc receive.

The process of eliminating the few remaining mechanical components continued. Baird considered that the rotating colour disc should be dispensed with and sought a static alternative.

The solution involved producing pairs of images in sequence, vertically stacked on the face of the projection cathode-ray tube, which corresponded to the orange-red and blue-green components. A short distance in front of the screen two lenses with orange-red and blue-green filters were positioned exactly in line with the stacked images, which were then combined by means of a converging lens to produce a coloured picture.

# CLOSE YOUR EYES AND THINK OF ENGLAND.

**John McCarthy's done nothing else for the last three years.**

On April 17th 1986, John McCarthy was kidnapped in Beirut. A British journalist on his first overseas posting, he had been there for just 32 days. Sadly, he's still there.

If you would like to see John released, please complete the form and return it to the Friends of John McCarthy, PO Box 80, London WC1X 8XE.

I am concerned at the fate of John McCarthy. Please send me a full information pack and a postcard with which to lobby Parliament.

Name \_\_\_\_\_

Address \_\_\_\_\_ RTS

Signature \_\_\_\_\_

**Don't forget the British Hostages in Beirut.**



## Workshop

# Repairing transformers and coils

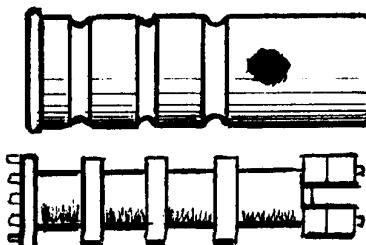
by Ray Whitcome

There comes a time in many restoration projects when an R.F. coil, or I.F. transformer is found to be defective.

Some of these faults seem to run to a definite pattern. Here are some tips for repairs:

Perhaps the easiest to rectify is the corroded leadout "syndrome", where the coil tails have rotted through at the point where the wire had been originally stripped and tinned, possibly because of corrosive residues from the flux or burnt enamel. Sometimes the tails are sleeved, and the sleeve material has transmuted into a corrosive "mess". The remedy in these cases is obvious, and full performance should be achieved, however, be very careful with stranded wires as even one broken strand can adversely affect the Q.

Now to enter the world of difficult, or even seemingly impossible repairs. Philips sets are some of the best designed ever, in my opinion, "simply years ahead!", but in one particular series a "stock fault" is evident. The R.F. amplifier coils as used in sets employing the "Red series" side contact valves (usually an EF8), invariably have open circuit primary (anode) windings. The big problem is how to get into the can in the first place to see what has happened. For those who steer well away from Philips sets I must qualify what I say. The coils in question contain L.W., M.W. and S.W. sections, and 3 "Beehive" trimmers mounted on top of the former. The particular method used by Philips to adjust the final value of inductance of the various coils in the can during manufacture was to "Spin" down the can diameter so bringing the can material closer to the coil and thereby lowering its inductance. A very efficient method, and typical of the care that went into these splendid receivers, however, if one wishes to remove the can to effect "micro surgery" on the inards it will not come off! The constrictions of the "Adjusted" can will not allow the trimmer plate to pass. If you split the can you will ruin the inductance adjustment and will have difficulty in achieving good screening on reassembly. Two methods present themselves:



- (1) Cut the top section off, (that which encloses the trimmers) and then unsolder the mounting plate. On reassembly the top will have to be "electrically" stuck on, but be wary of aluminium soldiers as corrosive fumes could be fed into the can, so perhaps conductive adhesive would be better. Silver loaded epoxy for example. I do not recommend this method unless the can has been "spun" in very much.
- (2) Using a "mini drill" and burr, grind the can in the region of the trimmer mounting plate also cutting the paxolin plate away so as to remove enough material to reduce the diameter so that it will pass the necked can. You must be very careful during this rigid bed, and handle the drill as you expect your dentist to do when having a filling! At the end of this procedure the can will be able to be removed, and there will only be a small hole in it, which can be covered with a self adhesive aluminium patch. (eg: Glazing tape)

Having removed the can, the next task is to find the fault. These coils are well covered in wax which will have to be removed, the best way being to apply hot air from a hot "pro" hair drier or paint stripping gun, take time and care during this not to increase the heat too rapidly or burn any part. With the wax removed the work really starts.

The winding seems to fracture at the inner lead-in next to the former. Why this is, and why it seems always to be only the anode winding, I do not know. Other windings are just as thin, the materials used by Philips do not appear to be especially corrosive, and so on. Perhaps it is due to the pressure exerted by the wire on top combined with repeated thermal reversals, or is it an electrolytic/electrostatic effect caused by the anode volts? (Chemists out there please help.) If the break was on the outer end or tail, then repair is easy, but on the inner a compromise has to be made. As the anode winding is untuned its inductance is less important, more so is its magnitude, so a slight loss will not have a great effect. Using an eyeglass, spot-light, and a very fine sewing needle extract a wire from the wave winding as near to the bottom as possible. Check that

continuity exists to the other end of the winding at this time, after all that is the object of this exercise! To make it easier, use the needle as the meter probe. Having retrieved a suitable strand, use a "micro" soldering iron with a copper bit and "Savebit" solder a fine wire to the stub. A butt joint is sufficient, but inspect it through the eyeglass for good "wetting" of the wires. The reason why I specify the solder is that if you use any other solder or iron there is the great danger that the fine copper wire will dissolve into the solder; that specified will make sure that the solder is already saturated with copper.

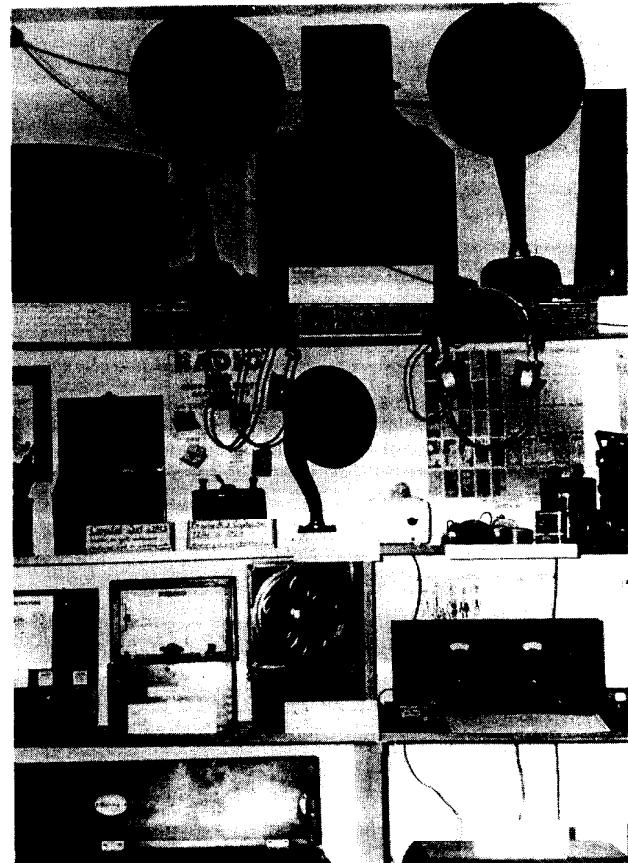
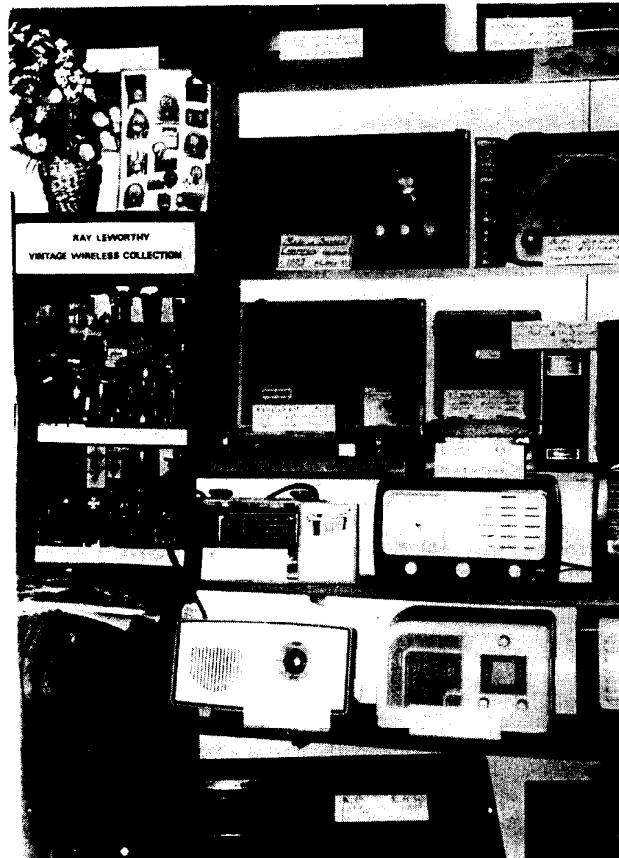
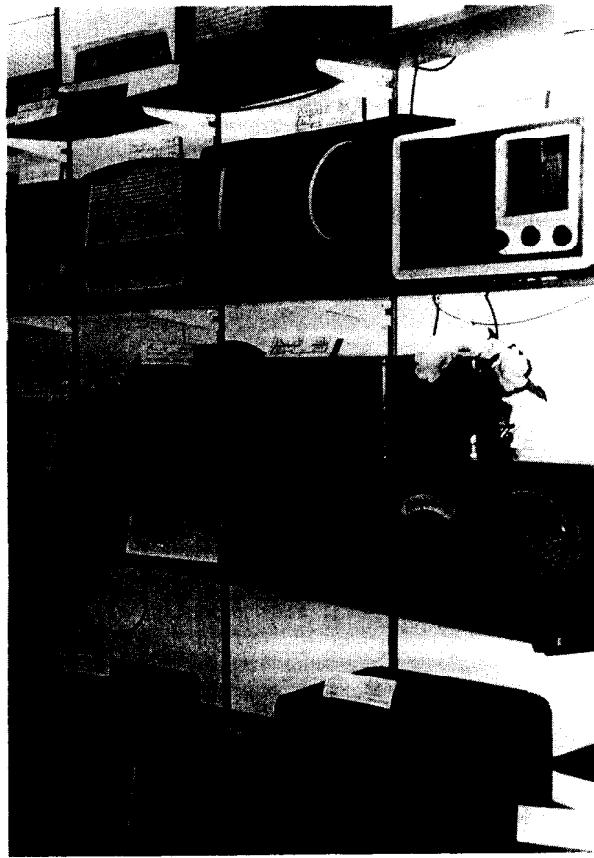
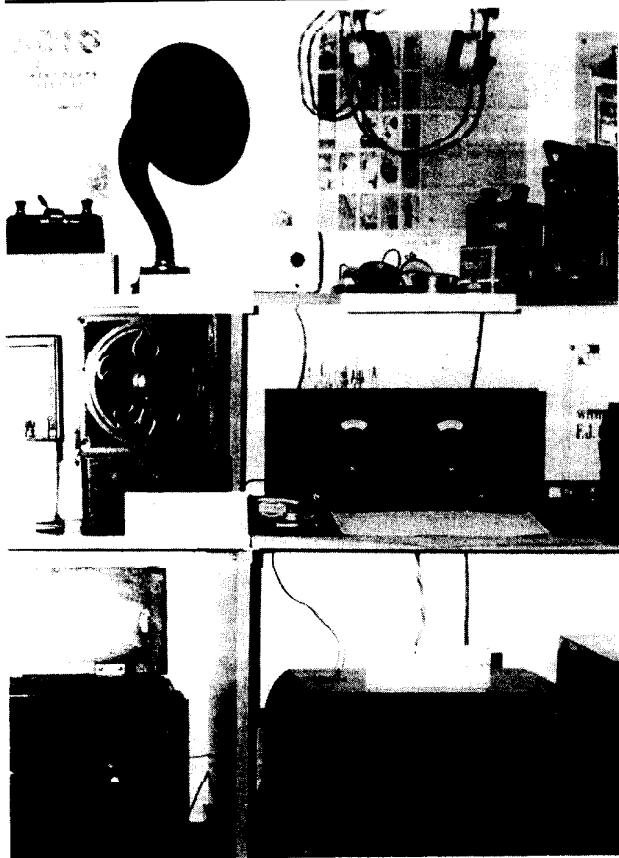
Having done all necessary repairs, check the continuity of all the windings, and carefully inspect the complete assembly including the operation of the trimmers. Reinstate the can, and then if you are lucky enough to possess a "Q" meter, check the parameters to the tuned windings and the anode ones, the results will have to be interpreted by experience and intuition unless the original Philips specification is available.

I have not mentioned the removal of the coil from the set in the first place. It looks difficult, as with most Philips restorations, but a bit of thought and careful inspection will suggest a method. The connections to the set will first have to be unsoldered. Cut them if not very accessible. Later remove the wire stub and solder using a sucker, etc, and resolder the cleaned termination using a small iron. The wave-change switch passes through all the wafers, which in turn are fixed to the coil mounting plates, at first glance making it impossible to remove a single unit, however the actuating rod is easily removable from the assembly, in the 1938 push button models via a hole in the rear of the chassis. On reassembly clean the wafer in, "Genkrene" and reseal the rotten rubber wire (to preserve looks use yellow).

As in all good car manuals, re-assembly is the reverse of dis-assembly. Carry out the rest of the restorations, and you end up with an excellent radio.

P.S.: In the particular set in question it was found that the aerial coil had burnt out, no doubt due to the use of a mains aerial adaptor (No this particular Philips did not have one already), and the resistance had reduced to a few Ohms. This would require a rewind of the offending winding (or offended winding). Luckily I had a suitable spare. (Keep coils from scrap sets!) P.P.S.: The set in question was actually a Mullard MUS 24. Philips otherwise.

## Round the Collections



## Round the Collections continued

### Lindfield wireless museum

Lindfield, a village just North of Haywards Heath in West Sussex, is popular with tourists and photographers due to its picturesque old buildings and the village pond with ducks and swans. It is not the most likely place to find a wireless museum but that is just what the visitor will find in the High Street.

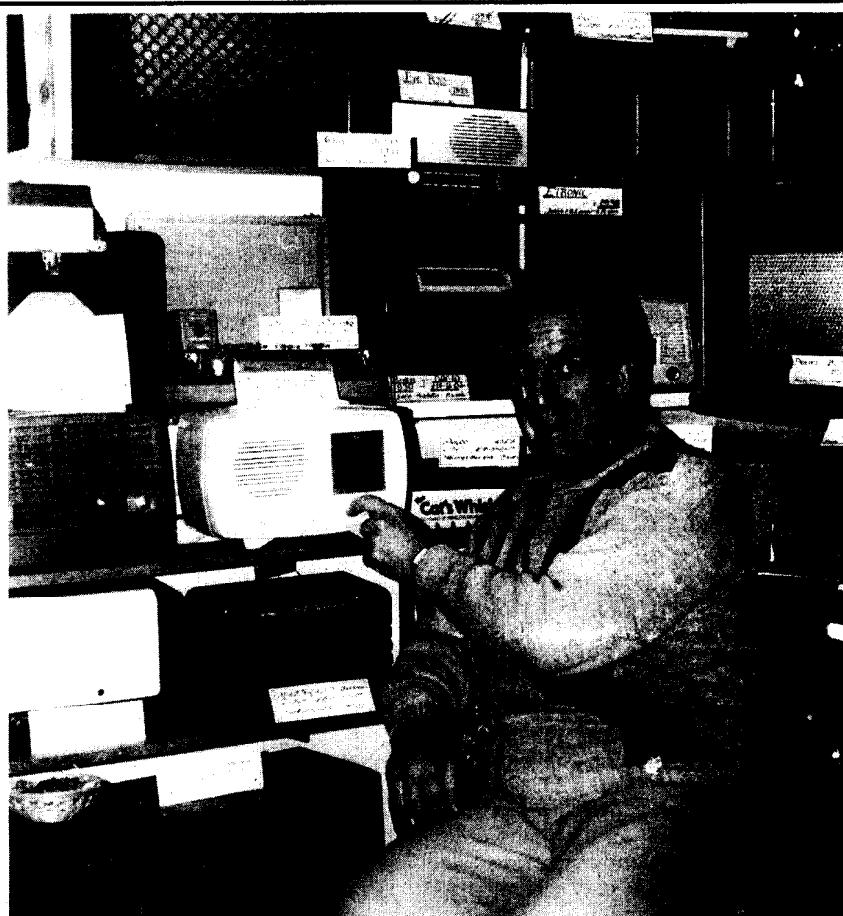
Just behind the shops is the Old Brewery Building (no, there is no beer there now!), and it is in part of this building that society member Ray Leworthy has set up his museum of wireless memorabilia.

Ray was a wireless enthusiast in his school days when he read old copies of American magazines like Radio Craft and spent his pocket money on parts to build simple short wave receivers. On leaving school in the 30's he went, naturally, into the wireless trade as an apprentice service engineer and, just before the war, became interested in amateur radio and soon obtained his licence and the call sign 2HGJ.

During the war, he served with the R.A.F. as a wireless mechanic and, in 1947 was stationed in India, servicing high power transmitters but found time to get "on the air" himself with amateur call sign VU2SJ.

Since those days Ray has earned his living servicing domestic radios and televisions, but with the coming of transistors and "chip" technology, he realised that his love would remain with valve equipment and, over the next few years, he collected and restored many old scrap valve radios.

Like many collectors, he soon realised that space for all these sets was going to be an ever worsening problem so it became necessary to put some sets into storage and to loan some of the others to the Seaford "Martello Tower" Museum on the South Coast where they have a fine collection of radios and televisions — well worth a visit if you find yourself that way. This situation led to the opening of his own museum to exhibit his collection to the public. It took several years to find suitable premises that did not cost "the earth" but Ray's determination paid off and, by the time he retired last year the



Lindfield Museum was open. Outside the museum a sign reads "40 years of valve radio — 1920-1960" and inside can be found over 100 valve sets — most of them in working order — and a few crystal sets and 78rpm gramophones.

Whilst Ray is a technical person, he has tried to avoid too much emphasis on technicalities preferring to make the exhibits of interest to a wide range of visitors, some of whom will just enjoy seeing and hearing old wireless sets. (Ray does cheat sometimes and plays taped old time music). Other wireless paraphernalia on display includes horn and cone loudspeakers, headphones, accumulators, components and valves including the one and only integrated circuit in the museum — a 1926 Löewe 3NF valve.

The radio "Ham" has not been forgotten; there is a small section displaying some vintage communications receivers such as Hallicrafters, Eddystone and National (HRO). Old photographs of amateur stations and vintage QSL cards add a touch of nostalgia.

Probably this is one of the smallest of museums but it is an example of what can be done with a small private collection of wireless equipment.

Thanks to enthusiasm on the part of the local radio and Press the Museum has become well known in Sussex and, judging by the visitors book, is getting to be known far and wide. Ray will be pleased to welcome any B.V.W.S. Member who cares to call but he warns that they should telephone in advance to confirm the times and days of opening as these will vary from time to time.

The new published times will be: Tuesdays, Thursdays, Fridays, 10am-5pm (October to April: Close at 4pm.) Weekends: 1st & 3rd Saturdays in the month: 10am-1pm and, on those weekends only: Sundays 2pm-5pm. (NO Sunday opening October to April). Sundays and other times by appointment only.

There is no charge for admission but donations towards expenses are invited.

Two free car parks are close to the Museum but problems could occur with disabled persons due to very steep steps at the entrance to the Museum.

**Curator:** Ray Leworthy.  
**Address:** 53 High Street, Lindfield,  
 Nr Haywards Heath,  
 W. Sussex, RH16 2HN.  
**Telephone:** Lindfield (04447) 4552.

## Reviews

### Book Review

by Robert Hawes

*"Vision Warrior"* by journalist Tom McArthur and Dr. Peter Waddell, inventor and senior lecturer at Strathclyde University. A new publication with extra photographs and an epilogue, from Scottish Falcon Books in paperback, price £4.99. First published in 1986 as "The secret life of John Logie Baird" by Century Hutchinson.

Published to coincide with the important Baird Exhibition in Glasgow, "Vision Warrior" is more of a sympathetic biography of the man than a historical analysis of the technical work of the television pioneer.

The brief of the authors seems to have been an attempt to effect some sort of resurrection of the man who is popularly believed to have been the "inventor" of television, in the same way as Marconi is erroneously supposed to have been the inventor of wireless. But in crediting Baird with his undoubted achievements, the authors do him little service by exaggerating the importance of his early development of such things as sequential colour and stereoscopic television, conveniently ignoring the facts that both were very elementary extensions of the original television system and that neither would have been practicable for scenes containing appreciable movement. In another case, to describe Baird's replacement of a lens with a matrix of copper light pipes as 'the invention of fibre optics' seem hardly justifiable. Baird is renowned for having left false trails to make it difficult for competitors to filch his ideas; and he was vague and inconsistent about such things as dates. The authors at times take advantage of inconsistencies and chance remarks to devise some rather fanciful speculations which, once mentioned, they present as established fact from then on.

Certainly Baird must be credited with the first practical demonstration of true television, achieved in a similar manner as Marconi set about demonstrating wireless: by bringing together elements of a system which were already in existence and making them practical. But the book suggests that Baird did it in 1919 (instead of 1926) when he was supposed to have transmitted pictures from his three-man jam-making factory in a jungle clearing in a corner of Trinidad.

They correctly applaud Baird for his undoubted achievements like the first video-recording, his pioneering of

"outside" broadcasts of television and his early presentation of all-electronic 600-line colour pictures.

Baird emerges from this new book as a much more canny Scot than previous biographers show him: a man of remarkable resolve, brim-full of ideas, untiring in his experimental work and courageous enough to do battle with both the establishment and big business, yet often quiet and unassuming and displaying an endearing sense of humour behind his "mad inventor" image. He comes out as a man of vision and determination who did not so much sink into oblivion as a disillusioned inventor but rather withdrew into a secret world of wartime Boffins, his important work "classified" and unsung even after all this time since his death aged only 58, just after the end of the war, in 1946.

In Baird's day as now, both the popular Press and even technical journals (who ought to have known better) presented the public with incorrect, inadequate, unqualified and often exaggerated information and even pure fantasy. Baird, who was up against an Establishment that ignored him and a business world with which he was incompatible, had an unhelpful Press in his lifetime and a bad one afterwards. In their enthusiasm to popularise Baird's ideas, his publicists were sometimes party to fanciful claims about his work which did his reputation no good. In a way, some of his biographers have fallen into a similar trap. The new book, for instance, seems to raise as many questions as it answers, presenting scraps of information coupled with a good deal of speculation, instead of solid evidence. Nevertheless, the authors have done a large amount of painstaking research providing important references. It would have been useful if all this material could have been presented to the reader in a way that one would have been able to assess it for oneself.

An Epilogue is devoted to suggestions that Baird was deeply involved in secret Government work during World War II, particularly on radar development. Certainly it is true that Baird patented ideas in 1926/7 for detection of objects by reflection of radio waves, using his 'Television' receiver as a display device: the patent includes acknowledgement of Heinrich Hertz's original observations in this field in 1888. Based partly on diary entries referring to meetings with some important military and scientific figures, the authors conclude that Baird was a key figure in radar

development: the Chain Home system, for example, they say "stems directly from John Logie Baird's radar equipment of the 1920s". Baird was always a prolific source of ideas, often well-founded, and it seems very probable that he would have put forward to appropriate authorities proposals relevant to the war effort. But it should be recognised that he was primarily a practical experimenter rather than an electronics genius; and it could be thought unlikely that he would have been regarded as a sufficiently expert engineer to be deeply involved in radar development in the 1940s. It would have been interesting if the authors had also considered this alternative interpretation of the rather slender evidence available.

(The reviewer is grateful to Ray Herbert and Pat Leggatt for studying this review and suggesting alterations to text and emphasis)

### Book Review

by Desmond Thackery

*Wireless Communication in the United States*, Thorn L. Mayes, New England Wireless & Steam Museum, 1989, pp242 + vii, (paperback \$19.95 at source)

As Robert Merriam's preface explains, he and his fellow editors Art Goodnow and Nancy Merriam have brought together numerous articles written by Thorn Mayes, mainly concerned with professional wireless in the USA before public radiophone broadcasting began. 185 pages are devoted to the activities of no less than 12 wireless companies operating in the USA. Much of the content concerns the strenuous efforts of notable engineers, such as Harry Shoemaker (Chapter 6), inventing the hardware required, overseeing its manufacture, installing and even operating the stations that were the public face of wireless in those days. UK readers may be surprised by the status then of one of these companies: A number of factors initially made the American Marconi Company (Chapter 5F) a relatively feeble contributor to this scene. Not only did it have a "hire only" policy which was not what some US customers for equipment wanted; but according to Thorn the company also dragged its feet technically. However, relative financial stability enabled the American Marconi Company to buy its way to a powerful position eventually, when indigenous American companies failed in due course, milked of financial resources by unscrupulous share-pushing directors. This rescue operation helped to keep wireless on its feet in America and

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growing, until eventually the Marconi interests were absorbed by the formation of RCA. Earlier chapters in the book include 12 pages on equipment development which provide essential information not generally repeated in later chapters. And Chapter 7 is an appendix containing a selection of interesting letters from such notabilities as E. E. Butcher, G. W. Pickard, L. DeForest, W. Dubilier, L. Espenschied and H. H. Beverage. The book is profusely illustrated, but the plates and figures are not numbered. And though there is an index of personal names, there is no subject index. Numbered references are given at the end of each section and chapter. While this book is a "must" for vintage wireless enthusiasts who are "into" the wireless of pre-broadcasting days, it will surely open the eyes of others who know little about the earlier technology that paved the way to broadcasting. There must also be many outside the USA with little idea of the part played by early American wireless engineers, nor appreciation of how active they were already, in the first two decades of this century. With this mine of information on your shelves, ignorance in such matters is dispelled for ever. As the news "boys" once shouted: "Read all about it!"

#### Book Review

by Robert Hawes

"ZY to NBH" an informal history of the BBC in Manchester and the North West by Ian Hartley, obtainable from the author at £4.50 including postage, 252 Brooklands Road, Wythenshawe, Manchester M23 9HD.

This is a book about broadcasters and programmes rather than a technical history of the progress of broadcasting in Manchester and the North West, and provides some interesting pictures and amusing anecdotes covering the period from the early 'twenties to the 'eighties.

It begins with an account of how inventor and industrialist George Westinghouse set up a huge factory on the Bridgewater Canal before the turn of the century, which was taken over just before the First World War to become Metrovicks. The American Westinghouse company began sending out music and speech programmes from their East Pittsburgh station KDKA in 1920 and the Manchester engineers followed up the idea, first began experimenting with an amateur transmitter, then set up one at the factory which put out its first

programme in May 1922, consisting of news snippets plus classical and dance music and in the same year, Metrovicks became one of the founding companies of the British Broadcasting Company. The book goes on to show how the station was in the vanguard of progress in broadcasting, pioneering programmes for children, dance-band fans and opera lovers, often using local artists. An account is given of how the organisation developed as part of the Corporation which the old Company spawned and of the notable and the much loved broadcasters who built up the programmes, from Isobel Baillie, the "Wireless Uncles", Harry Tate and Olive Shapley to Wilfrid Pickles, Violet Carson, Reginald Dixon, Al Read and Harry Corbett. Himself a Mancunian who works as a hospital scientific officer and who collects mechanical music machines, author Ian Hartley demonstrates in his book that the progress of Britain's wireless and television is not simply a story of 2LO and broadcasting house London.

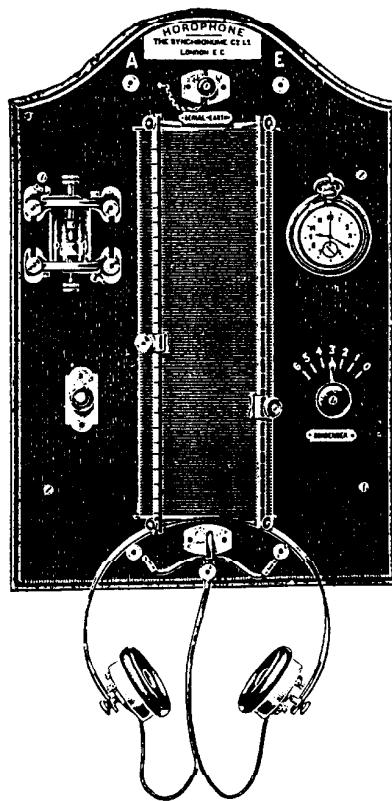
#### Recordings

"Radio Days" on LP, cassette and CD, no. 163 from Conifer Records, 64 Horton Road, West Drayton, Middlesex UB7 8JL.

Readers interested in recordings concerning radio over the years will like this "Radio Days" compilation of 78's which are hard to find. Processed to exclude much of the inevitable background noise but preserving much of the character of the originals, it includes Henry Hall's "Radio Times" tune, and Norman Long's "All for ten shillings a year" plus comic numbers from Sandy Powell, the Western Brothers, Al Bowly, George Formby, Arthur Askey, Cyril Fletcher and many others. They reflect some of the history of radio from the jokes of the crystal-set era and the excitement of tuning-in distant stations, to the beginnings of commercial radio. None of the material appears to come from actual broadcasts, but all has a connection with the subject and comes from stars who were well known as broadcasters over the years. — Robert Hawes.

#### Record catalogue

Also of interest is the latest catalogue from Symposium Records, 110 Derwent Avenue, East Barnet, Herts EN4 8LZ, which features re-recordings of celebrated performers of the past of important early performances. They range from rare Elgar pieces to the original Dixieland Jazz Band. A call to 368 8667 will bring a catalogue.



#### Letter

from David K. Boullin,  
Editor "Radio Time", 51 Burford Road,  
Witney, Oxon OX8 5DR

My magazine is concerned with the history and development of clocks and watches regulated by time signals broadcast by radio. Do you have any early radio receivers in your collection which were designed for use by clockmakers or watchmakers to receive time signals. I am particularly interested in the Horophone (1913) and a later version (1919), plus those made in the 1920s.

It is unlikely that these receivers were made exclusively for clock/watch makers, but they may have been especially advertised for that use. I have many documents relating to such radio receivers, but have never seen one. I would be very glad of your help.

#### Letters to the Editor:

Letters for inclusion in the Bulletin should be sent to Robert Hawes, 63 Manor Road, Tottenham, London N17 0JH. Where possible, they should be brief, and we reserve the right to abbreviate if necessary.

# Feedback

## Letter

from Ray Whitcomb

### The "Drainpipe Effect"

I have recently re-discovered a phenomenon which may be of interest to other Members, especially after the talk given by Pat Leggatt at the last Seminar. The effect I have come across is 'External Cross Modulation', and I give some references to past publications at the end of this letter.

The case I report now comes into the category of spurious 'Natural' rectification, (Ref. 2). It is of special concern to those of us who wish to be able to demonstrate/operate wireless receiving equipment to its best ability, and when we are lucky enough to possess a number of working examples. As in Pat Leggatt's case this may include a common aerial, or perhaps several aerials in close proximity. If an aerial, or any other conductor, includes in its circuit a contact/joint that can be capable of a diode effect, then it has been demonstrated that in the presence of suitably strong RF fields intermodulation will occur between the signals present; moreover the conductor will re-radiate these intermodulation products. Obviously any other aerial in close proximity will pick up these intermod products as a perfectly 'legitimate' signal.

In the case in question I had a crystal set attached to a long wire aerial which had been left 'Running' in order to determine the drift in the detector (a 'Red Diamond' permanent type). Now I have a radio in my 'Shed' to provide 'Music While I Work!!!', and this instrument is run off an aerial which as luck may have it had a length running close to the crystal set's aerial; only a small length may I add. The result was that my trusty wireless set began to exhibit 'Foul' tuning noises, interference, and intermodulation. This was most embarrassing since a passing friend, on seeing my old set, asked if he could hear what Radio 3 sounded like: well it did not sound very good!!!

Next day I decided to find the cause of the trouble with the radio. At first I suspected the frequency changer, an MX40, I swapped it with a new one, but no difference. Out came the IF and DET valves — both OK. Out came the AVO; result all volts OK and AGC doing its job. Well then I remembered the external cross modulation articles I had come across reading vintage Wireless

World Mags. I disconnected the crystal set, which is in the house, and cured the fault.

Another culprit in causing this effect was a high level modulator which I use to run a high quality AM signal for listening purposes. This is semiconductor based and provides enough signal to run into a small aerial and thus into a receiver. The unit uses a small transistor (a BC337) as an output device, and when it is running there is no trouble, the transistor operating as a linear class A amplifier, with a resistive output. The situation changes, however, when the unit is switched off. Now the output transistor looks like a diode (collector/base junction), and as a conductor is joined to this point excellent prospects of external cross modulation exist.

With the interest in running a number of wireless sets in proximity, I hope this letter may be of help to other members

#### REFERENCES:-

1. 'The Interaction of Radio Waves' Wireless World February 26 1937.
2. 'The Interaction of Radio Waves' Wireless World March 5 1937.
3. 'Editorial', Wireless World June 4 1937.
4. 'A New Kind Of Interference' Wireless World June 4 1937.
5. 'Atmospheric Cross Modulation' Wireless World October 22 1937.
6. R.C.A. Review April 1937.
- Note from Pat Leggatt: The effect was well known to the BBC, and was sufficiently widespread in the 1950's to justify a pre-printed leaflet to be sent to listeners reporting trouble. The leaflet was entitled "The Drainpipe Effect".

## Letter

from C. Milego-Pertierra

### Remembering Marconi

I submit following Marconigram to Chelmsford town's local councillors:

"Delighted to learn of recent declared intention to create much overdue new and proper Museum to honour famous ex-resident. Wonder though if memory genial inventor already exalted by naming street after him?

"Having visited two places in Greater London bearing his name, hope Chelmsford's choice would be superior to Gravesend's Marconi Road, cleaner than Southall's Marconi Way (lumped together with poor Edison Drive, Faraday Road, Baird Avenue, Fleming Road and, to cap it all, Darwin Drive!). and urbanistically worthy of Prince of Wales' seal of approval."

If only they could go and see the charming Rua Marconi, in São Paulo, Brazil . . .

## Letter

from Ivor Abelson

### Crystals

As one who used crystal receivers extensively in the 30's I can add some useful comments from my experiences to Desmond Thackeray's informative article. Firstly, whilst glowing claims were made for "permanent" detectors, in practice these were of no real use, for results were always inferior to conventional adjustable detectors. (We have similar advertiser's "hype" with compact discs!) Then there was the problem of mounting crystals in cups. The cheapest method was to put the crystal under a clip but it was the least good. Clamping screws could be better but the best way was to use Wood's metal — an alloy of very low melting point. (This is not now available but silver-loaded epoxy resin is suggested (R.S. components). In the thirties, I found the catwhisker less good because of its mechanical instability, but favoured the two-crystal detector with pointed carborundum element bearing on a flat gelena surface under firm spring pressure. Such a detector tended to resist displacement from its contact with the sensitive spot. There is a resemblance between the old detector and the modern two-crystal diode. Later, I moved on from the early devices to ones like the A070 and IN34A then to the gold-bonded A047 which gave improved sensitivity, high output and better audio quality.

#### • Note from Desmond Thackeray:

*There are whiskers and whiskers! Ivor probably always used the British "pigtail" whisker, which is hopelessly unstable mechanically. The American is far more controllable, and there is a short whisker with single kink in the literature which was designed for maximum stability.*

*No need for expensive low-melting point alloys for mounting Carborundum (another advantage) as it is proof against the temperature of molten solder. Telefunkewr did at times use the higher temperature alloys for mounting crystals: perhaps there was a bismuth shortage? However, a number of l.m.p. alloys are still available, but the companies who supply them have a minimum order requirement which is off-putting to the small user. If anybody comes across Cerrobend in old plumber's stock (at Lsd prices!) spread the news please. It could still be cheaper than silver-loaded epoxy.*

*What must have puzzled and annoyed all crystal detector users was the wide variability of performance between otherwise similar crystals and between different parts of the same crystal. "When they were good, they were very, very good . . ."; but it wasn't all that frequent, I deduce from measuring as many as I can. Also, performance could fall off with time, so that an initially "sensitive" crystal might not stay so indefinitely. At least those problems have been defeated by modern technology, and allowed easy fitting of a surreptitious diode in parallel with old and useless crystal detectors where necessary.*

## Letter

from Jim Butterworth

## A vintage day out

The alarm sounded at 3 a.m. on a cold November morn and off we went for a day out with "Auntie", my 34-year-old Rover 90, loaded with a selection of early wireless equipment for sale or swap.

Bound for Harpenden, 200 miles away, the original HMV valve radio buzzing away, Auntie hummed her way along the dark Somerset lanes until we joined the boring, but so efficient, motorway. A steady 70 mph around Bristol, past Membray and along the empty M25 and we found Harpenden already waking up.

Swap-meets are supreme in bringing together devotees; not only do esoteric theoretical discussions materialise, but the hardware is also there to discover. A happy day unfolded, disposing of and acquiring "essential" wireless items. Not many car radios in evidence, though — early ones are certainly most collectable and add to the authenticity of the pre-war car. Our swap-meets conclude with an auction — many good value items, but did I really pay that much for a 1929 mains wireless? Is there a common theme? Both early wireless sets and early Rovers are useable today — neither are useless artefacts from a by-gone age. We own the survivors of so many millions of radios and cars long ago consigned to the scrap-heap. The mains wireless set of the twenties and thirties is as useable today as it ever was; what a pity Auntie BBC is about to axe Radio 2 from the medium waves, a retrograde step. Auntie Rover has the performance to keep up with modern traffic; a brake servo; flashing indicators; a radio; an excellent heater — all luxuries in the fifties but all contribute to make the P4 Rover arguably the oldest truly practical car for the conditions of the nineties.

The essential ingredient in get-togethers is to meet with those who have chosen to appreciate the same things as you — the true aficionado without which our national organisations could not have been formed or continue to operate for over a decade. These are the true enthusiasts and to them we owe a great debt of gratitude.

The return trip was uneventful; the combination of armchair, lazy six cylinder engine, overdrive and freewheel making for relaxed driving after a hectic day. Like vintage wireless, Auntie lacks only one attribute; depreciation.

## Enjoying a spell

"It is a pity that Chaucer, who had geneyus, was so uneducated. He's the wuss speller I know of" said Artemus Ward in the mid-1800's, but he had not sampled the non-human genius: the electronic computer spelling-checker. Our Pat Leggatt has done so, and here are the results of his experiment:

**My word processor includes a spelling checker which highlights any word that it can't find in its dictionary; and what's more it offers to replace the word by what it thinks you might have intended to type. As an example I give below a little piece as I originally wrote it, and beside it the version which results from accepting the computer's suggestions for replacement words. Except for my reduction of some capital letters to lower case, this is genuinely what the computer came up with!**

## Original version:

What a wealth of material has appeared in the Bulletin over the years and continues under the editorship of Robert Hawes!

From the earliest times we read of the Ruhmkorff coil, Captain Henry Jackson's work, the Fessenden barretter, the Dunwoody carbon-dioxide detector, the Fleming diode, the Langmuir valve research and the Meissner oscillator; and from a later period the Colpitts circuit, the Sullivan wavemeter and French bigrille valves.

We learn how to deal with a battery-powered Philips superheterodyne and we can read about Macroniphone sets for Daventry reception. Crystal sets are there of course, and how pleased we older collectors are to get an Ericsson! We learn of the development of UK television in Hayes and the opening of the Birmingham Sutton Coldfield station.

We remember Roger Snelling's article on the Majorana microphone, and another piece on the Marconi Reisz microphone. There was a good review of 'Syntony and Spark', a real encouragement to Hugh Aitken. And of course the recent catalogue of Brown Bros was much appreciated by younger members. On smaller items we mustn't forget the Cossor Wuncell valve and the description of the 300 pfd Readi Rad Ductone. As for hardware, down at Gerry Wells' museum we can see the Graves Vulcan set; and at a recent Society meeting there was a Blattnerphone demonstration.

## "Corrected" version

What a wealth of material has appeared in the Bulletin over the years and continues under the editorship of Robber Hades!

From the earliest times we read of the rustproof coil, Captain Heady Jackpot's work, the foxtrot barrister, the dinged californium detector, the flaming diode, the languid valve research and the measlier oscillator; and from a later period the colitis circuit, the sullied wavelet and French bicycle valves.

We learn how to deal with a battery-powered phallus superheater and we can read about Macrocephaly sets for dainty reception. Crystal sets are there of course; and how pleased we older collectors are to get an erection! We learn of the development of ukulele television in Hades and the opening of the bilingual suction coalfield station.

We remember Roper Snarling's article on the mahogany microphone, and another piece on the maroon resin microphone. There was a good review of 'Synonym and Spark', a real encouragement to hug airmen. And of course the recent catalogue of brown bras was much appreciated by younger members. On smaller items we mustn't forget the Condor Wurzel valve and the description of the 300 pfennig read rag dustmen. As for hardware, down at Gerry Wells' museum we can see the Graves Vulgar set; and at a recent Society meeting there was a blackberrying demonstration.

## Looking Back

Contributed by Roger Snelling

From 'Wireless World and Radio Review' 8th October 1930.  
'Current Topics' 27/411-412.

## New 'Superhet.' Boom in America

The lowest prices in the history of American radio prevailed at Radio World's Fair, which has just closed after a successful week's run in the Madison Square Garden, New York. Refinements rather than basic changes marked the majority of the receivers on view, writes a correspondent. The trend towards the superheterodyne was very noticeable. With their production all centred in Camden N.J., described as the 'new radio hub of the world', the Radiola, Victor, General Electric, Westinghouse and Graybar firms all offered superheterodynies. Newcomers in the superheterodyne field are the Crigsby-Crunow and Atwater Kent Companies.

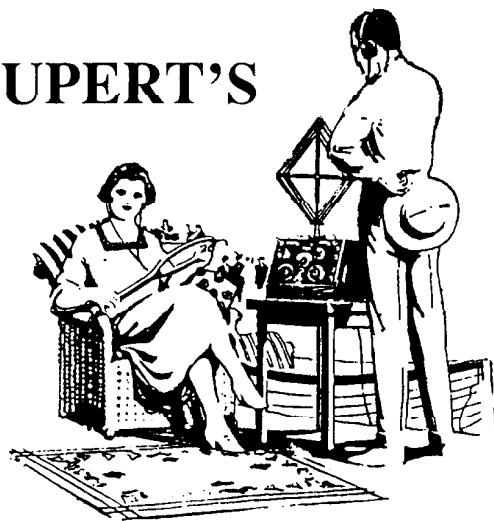
There are now nearly fifty makers of 'midget' sets, while at least a dozen manufacturers are offering car radio installations.

From 'Wireless World and Radio Review' 8th October 1930.  
'Current Topics' 27/411.

## Broadcasting at 11 p.m.!

When a landlord complained last week at Lambeth County Court that his lodger's wireless set was working between 11 and 12 at night, Deputy Judge McCleary expressed surprise. Counsel, according to a newspaper report, said that he thought there were foreign station broadcasts at that hour.

# RUPERT'S



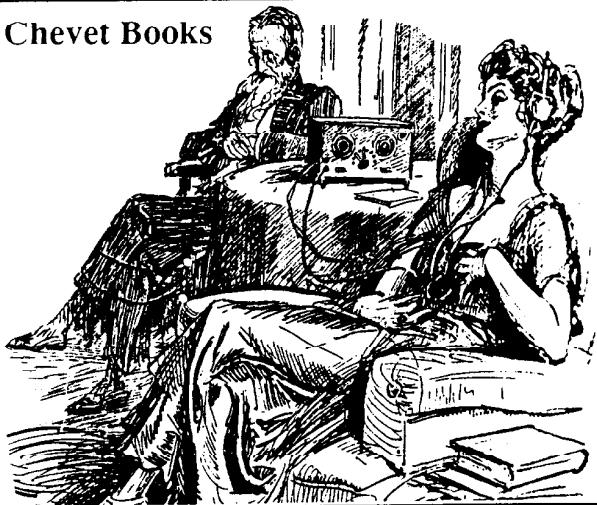
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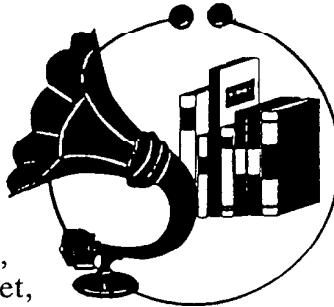
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