

# BVWS bulletin

volume 26 number 2 Summer 2001 [www.bvws.org.uk](http://www.bvws.org.uk)



# The Vintage Wireless Museum

23 Rosendale Road, West Dulwich London SE21 8DS  
Telephone 0181 670 3667

Proprietor: Gerald Wells. Please make appointments beforehand



# The History of the BVWS

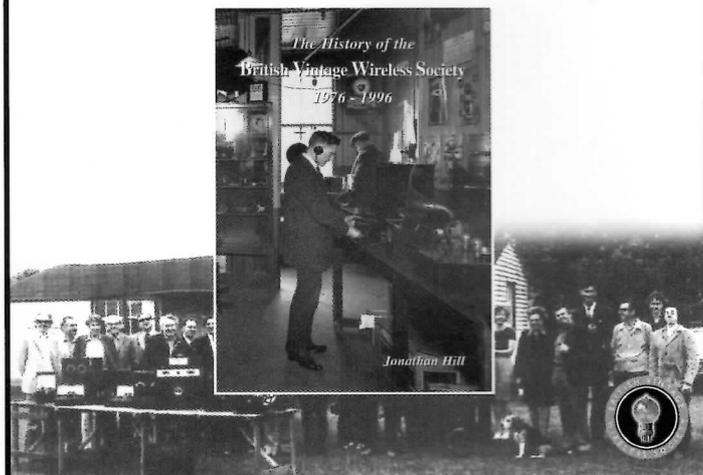
available now

Large Format  
176 pages, 250 photos  
Free to BVWS members

(£4 postage in the UK)  
(£8 postage overseas)

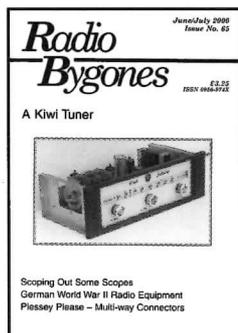
available from Mike Barker, 59 Dunsford Close,  
Swindon. Wilts SN1 4PW

1 copy free per member, additional copies at £5 each + p&p  
available at all BVWS meetings



# Radio Bygones

The leading vintage wireless magazine



Editor : Mike Kenward

Editorial and Subscription Offices:

Radio Bygones  
Allen House  
East Borough  
Wimborne  
Dorset BH21 1PF  
England

email : radiobygones@wimborne.co.uk

web sites :

www.radiobygones.co.uk  
www.radiobygones.com

# National Vintage Communications Fair

N.E.C. Birmingham  
Sunday 23rd September 2001

10.30am to 4.00pm

£5 admission

(early entry from c.8.30am @ £15)

Stall Bookings/Details

N.V.C.F., 13 Belmont Road  
Exeter, Devon EX1 2HF

Tel: (01392) 411565

e.mail sun.press@btinternet.com  
http://www.angelfire.com/tx/sunpress/index.html

## BVWS Committee

### Chairman:

Mike Barker,  
59 Dunsford Close,  
Swindon, Wilts  
SN1 4PW  
Tel: 01793 541634  
murphyamad@aol.com

### Bulletin Editor/Designer:

Carl Glover,  
c/o Aleph  
33 Rangers Square,  
London,  
SE10 8HR  
Tel/fax: 020 8469 2904  
choris.b@virgin.net

### Treasurer: Jeff Borinsky,

3 Woodberry Grove, London,  
N12 0DN  
Tel: 020 8343 8121

### Harpenden Organiser

Terry Martini:  
122b Cannon Street Rd.  
London E1 2LH  
Tel: 07947 460161  
audiovisual@cellnetuk.com

### Events Co-ordinator:

Steve Sidaway  
Tel: 020 8943 1249

### Membership Secretary:

Steve Pendlebury,  
BVWS  
P.O. BOX 391  
Bolton.  
BL1 1GA  
Tel: 01204-305781

### Members' Advertisements:

Ian Higginbottom,  
5 Templewood,  
Ealing,  
London W13 8BA  
Tel/Fax: 020 8998 1594

### Bulletin Correspondent:

Robert Chesters,  
Tel: 01244 675826  
bakelite.ekcos@virgin.net

### Committee Secretary

Guy Peskett  
13 Warneford Road  
Oxford  
Oxon  
OX4 1LT  
Tel: 01865 247971  
peskett@atm.ox.ac.uk

## From the chair

It has been a very busy few months since the last time I wrote here, what with the radio events at Blackpool, Lyndhurst, the fantastic day at Gerry's Garden party and Harpenden and soon I will be welcoming everyone to Wootton Bassett. All the events have been well worth the effort to attend and I have found some interesting items at each one. Murphy dealer flags suddenly appearing en masse after looking for them for a number of years and never seeing one! This goes to prove that there are still treasures tucked away in old shops, yet to be found.

A big thank you and Congratulations go to Sam Turner, who organised the new Lyndhurst radio meet. A good sized hall, well placed for parking and loading, and set in the New Forest, so driving to and from the meeting makes it an even more enjoyable day.

The meeting was well attended by both stallholders and members. A number of really good items could be seen and someone had a bargain with an Admiralty B41 in excellent condition for 50 pounds. He got there just before me, otherwise I would have had to find room for that as well, so perhaps it's just as well. Many varied items could be found, from 1920's crystal sets and parts to 1950's sets and early transistor radios, even a brand new Ever Ready biscuit tin set (not the saucepan) with the card backing behind the knobs still indicating their functions, and perfect.

The Garden party at Gerry's in Dulwich was once again a really good day with plenty of things to win in the raffles. A replica BBC microphone, a number of radios, a CD of jazz and some plonk. Food was excellent and plentiful and served under a marquee. Gerry, Eileen and all the family and friends who helped really did make the day with all there hard

work, so a big thank you to them. The usual mix of vintage radio and television was on hand together with a good number of assorted radio items in Kevin's boot sale where I picked up a "never seen" Murphy export set that had a label attached to it with an address of a supplier in India.

After some discussion and a great deal of thought, Rob Chesters has decided that with his new found permanent lecturing career, and the huge increase in workload he can no longer devote the necessary time to the Bulletin Editor's job. For the present, Carl Glover will take over the editorship.

This will ensure the continuing high standards of the Bulletin but is not the ideal long term solution. To ease the editor's burden we intend to appoint correspondents who will work with Carl. Their role will be to do the 'front-end' work of gathering and commissioning material for the Bulletin and doing "first pass" editing of these articles before they are handed to Carl. In doing this we also hope that more members will submit items for printing in the Bulletin, and the correspondents will encourage new articles of varied interest.

Rob will stay on the committee and should become our first correspondent. Correspondents need not be committee members but they will perform a significant and valuable role within the Society. If you think you could be a correspondent, you do not need any editorial skills but just to be able to liaise with other members and help when needed. You could be a correspondent in your chosen field, just let Carl know if you are interested, or want to know more.

At present, however please send your Bulletin articles to Carl until the correspondents have become established and listed in the Bulletin.

Bulletin of the British Vintage Wireless Society  
Volume 26 No.2 Summer 2001

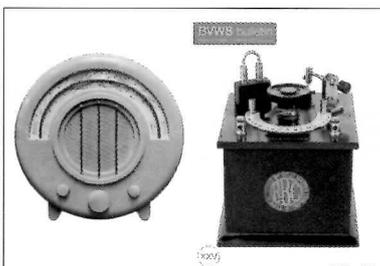
www.bvws.org.uk

Copyright: No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means without the prior permission of the publishers, The British Vintage Wireless Society. Copyright may also be the property of contributors.  
©2001 British Vintage Wireless Society

Separations and Printing by Apollo

### Honorary Members:

Gordon Bussey | Dr A.R. Constable  
Ray Herbert | Jonathan Hill  
David Read | Gerald Wells



Front cover: National Wireless & Electric Co. Gnat (1924). Rear Cover: Ekco AD65 in green urea formaldehyde.

Front and rear cover photography by Carl Glover  
Graphic Design by Carl Glover and Christine Bone

This issue Edited by Rob Chesters, Carl Glover, Mike Barker and Ian Higginbottom.

Proof-reading by Mike Barker, Ian Higginbottom and Peter Merriman

## Contents

- 1 Gnat Crystal set
- 2 Advertisements
- 3 From the Chair, The prodigal editor
- 4 Message Received - Signal Hill
- 12 Picking up the pieces - the Ekco B53 battery receiver
- 14 Electrolytic myths
- 16 Crystal gazing
- 18 The BVWS at the NEC
- 23 Spring harpenden, back on the air
- 24 The tube and either side of it
- 25 Reviews
- 26 Installing aerials and earths - a forgotten skill?
- 27 Talking about wireless special, Radio week in Cornwall
- 28 Novelty radios
- 30 An invisible repair
- 31 BVWS minutes
- 32 Aerial erectors
- 33 An 'all electric' company makes battery history
- 34 Letters
- 36 Pictures from Blackpool, words from the departing editor
- 37 Back issues, Advertisements
- 38 News & Meetings, Advertisements
- 39 Advertisements
- 40 Green Ekco AD65

## The prodigal Editor

Due to circumstances involving gainful employment and a sizable reduction of spare time, Rob Chesters has decided to 'call it a day' regarding the editing of the BVWS Bulletin. This is not a problem for us as my involvement has been constant throughout Rob's tenure, (and previously as editor) I also have a new weapon in my Bulletin arsenal - Christine.

Christine is also a designer and has been my partner for ten years, she has kindly decided to give assistance in getting the future Bulletins designed, edited and completed to deadline. With a team of two in the same location the tasks involved will be greatly reduced.

All we ask of you is that new articles, letters etc. should be sent to:  
Carl Glover, 33 Rangers Square, London, SE10 8HR.  
Telephone/Fax: 020 8469 2904.  
Email: choris.b@virgin.net

May we all wish Robert continuing success in his new full-time lecturing career and in his Committee role as Bulletin Correspondent. Carl Glover

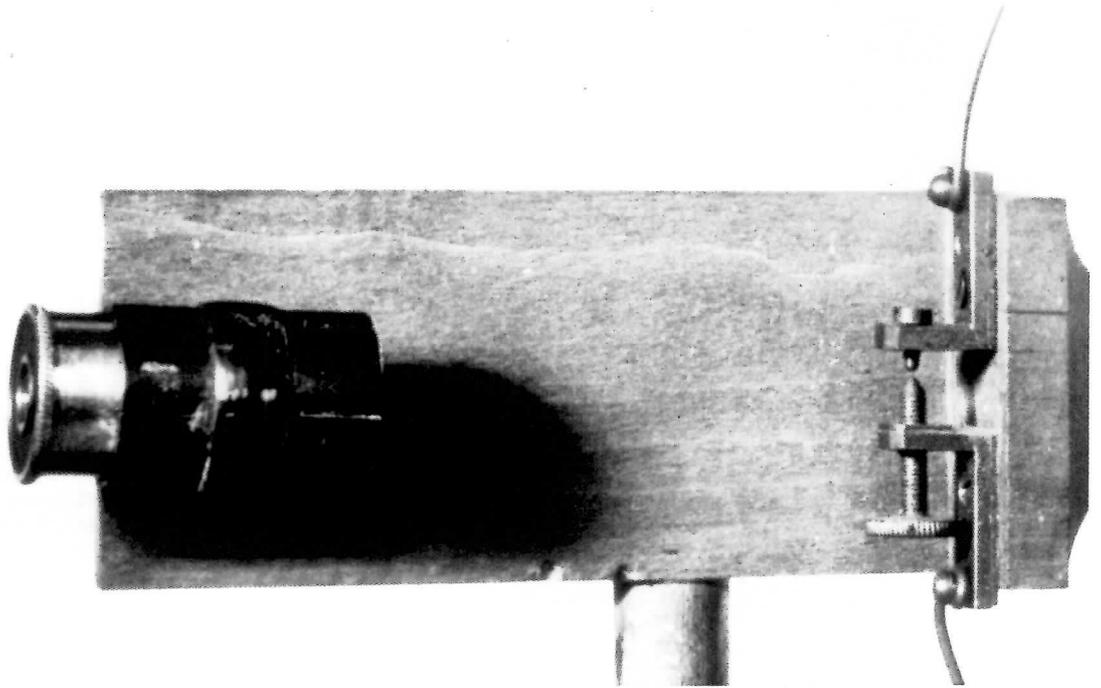


Below: Gerry Wells giving the answers to one of the quizzes at his garden party at the Vintage Wireless Museum in Dulwich.



# Message Received - Signal Hill Detectors of a Bygone Age

by Anthony Constable



1. A close up of the lens and micrometer screw spark detector used by Hertz on one of his loop receivers. (Deutsches Museum, Munich)

**The famous three-dot message sent from Poldhu in Cornwall to Signal Hill in Newfoundland was the culmination of a series of successful transmissions over ever increasing distances. Marconi's first significant demonstration took place in the presence of official observers from the Post Office, the War Office and the Admiralty on Salisbury Plain in September 1896 over a distance of much less than a mile.**

As we approach the centenary of Marconi's first transatlantic wireless transmission on 12th December 1901 it is of interest to look at a few of the historical developments which preceded it and, in particular, to trace the evolution of some of the Hertzian wave detectors that came into use before 1901. While the design of the transmitter was of great importance in generating a Morse signal of adequate strength, the detector situated on the other side of the Atlantic remains the most crucial element in successfully demonstrating the possibility of transatlantic wireless telegraphy.

The famous three-dot message sent from Poldhu in Cornwall to Signal Hill in Newfoundland was the culmination of a series of successful transmissions over ever increasing distances. Marconi's first significant demonstration took place in the presence of official observers from the Post Office, the War Office and the Admiralty on Salisbury Plain in September 1896 over a distance of much less than a mile. In the spring of 1897, again on Salisbury Plain, he achieved reliable communication up to a distance of about five miles. Marconi rapidly sought opportunities to extend the transmission range of his equipment far beyond what seemed at the time to be its logical limit.

By the time signals were received in 1899 at Chelmsford from as far away as Wimereux, near Boulogne in France, a distance of 84 miles, Marconi was ready to believe the earth's curvature would offer less of a hurdle than many theorists predicted. Further support for this belief came during the winter and summer of 1901 with successful pilot transmissions from Poldhu to Niton, Isle of Wight, and Crookhaven, County Cork, at distances of 186 and 225 miles respectively. For some curious reason Hertz's waves seemed able to travel over great distances hugging the earth's surface far more than could be expected from

diffraction alone. Under these circumstances, Marconi's growing ambition to span the Atlantic was not unreasonable though quite daring. He carefully planned to do so. And what a coup if he should succeed!

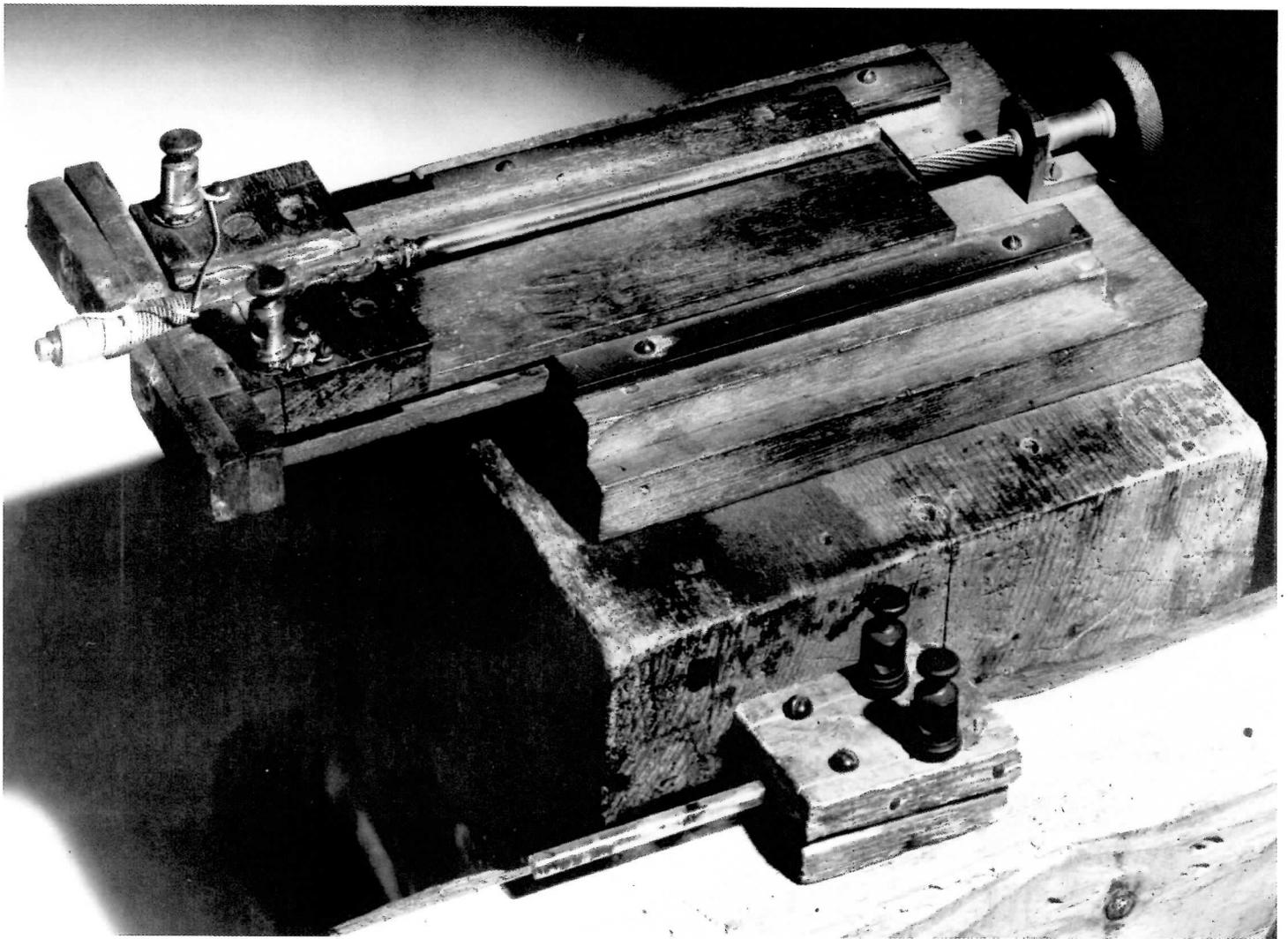
Any attempt would certainly require a high power transmitter but how could he expect to detect what must surely become a very weakened signal so far away? The great circle distance between Poldhu in Cornwall and Signal Hill in Newfoundland is 2130 statute miles, 1850 nautical miles or 3430 km.

A well made coherer was probably the most reliable detector available in the year 1901 when final preparations were being made for the transatlantic transmission of a Morse signal. The word 'coherer', as will be discussed below, was coined by Oliver Lodge to describe Eduard Branly's tube of iron filings and other 'bad contact' devices which responded to a spark discharge by a marked fall in electrical resistance.

But what other options were there and how had the history of detection so far unfolded? All serious experiments with freely propagating electromagnetic waves started with Heinrich Hertz in the late 1880's and he used the most primitive of all detectors, a tiny spark arising from the generation of a voltage in a receiving circuit in resonance with a transmitting circuit.

## **The Hertzian Detector**

When Hertz began his crucial experiments in 1886 to distinguish between Maxwell's ideas and the older ideas that were in vogue in continental Europe, no obvious instruments were available for his work. The vast number of electrical measuring devices that had grown up since Oersted, Faraday and Ampere were mostly designed to measure what went on inside electrical conductors. But Hertz, like Lodge, knew that to explore Maxwell's ideas it was necessary to measure



what was going on in the region of space outside the conductor, in the dielectric, when rapid electrical changes occurred in the conductors.

Electrostatic fields by themselves had been produced and investigated since the dawn of electrical science and every teaching institution had cabinets full of apparatus for demonstrating and measuring such static phenomena. But they also included high-voltage generators such as Wimshurst machines and Ruhmkorff coils for charging up Leyden jars and producing spark discharges that were anything but static. With some modifications, these would become the devices for producing oscillating electromagnetic fields propagating through space at the speed of light in accordance with Maxwell's equations. Light itself was, according to Maxwell, just such an oscillating field.

In order to investigate the extraordinary consequences of Maxwell's equations, that simple electrical circuits could emit a form of 'light', a completely new set of instruments would be necessary for the production, detection and measurement of this new form of radiation.

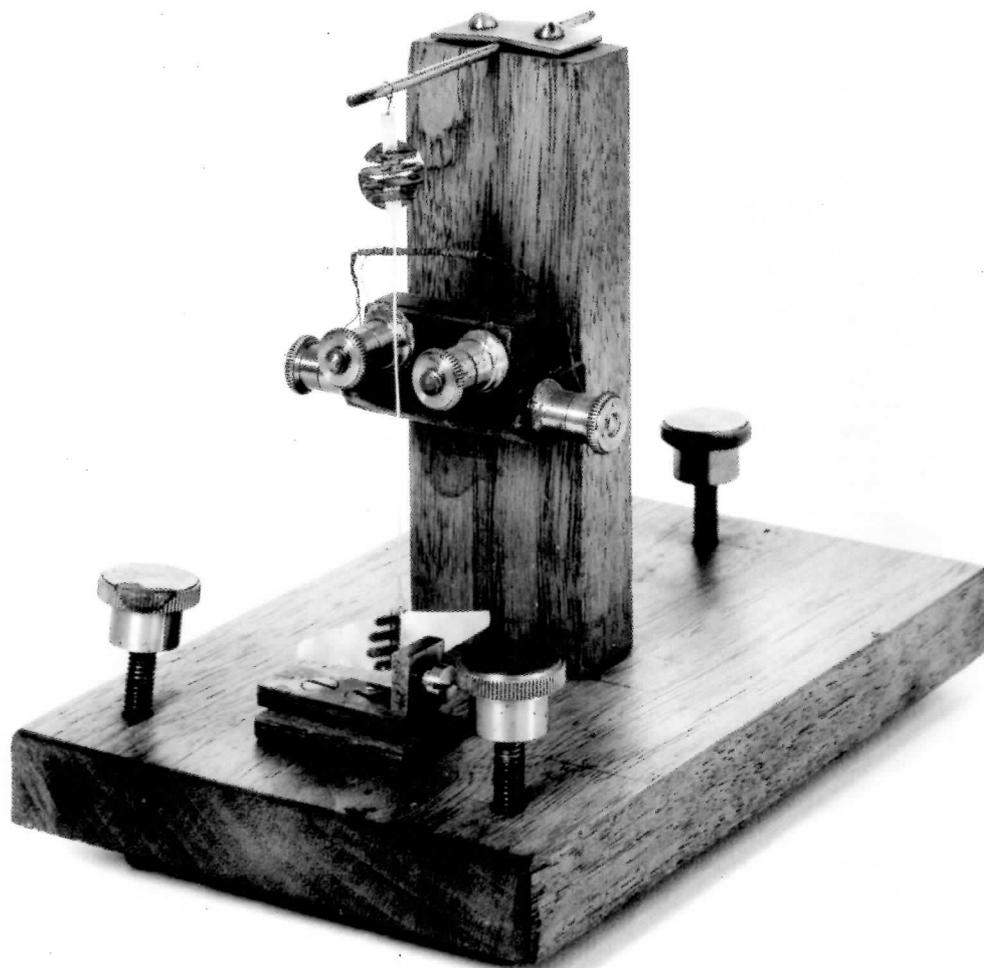
Oliver Lodge began familiarising himself with Maxwell's ideas on electricity (1) while on holiday in Heidelberg in 1876 (2) and began thinking about the methods of generating, detecting and measuring electromagnetic waves from about 1880. He was a convinced Maxwellian. The subject was brought to Hertz's attention in 1879 when the Berlin Academy of Sciences offered a prize for experimental research on the topic. But Hertz did not take up the offer and only came back to the now invalid prize problem in 1886 when it suddenly occurred to him how to go about it. When Hertz began this work he did so in a non-Maxwellian climate and set out simply to distinguish between Maxwell and older ideas. In the process he

slowly became a Maxwellian.

Lodge's apparatus came essentially from his science cabinet at Liverpool. With a few well understood devices such as Leyden jars, high voltage generators and spark gaps, he developed great skill in measuring the disturbances in the dielectric surrounding conductors. He developed his famous 'recoil kick' for quantifying experimental results and for measuring wavelengths. His apparatus was his measuring instrument. By 1888 Lodge knew the full significance of his own experimental observations to the ideas embodied in Maxwell's equations. However, his methods did not establish the existence of freely propagating electromagnetic waves such as Maxwell's equations seemed to embody and which G.F.Fitzgerald in Dublin, another Maxwellian, had predicted in 1882-3 (3).

Hertz's initial experimental beginnings also came from an old science cabinet in 1886. His predecessor at Karlsruhe had left behind a piece of apparatus called 'Knockenbauer spirals' with which sparks occurred in a secondary circuit in response to large voltage changes in a primary circuit. These sparks occurred even when the usual capacitors had been disconnected, thus generating sufficiently high frequencies that any resulting waves would be short enough to be accommodated within the confines of his laboratory. The two circuits were of similar dimensions and therefore in resonance. In one stroke, Hertz had moved from a position of helplessness in his long postponed task of investigating Maxwell's ideas and soon became in total command over all those strange phenomena which happened outside a conductor carrying a rapidly varying electric current. His only means of detecting the arrival of transmitted pulses in his receiving circuit was a very small spark gap which he equipped with a micrometer screw adjustment and a magnifying lens (Fig.1.).

2. Rutherford's magnetic detector. (Cavendish Laboratory, Cambridge) The detector coil is wound on a horizontal glass tube mounted on top of the wooden block and a stranded magnetised steel wire is placed in the tube. A magnetometer is positioned near the steel wire and a change of deflection is noted when a pulse of radiation is received. The small coil below is for remagnetising the steel wires.



**It is only necessary to repeat any one of Hertz's experiments to realise the enormous difficulty of using the spark detector. It was the first in a long line of more sensitive devices.**

After two years of systematic experiments he was finally able to produce and measure electromagnetic waves detached from the circuits which produced them and propagating freely through space. Like Lodge, the elegantly simple apparatus he made to create and detect the waves was inseparable from his measuring instruments. He could change the dimensions, orientations, separations and intervening medium of two independent electrical circuits and demonstrate conclusively that what happened in one circuit transmitted itself to another across the intervening space exactly in accordance with Maxwell's equations. His approach to the subject is an object lesson in good experimental design coupled with a sound theoretical understanding.

When Hertz confidently announced the successful production, detection and measurement of freely propagating electromagnetic waves travelling through space at the speed of light, he had put together a unique system of apparatus - the half wave dipole transmitter and the resonant loop or dipole receiver with micrometer spark gap - the essential features of all subsequent systems used for the production and measurement of what today we call radio waves, but which can be variously called electromagnetic waves, Maxwellian waves or Hertzian waves. The significance of these experimental results together with his acknowledged theoretical grasp of the subject ensured for Hertz a position of pre-eminence among those few select scientists whom we call 'Maxwellians' Lodge, Fitzgerald and Heaviside in particular.

The 1888 Hertzian experiments marked the very first occasion when electromagnetic waves of measured wavelength were knowingly produced in one electrical circuit, propagated across space and detected in another circuit of similar dimensions. The micrometer spark detector thus became the first Hertzian wave detector, made specifically for the purpose, at the very

dawn of the pre-history of early wireless.

All else could follow once Hertz had done this work, so much of which depended on his skilful use of the micrometer spark detector - the most finicky of all early detectors. This crude device, with its adjusting screw and magnifying lens, became not only a detector with which to observe a response; in Hertz's hands the response could also be quantified. It is only necessary to repeat any one of Hertz's experiments to realise the enormous difficulty of using the spark detector. It was the first in a long line of more sensitive devices.

The Hertzian spark detector was not capable of much technological development. In practice, it could only really be seen by one vigilant observer. However, it could be harnessed as a trigger for a Geissler tube or, as Fitzgerald showed in 1890, it could be made to produce a large deflection on a galvanometer (4). These adaptations made no fundamental improvement in the spark detector but certainly provided the means of demonstrating the act of detection to a large audience.

Other well known detectors began their history even before freely propagating radio waves were knowingly generated, detected and measured by Hertz.

#### **The Magnetic Detector**

As early as 1842 Joseph Henry used the magnetisation of a steel needle to detect the oscillating fields at a distance of thirty feet from a discharging Leyden jar and thus began the history of what would, sixty years later, be called the magnetic detector, or 'maggie'. A similar effect was used in 1895/6 when Ernest Rutherford carried out his well known early outdoor investigations in Cambridge with Hertzian waves of about 7 metre wavelength (5). He used a detector consisting of a magnetised steel needle placed in a coil of wire (Fig.2.) connected to a Hertzian dipole antenna. The needle was about 1 cm long and consisted of several very fine steel wires held together with shellac. The deflection of

a magnetometer was used to measure the degree of demagnetisation of the needle on the arrival of a pulse of radiation from the transmitter. The needle was then re-magnetised in a separate coil to await the arrival of the next pulse. This instrument was very sensitive and Rutherford had no difficulty transmitting Hertzian waves across the northern part of Cambridge from the Cavendish Laboratory to Park Parade, a distance of a little over half a mile.

The idea was taken a step further by E. Wilson in 1897. In his detector (Fig.3.), the demagnetisation caused an adjacent magnetometer to alter its orientation and then, acting as a relay, to switch on a re-magnetisation current to reset the detector to its standby condition. This was a most important development as it moved the fundamental principle a step closer to the practical detector it later became. The idea was filed under patent no. 30846 in 1897 by E. Wilson and C.J. Evans, Admiralty scientists, who designed the detector for use in the remote control of torpedoes and airships.

The Rutherford and Wilson detectors effectively worked by the 'degaussing' effect of a high frequency current in a receiver coil surrounding the magnetised needle. For obvious reasons, detectors based on this principle are sometimes called 'hysteresis' detectors (6).

Unlike Hertz's spark, the magnetic detector was capable of significant development. In 1900 Rutherford suggested to Erskine Murray (7) that a continuous iron band might be used for recording the received oscillations. Marconi engineers took this idea a stage further in 1902 and eventually produced the 'maggie' which served as one of the most successful detectors, particularly at sea, up to and throughout the first world war.

### The Microphone Detector

In 1879 David Hughes, while performing delicate measurements with his induction balance, traced some curious noises heard in a telephone to a bad electrical contact - an effect few modern experimentalists have not experienced! Instead of correcting the bad contact and continuing with his induction balance measurements, he chose to pursue the phenomenon by exchanging the intermittent bad contact with one reliably driven by a clockwork-motor. He then listened to its effects at distances up to 500 metres as he walked along Great Portland Street in London. He spoke of the effect as due to 'aerial conduction transmission'.

Hughes neither understood that he was detecting freely propagating electromagnetic waves nor was he able to convince the scientific community that the explanation of his observations required anything more elaborate than the well known Faraday's laws of electromagnetic induction. Coming as they did, well before Hertz, it is not surprising that Hughes' highly significant experiments were also poorly understood by William Crookes, George Stokes and William Preece, to name but three of the several distinguished members of the Royal Society who were invited to witness them.

Nevertheless, Hughes did quite a convincing job on Great Portland Street using a carbon microphone detector connected to a telephone ear-piece (8) to detect the as yet undiscovered Hertzian waves. His microphone consisted of a carbon rod in light contact with a bright steel needle which functioned as a form of self restoring coherer with rectifying properties; a complex detector. It is a coherer device because the loose carbon/metal contact comprises a dry joint which can jump from a high resistance to a low resistance state when disturbed by an electrical voltage. It also has a rectifying action because of oxide layers on the steel surface and is therefore well suited to actuating a telephone. His receiver thus combined an inefficient diode detector, or demodulator, with the great sensitivity of the human ear. He also used a detector consisting of a steel hook in contact with a well oxidised loop of copper sealed inside a bottle, probably an even better diode detector. In the detailed account obtained from

Hughes in 1899 by John Munro (see ref.8.) Hughes reported that this detector was, "...*extremely sensitive but easily deranged*".

The microphone detector is hardly a separate detector classification. In the guise of a coherer it would be superseded by better designs but ultimately become a historical curiosity. It would however remain an important precursor to the technologically successful diode.

### The Diode Detector

The basic characteristics of the solid state diode became available when Ferdinand Braun in Germany wrote his well known paper on the subject in 1874 (9). Thus the ground was well prepared long before its rectifying action would be used to separate low frequency amplitude modulations from high frequency carrier waves and so become a true Hertzian wave detector. Although the diode never formally functioned in this capacity before its appearance in the early years of the next century, it probably made its debut unwittingly on several occasions when freak reception was reported and, as will be discussed later, it was used to receive the famous three-dot transmission across the Atlantic in December 1901. Many bad-contact detectors, or coherers, were made in the last three years of the 1890's and some of them also had a diode action. This would include most of those which consisted of two metals in loose contact, such as the iron spiral with one end lightly touching an aluminium plate devised by Lodge and Fitzgerald in 1894 (Fig.4.) and the tripod resting on a flat plate later used by Branly.

As indicated in the previous section, the diode was used unknowingly by David Hughes in 1879. It seems that, on that summarily dismissed pioneer occasion, the rectifying action of his microphone detector, linked to a telephone ear-piece was really an untuned forerunner of the crystal receivers of some 27 years later.

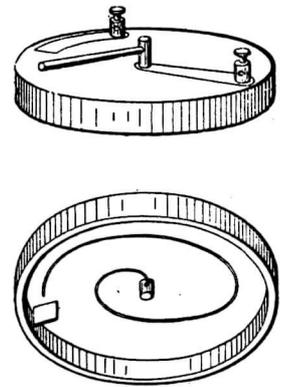
The diode detector would have to wait some years to realise its full technological promise as the essential element for demodulating an r.f. signal. The Fleming thermionic diode would not arrive on the scene until 1904 but its prototype made a brief appearance many years before in the form of the Edison effect of 1884.

### The Filings Coherer

The filings coherer has its own well-defined history and depends for its action on the dry joint - it is a 'bad contact device'. A bad contact can exhibit a high electrical resistance but can also be excited into a low resistance state by the application of a DC voltage above a critical threshold, possibly by breaking down oxide layers. The same effect can be achieved when a high frequency oscillating voltage is intercepted by an antenna connected to the bad contact device; thus it can function as a Hertzian-wave detector. The coherer is a bistable voltage-actuated switch requiring a small voltage to reduce its resistance and a mechanical shock to restore it to a high resistance state. In use it is a sensitive voltage actuated relay and, when connected to a conventional current actuated relay, is able to operate electric bells, Morse inkers and any other high current electrical devices.

This coherer principle has a long pre-history. Before Hertzian waves arrived it was observed in various guises by P. S. Munk (1835), S. A. Varley (1852), David Hughes (1879), Calzecchi-Onesti (1884) and others. At the dawn of the Hertzian era it was also re-discovered by Oliver Lodge (1889) and Edward Branly (1890) but neither of these gentlemen used their observations until some years later in a true Hertzian wave transmitter/receiver system.

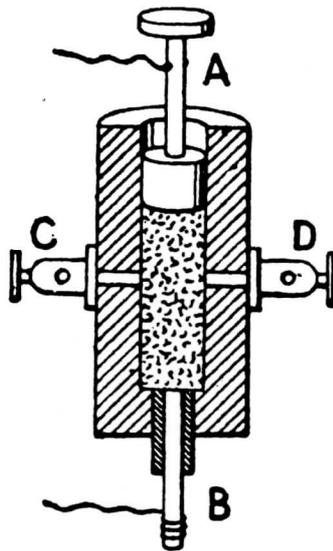
Lodge first observed the effect in 1889 when two slightly separated metal balls made electrical contact as a nearby Leyden jar was discharged. Although he reported his observation at the time, he thought it, "a little fact" and, "not immediately important". This metal ball device is not a filings coherer, but it certainly exhibits



4. The Lodge-FitzGerald point contact spiral detector which Lodge named a coherer. (Illustration from Lodge's lecture, ref. 13). The spiral spring rests lightly against an aluminium plate and the pressure can be adjusted with the handle.

**Many bad-contact detectors, or coherers, were made in the last three years of the 1890's and some of them also had a diode action. This would include most of those which consisted of two metals in loose contact, such as the iron spiral with one end lightly touching an aluminium plate devised by Lodge and FitzGerald in 1894 (Fig.4.) and the tripod resting on a flat plate later used by Branly.**

5. Branly's original diagram of his experimental filings tube.  
(Illustration from Branly's 1891 paper, Ref. 10)



**Several of the original coherers used by these pioneers have survived and some are to be found at the Science Museum, London.**

the dry joint characteristic extremely well in response to local spark discharges which were generating the electromagnetic waves elucidated by Hertz a year earlier. In the 1892 edition of his *Modern Views of Electricity*, Lodge used the word 'cohering' in an effort to explain the phenomenon.

Eduard Branly discovered the bad contact effect in 1890 in the form of a tube of metal filings (Fig.5.) in the vicinity of a spark discharge (10). Thus he, like Lodge, observed the device responding to a nearby source of Hertzian waves. He did not refer to Hertzian waves in his original publications in 1891 and he certainly did not propose the use of his filings tube as a Hertzian wave detector. The suggestion to do so was left to George Forbes in 1892 (11). Branly's papers simply described his scientific observations and there was no need to suggest an application for the device at this stage nor to give it a name. He used many different configurations, some of which involved glass or ebonite tubes with metallic filings which he simply called *les tubes à limailles*, (*filings tubes*).

It is not certain when Branly began calling his tube a radio-conductor but the word did not appear in his original publications. He may well have started using it in the early 1890's simply to mean that the conduction of his tube was affected by unspecified radiations from a discharging spark. It only later came to mean a detector in any well defined Hertzian sense. The word has sometimes been cited as the first use of the term 'radio'. This suggestion cannot be taken too seriously as it had little to do with its later meaning as a substitute for the phrase 'wireless receiver' or 'wireless communication'. The term was already used in such devices as Crooke's 'radiometer' (1875), or Boys' 'radio-micrometer' (1887) to which Branly's use bears a closer relationship than it does to such terms as 'radio waves', 'radio set' or 'Radio Luxemburg'! However, Branly's '*radioconducteur*' is a well chosen word and would have served very well had the tube not been adopted by Lodge and eventually called a coherer.

Oliver Lodge only encountered the Branly tube in 1893 when it came to his attention by a series of well documented events culminating in a paper by G.M.Minchin (12) describing his repetition of some of Branly's observations and comparing them with his own impulsion devices. Lodge acquired this paper before publication and added his own note comparing the filings tube with other observations including his own of 1889 referred to above. In this note he again accounts for the effect with the words 'cohesion' or 'adhesion'. Soon after, Lodge named his spiral detector (Fig.4.) a coherer and the language acquired a new word for the

bad-contact device. Coherer is a name which stuck, you might say.

The coherer was first properly used as a Hertzian wave detector when Lodge gave his seminal demonstration lecture at the Royal Institution on 1st June 1894 in memory of Hertz's untimely death on 1st January of that year. This crucial lecture brought the coherer to the attention of the world when the details appeared in *The Electrician* (13).

Thus the bad-contact, the bane of the radio technologist of later years, now became the crucial element in the further progress of Hertzian waves towards wireless telegraphy.

Lodge's coherer, in its most memorable form, consisted of metal turnings in a simple glass tube, not unlike some of Branly's original tubes. In 1895 J.C.Bose in Calcutta used a set of steel springs laid side by side inside a rectangular ebonite box and he used this detector to demonstrate the optical properties of millimeter waves (14). In 1895 the Russian naval officer, Alexander Popov, began using a glass tube of metal filings very similar to some of Branly's original tubes and he used it initially to detect and record great bursts of radiation from distant lightning (15). Marconi in Italy paid a lot of attention to developing the Branly tube or Lodge coherer into a reliable Hertzian wave detector which, on his arrival in England in 1896, consisted of fine metallic particles in a sealed and partially evacuated glass tube. All these devices worked in the same way, all were bi-stable bad-contact detectors.

The filings coherer needed to be restored to its high resistance state after responding to Hertzian waves with a small mechanical shock. Both manual and clockwork restoration was used by Lodge. Popov used the bell ringing action of the signal itself to restore (or de-cohere) his detector and Marconi used the same idea.

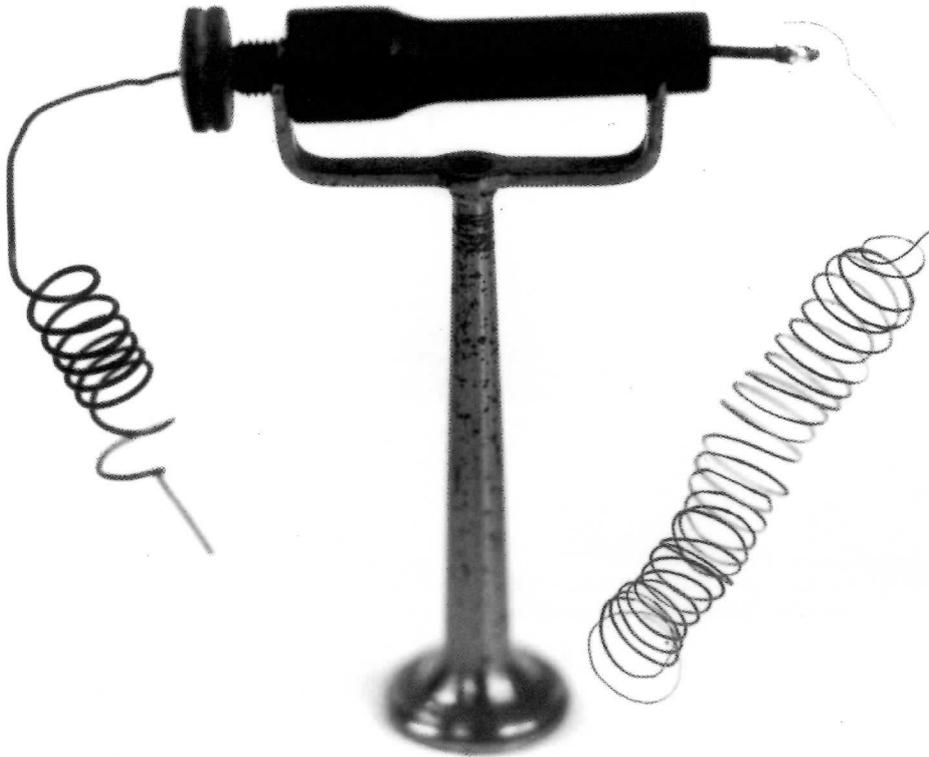
A British Naval Captain, Henry Jackson, heard of the new developments when he read about Bose's work. Jackson had long thought of the idea of using Hertzian waves as a signalling system to achieve his aim of communication at sea, and now realised it might be possible. At first Jackson used a near replica of Bose's equipment including the spring coherer in December 1895. After reading of Lodge's work in 1896, he made further developments to his equipment and first began successfully transmitting and receiving Morse signals across the deck of HMS Defiance in August 1896 (16). He later developed other coherers which used fine metallic filings but which retained the original ebonite body - presumably thought to be less fragile than glass for Navy use.

Several of the original coherers used by these pioneers have survived and some are to be found at the Science Museum, London. One of them, donated to the Museum in 1923 by the then Admiral Jackson, was brought out of storage in 1984 when there was a joint meeting of BVWS and AWA. It is a small ebonite tube mounted precariously on a delicate brass stand (Fig.6.). Exactly when or where it was used by Captain Jackson in the 1890's is not at all certain. It is quite unlike the very robust ebonite coherer which can be seen on the remains of a Jackson receiver at HMS Collingwood (17). When Jackson gave this small ebonite coherer to the museum in 1923 his accompanying note claimed he had used it in 1897. It was probably used as a laboratory or demonstration device rather than as part of a Navy receiver. Another of these detectors has recently come to light was sold at Christies, London, for £1000.

Jackson also donated a double detector consisting of a piece of ebonite with two parallel holes, each with a pair of electrodes (Fig.7.). Any metallic filings there might have been are no longer present. The double detector makes good sense as a second one is always immediately available to fall back on when the one in use loses its sensitivity. It is possible that this double detector may have seen service aboard ship at some time during the last two or three years of the nineteenth century when the Royal Navy was making its own

6. Jackson's ebonite filings coherer. (Science Museum, London. Author's photograph)

This detector has an ebonite body with one fixed electrode and one adjustable with a thumb screw.



equipment under Jackson's supervision and before it began hiring Marconi equipment in 1900 (18)

Although the coherer had no potential for technological development, numerous forms appeared during the final years of the nineteenth century and even more elaborate varieties in the first decade of the twentieth with contributions from Jervis Smith, Blondel, Ferrié, Lodge and many others. Most were simple variations on a theme, the bad contact between two or more metallic surfaces. Some were self-restoring and some operated in the diode mode. They all had inherently unreliable operating characteristics and the capacitance was highly variable. In its high resistance state the well-made filings coherer had a sufficiently high Q to allow it to function moderately well in the tuned circuits then in use.

#### The Italian Navy Detector

A new type of coherer appeared on the scene between 1899 and 1901 which consisted of a small drop of mercury between two electrodes. This detector was a self-restoring coherer, it automatically reset to its high resistance state. Like many of the other two metal detectors, it also operated in a diode mode and could therefore demodulate a signal. Its resistance swing was much smaller than the filings coherer and its characteristics were no less variable. However, like Hughes' microphone detector, it could be operated with a telephone in an aerial line with the one advantage of having the great sensitivity of the human ear as part of the detector system.

This detector is generally referred to as the Italian Navy coherer which perhaps conceals some of the historical facts regarding its true history. The details of the raging controversy regarding its origins which appeared in the pages of the Saturday Review and The Times in 1902 were admirably summarised by Dr Vivian Phillips in 1993 (19). In brief, Professor Tommasini of Geneva seems to have been the first to investigate the device but he only made passing mention of it in the May 1899 issue of Comptes Rendus. A low ranking

signalman, Paolo Castelli, made and used one consisting of a drop of mercury between two steel or two carbon electrodes during the famous Italian Navy trials of Marconi's apparatus supervised by Captain Quintino Bonhomo in Livorno, Italy between September 1900 and May 1901. Lieutenant Luigi Solari had one made with one steel and one carbon electrode which he brought to England and gave to Marconi in the summer of 1901 with the compliments of the Italian Navy and supported the idea that Marconi should take out a patent for it in his own name. This he did on 10th September 1901, patent no. 18105. In July 1902, Marconi's application was amended to become, "...an invention communicated to him from abroad by the Marquis Luigi Solari of Italy".

The controversy which followed Marconi's use of the Tommasini-Castelli-Solari coherer for receiving the famous three-dot signal across the Atlantic in December 1901 brought to light its true origin and, subsequently, it has always been conveniently and officially referred to as the Italian Navy coherer.

While having some of the bi-stable characteristics of a filings coherer, this detector also functions as a diode rectifier due, no doubt, to oxide films on the mercury and steel surfaces. Unless very carefully set up, it has a tendency to flip out of the diode mode of operation. The characteristics of this detector have been investigated by Phillips (20) from which it can be seen that, as long as it was functioning in the diode mode and in combination with the telephone and human ear, it would convert weak signals into a 'tone' characteristic of the transmitter. When Castelli's device was used in February 1901, Bonomo reported that he could, "...accurately distinguish the rhythm of the oscillator at that station (Palmira)..." (21). These words suggest it was operating as a diode.

In setting about his transatlantic trials, Marconi probably started by considering only his standard filings coherer but, fortunately, his gadget bag also included the Italian Navy coherer.

Ironically, even Tommasini may not have been the first

**Although the coherer had no potential for technological development, numerous forms appeared during the final years of the nineteenth century and even more elaborate varieties in the first decade of the twentieth with contributions from Jervis Smith, Blondel, Ferrié, Lodge and many others.**

One electrode has been removed.



**There is no really satisfactory way of re-running the Poldhu-Newfoundland transmission in all its pristine originality in order to further clarify our thoughts on the subject.**

to investigate the mercury steel coherer. It seems that in 1879 David Hughes also did and found it, "...sensitive, but very troublesome" (22).

Like all other coherers, the Italian Navy detector had no potential for development and would soon become a mere historical curiosity.

#### **Marconi's three-dot message on 12th December 1901**

The events leading up to this important breakthrough have been written about over and over again and need not be repeated here in any detail. Those interested in the subject will undoubtedly have read Gordon Bussey's excellent book on the subject (23). This work summarises the historical facts and has the great merit of being well written, copiously illustrated and very attractively produced.

When Marconi sailed to Newfoundland in November 1901, he took with him whatever he thought necessary to receive a very faint signal sent out from Poldhu in Cornwall. Exactly what he and his assistant, George Kemp, had in their baggage apart from the regular jiggers, coherers, sounder/tappers and ink recorders, we may never know, but there would certainly have been all sorts of unspecified bits including more than one version of the Italian Navy coherer. The pre-arranged signal was three dots - and three dots Marconi intended to receive, so he would not have gone unprepared.

The Italian Navy coherer shown in Fig.8 was loaned to the London Science Museum in 1924 by G.S. Kemp and in 1995 it was returned to Marconi plc (formerly GEC) at Chelmsford. It is believed to be the coherer used by Marconi to receive the three-dot message at Signal Hill on 12th December 1901. To quote the museum inventory (24), "...Marconi soon found that it was impossible to make use of his standard coherer receiver... He accordingly tried various types of self-restoring coherers, and obtained signals with several, one of which is here shown..." As George Kemp was Marconi's assistant on that historic occasion this attribution is almost certainly correct but the words do not clearly state that it was the crucial detector on which the signal was first heard. The Science Museum inventory curiously describes it as an *anti-coherer* - a device whose resistance switches from low to high when a signal is detected. This may have been a typist's error for *auto-coherer* - another name for a self-restoring coherer.

The same detector, or one very like it, is illustrated in Blake (25) who says it is, "...a photograph of the actual detector of this type used by Marconi for the transatlantic receptions in 1901". It is not clear from this

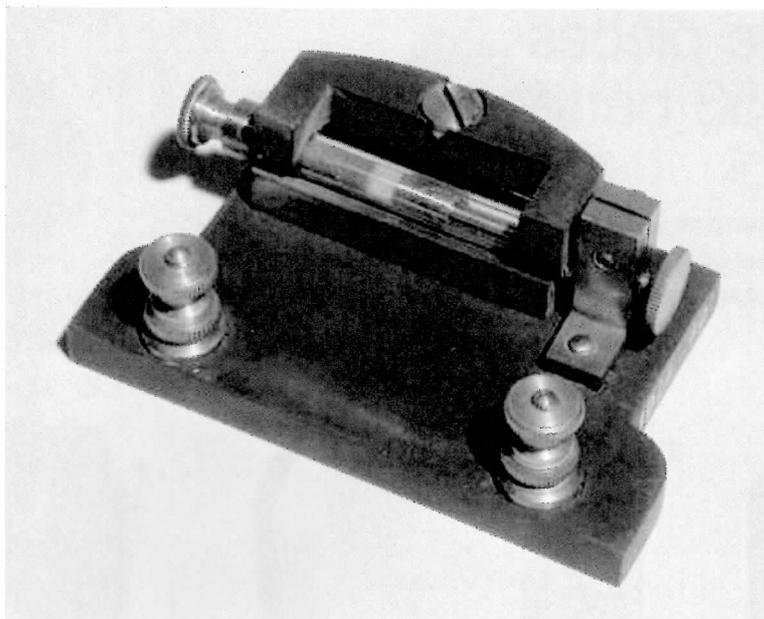
wording whether the illustrated detector is the *actual* one used or simply one of the *same type*, but it is not unusual for Blake's wording to be vague or ambiguous. Blake, writing in 1926, also says the detector was in the possession of the Institution of Electrical Engineers. Perhaps, at the time, it was there on loan from the Science Museum. It is certain that no such detector is now at the IEE.

In summary, the detector shown in Fig. 8 was certainly used at Signal Hill in 1901 and, on balance, it may reasonably be assumed that it is the actual detector with which Marconi first recognised the three-dot message.

Three dots may seem a poor sort of signal with which to inaugurate such a very important event but there was much sense in so doing. The transmitter, designed by Ambrose Fleming of University College, London, used an alternator with a power output of up to 25 kW at 2000 volts feeding a pair of transformers, condensers and spark-gap to produce a nominal wavelength of 350-375 metres (about 800 kHz) but rich in harmonics. Although Fleming devised a satisfactory way of keying the 2000 volt supply, it was still necessary to avoid using dashes to prevent arcing and excessive wear of the key contacts. It is also true that three dots in a row, sent repeatedly, constitutes a very distinctive signal and may well have been more readily distinguished from atmospheric interference than would a more elaborate message containing dots and dashes. These ideas are also referred to on p.48 of Bussey's book (23) and by Leggatt (26).

There is no really satisfactory way of re-running the Poldhu-Newfoundland transmission in all its pristine originality in order to further clarify our thoughts on the subject. The old radio-silent world of 1901 has for ever disappeared. But it is possible to subject the whole matter to a certain degree of theoretical analysis and come up with a result completely in accord with Marconi's experiences on that important day. Reception of the three-dot message at times when most of the route was in full daylight may remain puzzling but it is hardly necessary to invoke freak conditions as a reason for success. The average transmitter power may have been low but the spark pulse power could have been 20,000 times higher (27); all tuning may have been dispensed with but all the better to hear whatever harmonics could bridge the ocean; the coherer was dispensed with but it was replaced with a semiconductor diode which, in combination with the sensitive human ear, was better suited to the conditions than a filings coherer and Morse ink.

The Poldhu/Newfoundland experience is firmly embedded in human history no matter how we analyse



8. Italian Navy detector. (Marconi plc)  
This detector is believed to be the one Marconi was using when he first heard the three-dot message at Signal Hill, Newfoundland on 12th December 1901.

and re-analyse the details of the transmitter, the receiver and the signal. Marconi's achievement of transatlantic communication was truly fantastic. His was a mixture of youthful enthusiasm, motivation and audacity in the face of scientific doubt, a complete lack of theoretical knowledge of long distant transmissions yet utter faith in the possibility of success. All comprise a unique combination in the history of communications. Marconi also came out a clear winner in a race in which there was only one contestant. There were many others prepared to nobble the runner after the race was won, but there was only one runner and only one result. Less than three months after the three-dot message, by the end of February 1902, the reality of transatlantic communication was clearly demonstrated aboard the SS Philadelphia by repeating the three-dot message up to 2100 miles and full sentence transmissions up to a distance of 1550 miles (23).

The conditions in Newfoundland in December 1901 were not at all ideal and were more than sufficient to deter the faint hearted. Marconi was persistent and after experiencing all the difficulties nature could throw at him, he threw all caution to the wind, did away with tuned circuits, beautifully engineered filings coherers, sounders, decoherers and Morse inkers and reverted to the combination of the Italian Navy coherer, a telephone and the human ear an almost exact repeat of the simple method long ago pioneered by David Hughes and one which finally allowed him to hear Poldhu, if not loud and clear, at least faint but distinct.

#### Acknowledgements

The author is most grateful to the Deutches Museum, Munich, the Cavendish Laboratory, Cambridge, the Science Museum, London and Marconi plc for providing the photographs used to illustrate this article.

#### References

1. Maxwell, J.C., *Treatise on Electricity and Magnetism*. Oxford 1873 (Dover edition 1954)
2. Lodge, Oliver, *Past Years*, Scribner 1932 p.124
3. Fitzgerald, G.F., *On the Possibility of Originating Wave Disturbances in the Ether by Means of Electric Forces-Corrections and Additions*. 1882 and *On the Possibility of Producing Electromagnetic Disturbances of Comparatively Short Wavelengths*, 1883. See: *The Writings of G.F.Fitzgerald*. Ed. J.Larmor, Dublin U.P., 1902. p.99 and p. 129.
4. Fitzgerald, G.F., *Electromagnetic Radiation*. Royal Institution Discourse 21, March 1890. See: *The Writings of G.F.Fitzgerald*. Ed. J.Larmor, Dublin U.P.,

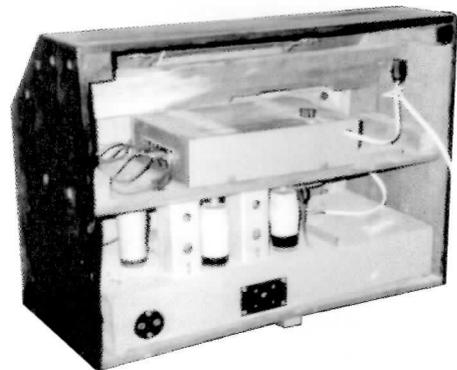
1902. p.267-268.
5. Rutherford, E., *A Magnetic Detector of Electrical Waves and Some of its Applications*. Phil.Trans. 1897: **89**, pp 1-24
6. Phillips, V.J., *Early Radio Wave Detectors*. Peregrinus 1980. Ch. 5.
7. Erskine-Murray, J., *A Handbook of Wireless Telegraphy*. Crosby 1907 p.96
8. Fahie, J.J., *A History of Wireless Telegraphy*. Blackwood 1899. On p.306 of the appendix of the 3rd edition (1902) Fahie reproduces a detailed description of this 1879 work reported to him by John Munro after interviewing Hughes in 1899.
9. Constable, A.R., *Ferdinand Braun, Pioneer of Wireless Telegraphy*, BVWS Bulletin 1996: **21**, No.3, pp 24-26
10. Branly, E., *Variations in the conductivity under electrical influence*. Delivered to the Academy of Science 24th November 1890. Published in *La Lumiere Electrique*: 1891: **40**, pp 301, 506. Translated version in *The Electrician* 1891: **27**, pp 221-222 & 448-449.
11. Forbes, G., (Question following Dawson Turner's demonstration of Branly tube). British Association Meeting, Edinburgh, September 1892.
12. Minchin, G.M., *The Actions of Electromagnetic Radiations on Films Containing Metallic Powders*. Phil.Mag., 1894: Series 5. **37**, pp 90-94.
13. Lodge, O., *The Work of Hertz and Some of His Successors*. *The Electrician*: 1894: **32**, pp 153-155, 186-190, 204-205. Also reprinted in book form under the same title, *The Electrician* 1897.
14. Bose, J.C., *On Polarisation of Electric Rays by Double Refracting Crystals*. Asiatic Soc. Bengal May 1895. In *Collected Physical Papers of Sir J.C.Bose*. Longmans 1926. Illustration of coherer on p. 6.
15. Popov,A., An Instrument for Detecting and Registering Electrical Oscillations. *Zh.Russ.Fiz.Khim, Obshchestva (Physics Pt 1.)* 1896: **28**, pp 1-14.
16. Pocock, R.F. and Garratt, G.R.M., *The Origins of Marine Radio*. HMSO 1972 p.4.
17. Constable, A.R., *Henry Jackson, Pioneer of Wireless Communication*. BVWS Bulletin, 2000: **25** No.1. Illustrations on pp. 22 and 24.
18. Pocock, R.F. and Garratt, G.R.M., Ref.16 p. 20-22.
19. Phillips, V., *The 'Italian Navy Coherer' Affair: a Turn-of-the-Century Scandal*. Proc. IEE 140 No.3 1993 pp175-185
20. Phillips, V., Ref 19 pp.182-3
21. Phillips, V., Ref 19 p. 177
22. Fahie, J.J., Ref 8 p.314
23. Bussey, G., *Marconi's Atlantic Leap*. Marconi, 2001.
24. Denman, R.P.G., *Catalogue of the Collections in the Science Museum. Electrical Communication, II Wireless Telegraphy and Telephony*. (1925) p.20. (Item 18, incorrectly listed as Anti-coherer).
25. Blake, G.G., *History of Radio Telegraphy and Telephony*. Chapman and Hall. 1928. p.71.
26. Leggatt, P., *Marconi's 1901 Transatlantic Transmission*. BVWS Bulletin 1990. **15**, p.5.
27. Garratt, G. R. M., *The Poldhu story - fact or fiction?* *The Short Wave Magazine* XXXV. Page 475-6

# Picking up the pieces

## The EKCO B53 battery receiver

by Graham Dawson

**Ekco made many attractive bakelite cased radios over a period of 40 years, but one of the least well known has to be the B53 of 1947, which is not even shown in 'Radio! Radio!'**



It was a 4 valve table radio using an accumulator and HT battery and to the best of my knowledge was never made in a mains powered version (it was supplied as the A44 AC mains set - ed.). It used Mazda octal 2 volt valves developed for military service during the second world war, which were both rugged and of good performance. With MW, LW, Short wave and Trawler band tuning, the set appealed to people living in the country where no electricity was available, and overseas stations and listening to shipping news was part of the daily routine.

I acquired one in about 1954, when a relative of a friend of mine dropped the set while carrying it from one room to another. The cabinet shattered into a dozen pieces, and the accumulator spilled acid everywhere, so when told by her local radio dealer that it was not economic to repair, she decided to throw it out. My friend and I discovered it in her garden shed, and she gave us the remains to play with. In fact it turned out that the speaker was not damaged, nor the dial glass, by some miracle, and the knobs when removed released the last bit of broken front panel. We hosed off the traces of acid and took the bits home. Fortunately my uncle had a 2 volt battery set powered by a mains unit marketed by the Radio Supply Company in Leeds. He had recently had electricity installed, and bought the converter to run his Alba from the mains. I persuaded him to let me borrow the converter one weekend, so I could try the Ekco and attempt repairs.

After connecting everything together and switching on, to my utter amazement it played the Light programme loud and clear on 1500 meters. With a little adjustment to the wavechange switch, all bands worked with surprising selectivity and sensitivity, and I had a radio that was better than the family Pye in the living room. There was just one snag; no cabinet, and I needed a power unit. I returned the RSC supply to my uncle, who gave me 5 shillings towards building my own! A replacement cabinet was out of the question, so I decided to build a wooden one to house the chassis. A friendly builder nearby gave me some planks of thin pine of sufficient size to assemble a replica cabinet in wood.

My woodworking skills at the time were limited (and still are) but spurred on by the thought of a smart new radio in my bedroom, I took time and trouble to make as good a job as I could. I had of course no idea of the dimensions of the original cabinet as most of it had been thrown away before I ever saw the set. But the

position of the tuning scale was critical and was high up on the sloping front of the top part of the cabinet, the pointer running along a track supported by brackets and driven by a long cord from the tuning capacitor drum. The set boasted flywheel tuning to overcome the friction of all those pulleys.

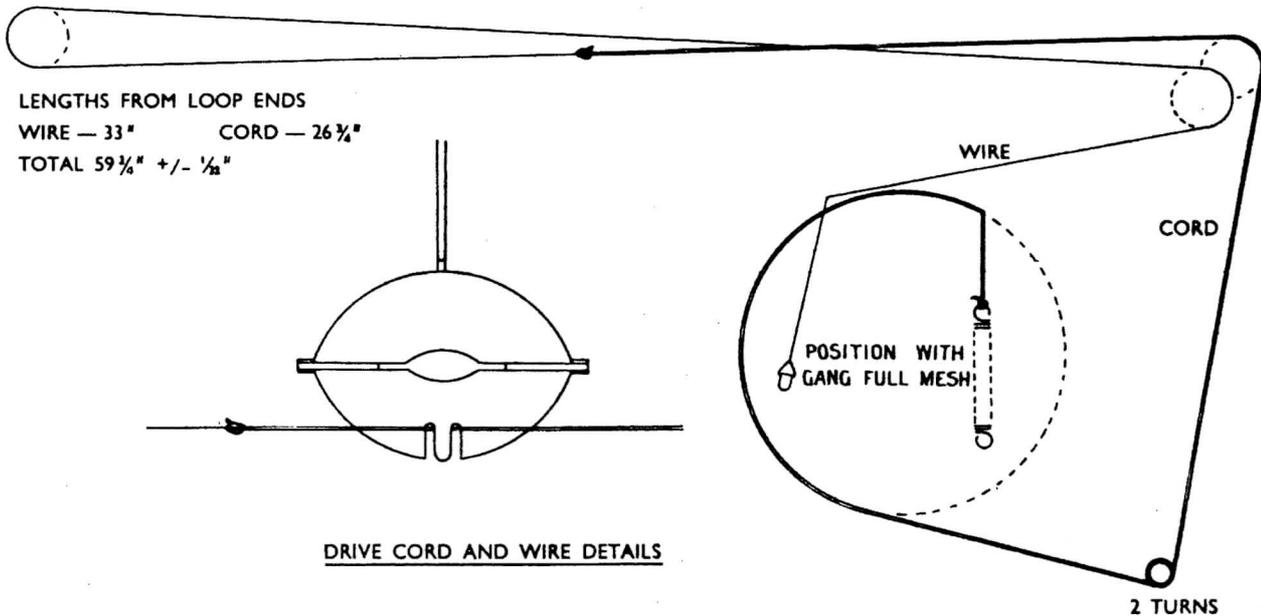
My cabinet was built on a trial and error system, cutting the shape to fit, until finally it could be glued and screwed together. I will not bother with the finer points of the final design, but it looked reasonably presentable and incorporated a shelf to take the power supply, when I could afford to buy it. Only recently did I discover that the shelf was an original design feature, to take the HT battery, while the accumulator stood on a plywood block glued to the chassis.

Having fitted the chassis into its newly stained and varnished cabinet, attention turned to building the power supply. I seem to remember that the kit of parts from RSC was 47/6 plus postage, which was a lot of money to me at the time. However over a period of about 3 months, with a loan from my mother, I raised enough to send off for the parts, which duly arrived ready for weekend construction. It was not too difficult to put together, but in common with most kits at this time, the tags and terminals of most components needed cleaning before solder would flow properly. The HT supply was approximately 120 volts, depending on load, and the 2 Volt LT needed loading with resistance to make it 2 volts when supplying the filaments of the set in question, since it was designed to run at about 1.5 amps. This was slightly more difficult to achieve without an accurate meter, so I took the set to a friend who had an AVO 8, and we added resistances until it was about 2.1 volts.

In spite of all the physical abuse directed at the set during the cabinet construction phase, it seemed to work really well on a good aerial, proving how well made Ekco sets were, and how rugged the Mazda valves of that type were; hence the reason they had been used in military equipment. I used the set daily for the next 5 years or so, and it has been used intermittently ever since. The problem was, I had no idea of the model number of the set, since there was nothing marked on the chassis. Of course back in the fifties an Ekco dealer would have told me, but I never thought to ask anyone then!

It had always been an ambition of mine, since starting a modest collection of old radios, to try and acquire the proper cabinet for the Ekco and put it back to its

**It had always been an ambition of mine, since starting a modest collection of old radios, to try and acquire the proper cabinet for the Ekco and put it back to its original condition. This was greatly hampered by not knowing the model, and then I received the BVWS CD of old circuits.**



original condition. This was greatly hampered by not knowing the model, and then I received the BVWS CD of old circuits, and I went through the index to see what Ekco sets there were. I guessed at B for battery receiver and tried B53 as a start. To my surprise the picture on the service sheet was my radio, so at long last I knew what I was looking for. I sent off an advert there and then to the Bulletin, asking if anyone had a cabinet, or set, they were willing to sell. Again to my delight shortly after publication I had a call from a gentleman in Yorkshire, who had recently bought one at Harpenden and was willing to sell. I had been on the lookout for years and never seen one, so of course it appeared one of the days I didn't go.

I won't bother with the story of how it got from Leeds to London, but just say that when it arrived it was original and complete, except for a hole cut in the cabinet near the scale. What the purpose of this hole was I do not know; possibly some additional mains supply switch.

Anyway when I got it home I took it all apart and the chassis was in nice clean condition. I had been told it worked, so it was no surprise to find sounds came out when I connected a power source. This was not the original RSC power pack, but a modern high tech regulated job which I built for running such sets a couple

of years ago. However it was a feeble, distorted sound which emerged, in contrast to the one in my home made cabinet. Now here is the interesting point. Both these sets were the same age, and in broadly similar condition, but mine had been used regularly for 50 years, while the other was probably not used for the last thirty.

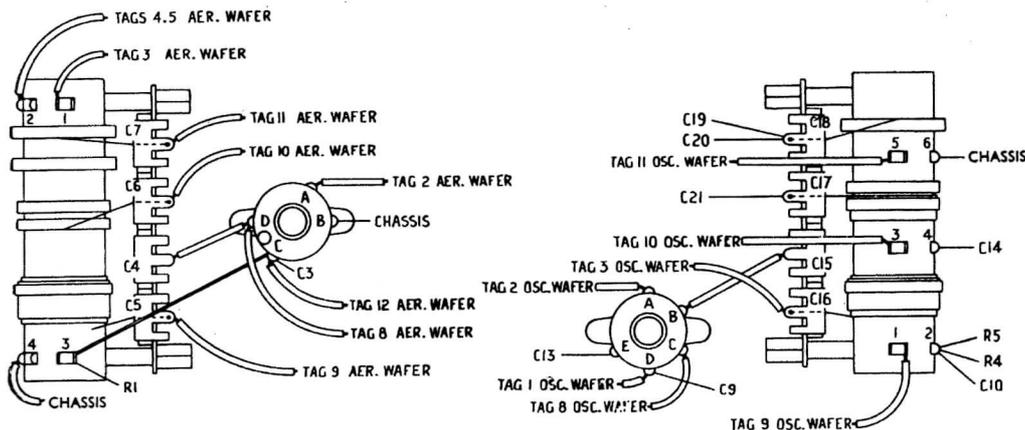
The paper capacitors in mine were perfect, while every one in the new acquisition was leaky, some down to as little as 10Kohms. After replacing every paper and electrolytic capacitor in the set, it worked much better, and fitting a new QP25 output valve cured the distortion and doubled the volume. I then aligned the set according to the service sheet instructions, which improved it some more, but still it does not perform as well as my old chassis. All the valves have been tested and are in good shape so either my old one is an above average example, or the new one is below average.

Since the "new" set was a complete example, I decided to keep it as bought, and have cleaned it up, repainted the dial surround, and filled in the hole where the switch or whatever had been fitted. It works well enough, but still not as well as the one I acquired all those years ago from a shed at the bottom of an old lady's garden which had been dropped on a stone tile floor.

**Since the "new" set was a complete example, I decided to keep it as bought, and have cleaned it up, repainted the dial surround, and filled in the hole where the switch or whatever had been fitted. It works well enough, but still not as well as the one I acquired all those years ago from a shed at the bottom of an old lady's garden that had been dropped on a stone tile floor.**

AERIAL COIL ENDS	
L4 TAGS 1 & 4	L5 TAG 3 & C5
L6 .. 2 & 4	L7 .. 3 & C6
L8 TAG 3 & C7	

OSCILLATOR COIL ENDS	
L13 TAGS 1 & 4	L14 TAG 4 & C16
L15 .. 3 & 6	L16 .. 6 & C17
L17 .. 5 & 6	L18 .. 6 & C18



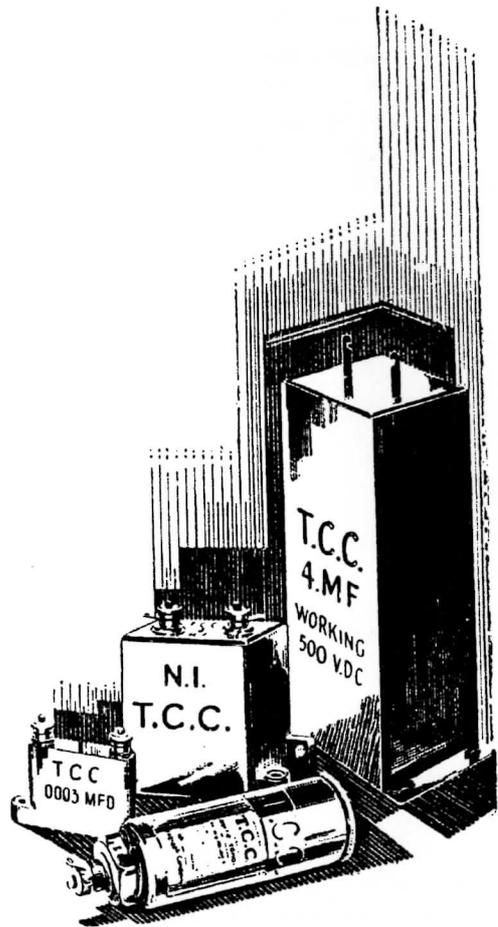
Top: how to thread the tuning drive for the B53  
 Below: part of the switch assembly

# Electrolytic myths

by Andrew Emmerson

Despite the vital role these capacitors play, many collectors have no idea how to handle them, rants Andy Emmerson.

**T.C.C.**  
ALL-BRITISH  
**CONDENSERS**



**A lot of rubbish is written about reforming electrolytic capacitors and a lot more is spread by word of mouth. There must be hundreds of enthusiasts who truly believe that “bringing them up slowly” is the kindest and most effective means of resuscitating old electrolytics but they’re all wrong!**

**...electrolytic capacitors in valve radios, televisions and other equipment can be revitalised (“reformed” is the proper term) in situ simply by controlling the mains voltage applied...**

It is certainly much gentler than just applying volts and it may give you time to react before extensive damage but there's risk involved as well, so it's not your best line of approach.

Describing precisely what goes on in the reforming process will explain this risk and help us see how we can do the job better. So switch off that variac and join me in a trip into the world of materials technology!

To begin, let's dispose of some old myths. Existing capacitors fitted in old equipment are not necessarily useless, particularly where electrolytics are concerned. Experienced restorers will tell you that fifty year-old electrolytic capacitors can still provide reliable service - sometimes. Unfortunately there are also risks involved. If old electrolytics fail, the consequences can range from ruining a nice rectifier tube to the total runaway destruction of a power transformer that may be impossible to replace or rebuild.

Another myth states that unused old stock capacitors are useless. Experts will tell you that nearly all of these can be used, regardless of their age, so long as they haven't come to harm in storage. They will require careful preparation, however, and here the third myth comes in.

It states that electrolytic capacitors in valve radios, televisions and other equipment can be revitalised

(“reformed” is the proper term) in situ simply by controlling the mains voltage applied. “Bring ‘em up slowly and they'll be fine” is the motto. In fact this is lousy advice and entirely false, as we shall see.

To understand why this is so, it helps to see how electrolytic capacitors work. You probably view the things as electronic components but they are complex chemical devices too. Explained simply, an electrolytic capacitor is made of two plates (made of aluminium foil) separated by a liquid (jelly) called the electrolyte. What actually makes it work is a layer of aluminium oxide (alumina), which grows on the anode foil (or “plus” side). Because alumina is a good insulator, this gives the capacitor its ability to withstand voltage and have a relatively high insulation resistance. So long as a voltage is applied, this dielectric coating on the insulated plate is maintained. This explains why devices containing old ‘lytics need to be switched on regularly (say an hour a month) to keep them exercised and ensure that the insulating surfaces remain formed.

If, on the other hand, a capacitor is not properly polarised (either through storage, disuse or even insufficient applied voltage/wrong voltage rating) the insulating layer starts to deteriorate. After many years, the capacitor will have a low resistance. When first re-polarised, it will not block AC (and hence hum) so well

and excessive leakage current will be noted.

There are several separate failure mechanisms to contend with. Some types dry out of their own accord (the cheaper cardboard container types are well known for this) and needless to say, as the electrolyte vanishes, so does the capacitance. Internal leakage is another mechanism; it causes the caps to heat, boiling or drying out the electrolyte. Sometimes the rubber seal on the end of the can ruptures (look for miniature Mount Vesuvius features!) and naturally the loss of electrolyte reduces the remaining capacitance even further. Alternatively lytics can fail open circuit, due to corrosion of internal connections. Yet another propensity is for electrolytics to work fine for ages, then suddenly go short!

Operating at high temperatures shortens the life of electrolytics significantly. This is why switch-mode power supplies in modern appliances such as fax machines and satellite receivers so frequently fail - the electrolyte in the caps is literally boiled away by the surrounding heat (special high-temperature capacitors are now made for replacement in these circumstances).

Re-using old electrolytics without preparing them for the task is stressful for the capacitor and a mighty risky business for you. The caps can explode with terrific force when stressed; they can burst through cabinets and redecorate your ceiling with remarkable effect. They are not called smoothing bombs without reason. The preparation required is called reforming and involves repeating a process first carried out at time of manufacture. The oxide film that enables electrolytics to perform properly is normally "formed" before the foil inside the capacitor is wound, and after the capacitor is assembled, it is generally "reformed" to repair any minor damage in the manufacturing process. Old electrolytics can in fact be reformed to operate like new or almost like new in most cases. Experts say that as long as the electrolyte inside the capacitor is not excessively dried out, a reformed electrolytic capacitor will perform almost as new, although if it continues to show excessive leakage current after reforming, you should throw it away.

But why bother? Carried out properly, reforming is a slow and delicate process and requires specialist apparatus and skills. People who repair old radios for a living assert that the game is not worth the candle; spending hours on a capacitor which may still perform indifferently is a waste of time and hence pointless. If a capacitor does reform sufficiently to operate normally there is no guarantee that it will continue to operate for a long time. Old capacitors also present a small but very real safety risk; new production is guaranteed fresh and has better venting to prevent pressure build-up. In fact the only reason for retaining old electrolytics is either for total authenticity's sake or when funds are desperately tight. In this author's opinion, scrimping and cheapskate tactics are incompatible with safety.

Those who argue against the cost of buying new electrolytics should remember that it's a lot less than replacing a rectifier or a transformer. There is also no assurance that what appears to be a satisfactorily functioning 'lytic will remain that way; there's always a risk in trying to extend their life. If you choose to gamble you should assure yourself some protection by adding a fuse (if not already present) to the primary circuit of the power transformer in devices having relatively few valves (10 or fewer) and to the HT line as well if the total is higher.

But why is reforming in situ with a variable transformer (variac) such a bad idea? Again, we need to look at what we are trying to achieve. A steady DC polarising voltage and current are what's needed to reform electrolytic capacitors. What's more, the values must be matched to the cap in question, so how do you know what's right? The simple answer is you don't!

The crude approach to reforming electrolytics is to power up the receiver (or whatever) somewhere around half mains voltage and watch what happens (check for caps that are getting warm). If nothing goes bang over a half-hour period you up the voltage 10 per cent. The notion is that increasing that voltage in stages is less

likely to stress the capacitors. Nice idea but fraught with difficulty. You have no way of telling what's really happening inside an electrolytic or an oxide filament and in any case, most hollow-state rectifiers don't even conduct until the voltage on them reaches 80 per cent of designed working voltage (which is far beyond the explosion threshold of an un-reformed old capacitor).

Using a variac doesn't give you much fine tuning control over the capacitor charging current out of the rectifier valve either. You can demonstrate this by putting a mA meter in series with the electrolytics; the charging current varies dramatically on account of the non-linearity of the variac control over much of its range.

In fact the correct way to reform electrolytics is to apply the full rated DC voltage to them through a large series resistance, then observe whether in time they come up to that voltage (you'll need to isolate them from any HT bleeder resistors of course). If they fail to make the grade or give any sign of heating up they should be dumped without further ado.

Doing this in circuit confuses the issue; if you don't want to have to factor in the current drawn by the anodes of other valves in the device, you must remove them and their influence. A variable 300-volt laboratory power supply (these can be found at electronic junk shops and amateur radio swapmeets if you're lucky) is ideal for the task.

If you can find a professional capacitor checker at a swapmeet you have the perfect tool. These units provide the HT voltage without the need to power up the device under test (thereby protecting its power supply from any damage due to shorted caps), and you can watch the leakage go down (or not) via the magic eye or meter. You can tell within a few minutes whether there is hope and these gadgets also tell you how awful any waxed paper caps are, which is a strong motivator to dig them out.

#### **Another sincere safety warning.**

It's vital to remember that when a capacitor is reforming, its leakage will be high, meaning that it will heat up, just as any other type of resistor would do. If the electrolyte becomes too hot, it will boil, producing gas pressure in the capacitor. The pressure may either cause irreversible damage (leading to failure in circuit) or the capacitor may rupture or even explode with sufficient force to shatter cabinets.

The truth is that only a masochist will go to all these lengths to save a few pounds on electrolytics and risk both the performance and the very survival of a treasured set. I know collectors are slightly strange but there's no need to be utterly perverse!

**If you can find a professional capacitor checker at a swapmeet you have the perfect tool. These units provide the HT voltage without the need to power up the device under test (thereby protecting its power supply from any damage due to shorted caps)**

# Crystal gazing

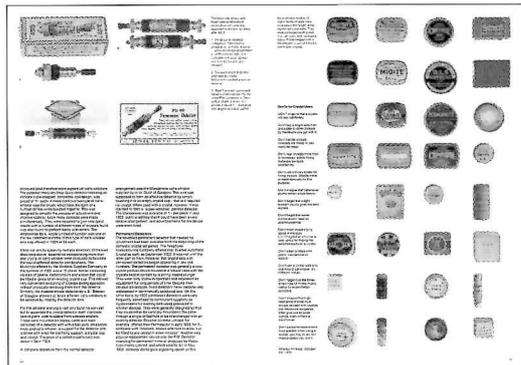
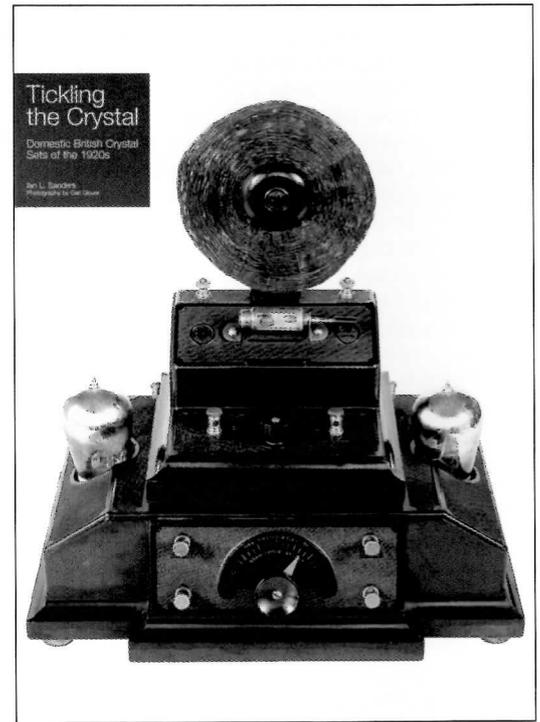
by Ian Sanders

In the preface to his book *Crystal Clear* on American crystal sets, the author Maurice Sievers said that it was 'the book he had hoped someone else would write.' As an avid collector of British crystal sets for more than twenty-five years, my feelings have run along quite similar lines. For much of that time I have been hoping that someone would put together a comprehensive reference book, to help with the identification of the hundreds of crystal sets that were produced in the U.K. during the early broadcast years between 1922 and 1927.

Of course, Jonathan Hill's *Radio Radio* has been a wonderful guide for collectors as was Gordon Bussey's 1974 book *Vintage Crystal Sets*, but the former because of its broad scope has only a limited coverage of 1920s crystal sets, while much new information has been uncovered since the publication of the latter.

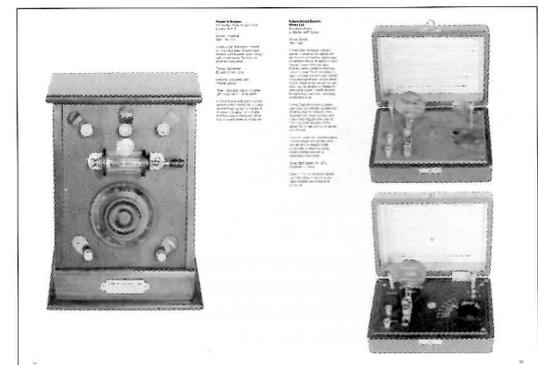
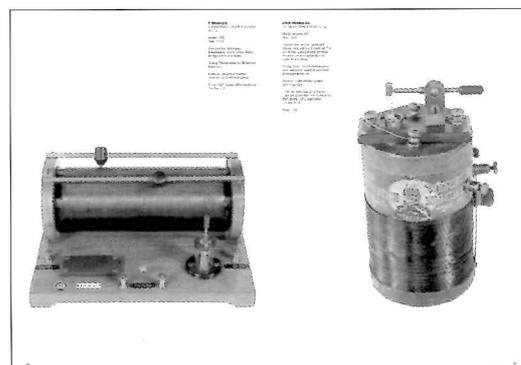
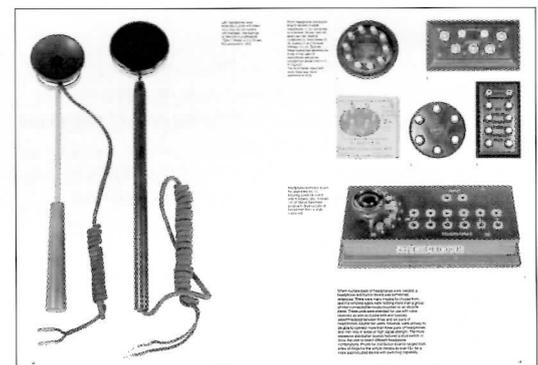
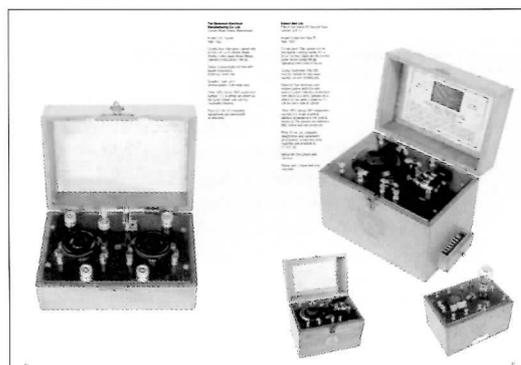
Some fifteen years ago, I began assembling a comprehensive database of crystal set manufacturers and models, and about three years ago I decided to bite the bullet and began to put pen to paper (or rather fingers to keypad) and write the reference book I felt was needed. Over the last two years, or so, the text of a new book to be titled *Tickling the Crystal* took shape. The highlight occurred last February when Carl Glover packed up his photographic equipment and made the trip to my home in Northern California to photograph my collection of nearly 200 crystal sets. These will be featured as full-page photographs in a 'pictorial dictionary' and form the heart of the work. In addition to background material on early broadcast history, manufacturers and crystal set designs, there are extensive listings of reference material, including makes and models, details of detectors and crystals, headphones and circuits.

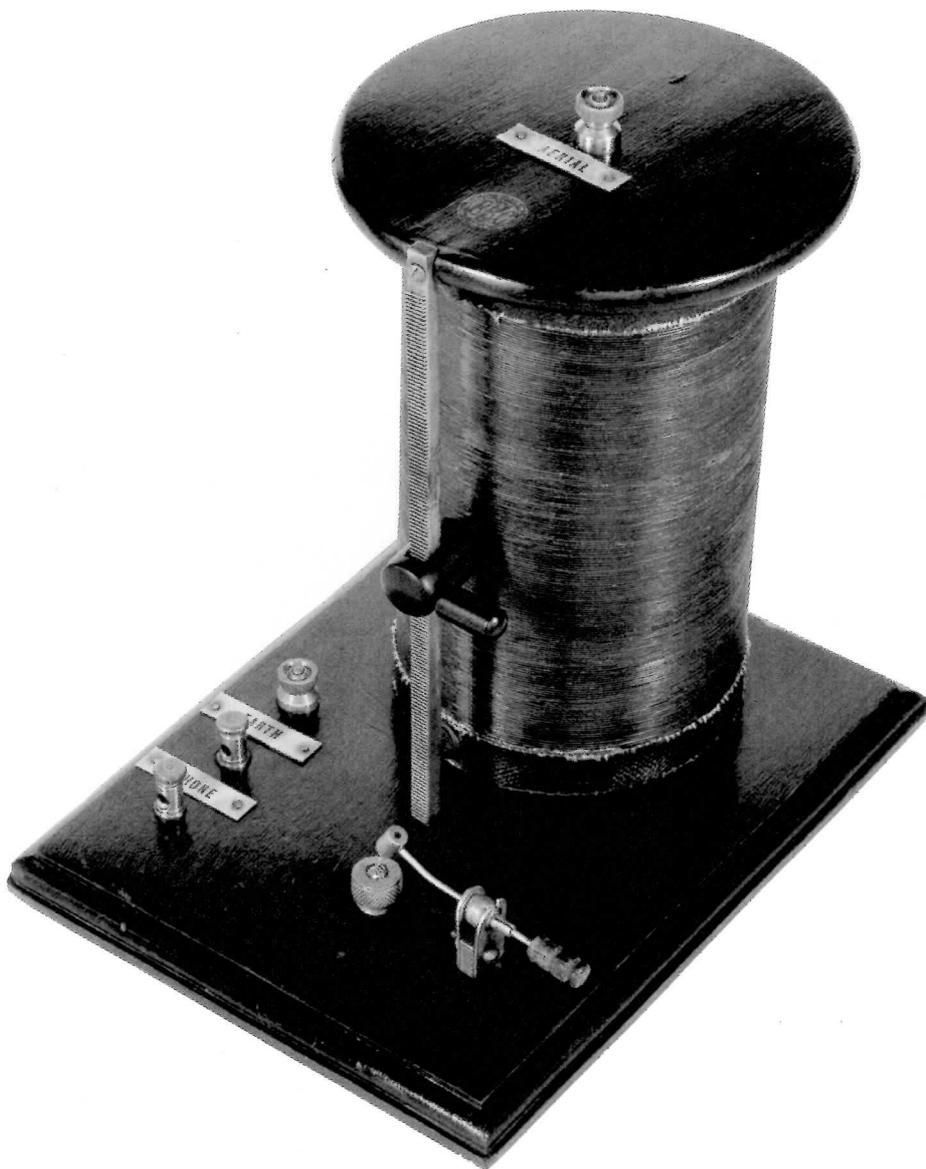
I am sensitive to the fact that some BWWS members may be concerned that such a large collection of British sets has been assembled outside of the U.K., and I hope the time and effort spent on preparing the forthcoming publication will – at least to some degree – mitigate their discomfort. I should also add that, such is the extent of the material that needs to be documented, a follow-on 'Volume 2' is already in its infancy!



Above: Carl photographing some of the many crystal sets for *Tickling the Crystal*.

Right: Some pages reproduced from the forthcoming book.





**A.W. Gamage**  
Holborn, London, E.C.1.

Model: Broadcaster No.1  
Year: 1922

Construction: Mahogany breadboard, 7 x 9 inches. Brass fittings.

Tuning: Vertically mounted slide coil with ratcheted slider (180-950 metres).

Detector: Open cat's-whisker/galena with unusual angled shaft.

Other: BBC stamp, GPO registration number 176. (An identical model known as the 'Popular' was offered in 1923 by Wireless Installations Ltd.).

Price: £3 10s. 0d. (including headphones and aerial/earth accessories). Note: The model offered by Wireless Installations Ltd. was priced at £1 5s. 0d for the set only.



**Peter Curtis Ltd.**  
75a, Camden Road,  
London, N.W.1.

Model: Silver Ghost  
Year: 1924

Construction: Polished aluminium alloy case, 7 1/2 x 5 x 2 1/2 inches. Brown ebonite control panel. Nickel plated fittings.

Tuning: Rotary slide coil (200-750 metres). Socket with shorting link for long-wave loading coil.

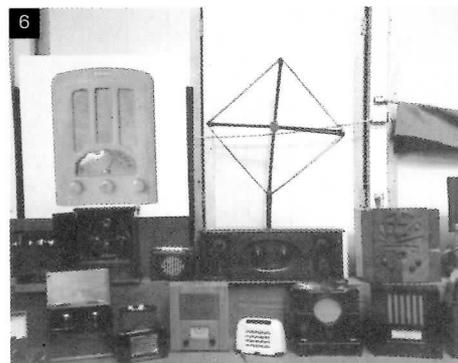
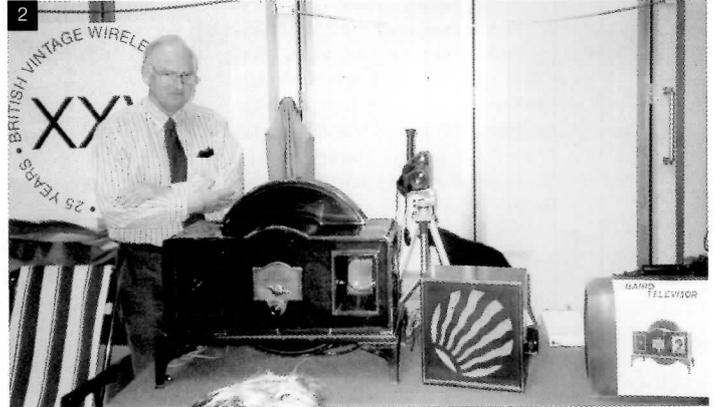
Detector: Open cat's-whisker/galena.

Other: No BBC stamp, GPO registration number 4157.

Price: £1 10s. 0d.

# The BVWS at the NEC

by Jonathan Hill, photographs by Carl Glover and Terry Martini



- 1: Simon Wade's stall.
- 2: A working Baird Televisor at the BVWS stall.
- 3: Ivo Lemmens' stall.
- 4: A stall specialising in horn gramophones.
- 5 & 6: Part of the wireless display on the BVWS stall.
- 7: *Radio Bygones*' stall
- 8: Geoffrey Borinsky describing the advantages of being a BVWS member.
- 9: Part of the BVWS television stall, many of these were working and showing programmes.

The spectacular success of our April fair, with record attendance numbers both in terms of visitors and stallholders, more than made up for the rather lacklustre and disappointing show we saw last September, when, you will no doubt recall, we struggled to survive the aftershock from that very unpleasant "petrol crisis".

If you have read your "History of the BVWS" closely, you will have noted that the present 4,000 square meter show in Birmingham grew out of a very small 15-table event held in a village hall at Bampton in Devon in 1991. Then, the hiring cost was a single £10 note, considerably less than the £12,000 fee demanded today - well, it is the NEC!

Since those small beginnings, the show has become a major player amongst other specialised antiques and collectors fairs in Europe, and its strong and consistent reputation, and the quality and quantity of the items on sale, coupled with the fierce loyalty of stallholders and visitors alike, has, over the years, seen off competition from several quarters.

In spite of one or two minor ups and downs over the years, the NVCF has certainly been a success story, and it is hard to believe that next year, we celebrate our 10th anniversary. This year, though, we celebrated in grand style the 25th anniversary of the BVWS with a wonderful visual and live display of radios and televisions arranged by Chairman Mike Barker and team.

Displays really do add to the atmosphere and enjoyment of the whole show, and this exhibition (well-featured in this

Bulletin issue) certainly was fabulous!

Next to the BVWS stand was a delightful retrospective exhibition covering almost 70 years of Roberts Radio. This had been put together by Geoffrey Dixon-Nuttall, a well-known BVWS member, but also past Director of Roberts, and by Gerry Thorn, Roberts' present Product Director. Around 35 sets were displayed, from their earliest products of the early 1930s, right up to their groundbreaking digital portable, the Classic 2000. Such was the appeal of all the Roberts radios on show, that, despite the "Exhibition Only" notices, the main question asked at this stand was, "Are any of these sets for sale?"

With thoughts of Enigma machines still current in our minds, BVWS member John Elgar-Whinney brought along for display a 3-rotor model (serial number 8456) which he had recently acquired for his "Romney Marsh Clandestine Collection" from a collector in Belgium. By chance, Tony Sale, who is associated with the Bletchley Park project, was on hand to field questions from visitors about the Enigma's role in WWII and about its operation.

In one way, this show was a victim of its own success, for so unexpectedly overwhelmed were we by visitors, that we soon ran out of our free popular Collector's Guides and many people were left disappointed. All I can say is, sorry for the shortfall, and next time we shall be more prepared. See you in September.

Jonathan Hill.



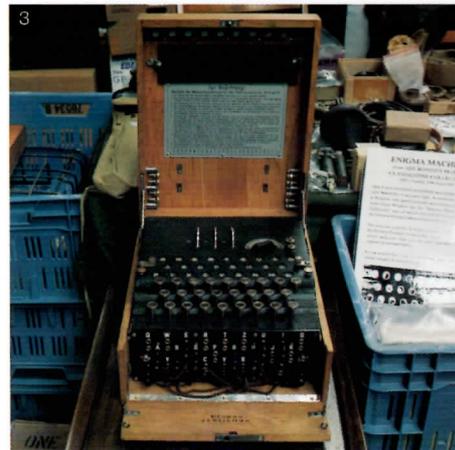


1: One of the two cameras flanking the BVWS display, this example having been manufactured by Pye.

2: A stall showing an impressive array of 1930s wirelesses and related material.



3: John Elgar-Whinney's three-rotor Enigma machine in impressive condition. There will be an in-detail feature on this device in a future issue of the BVWS Bulletin.



4: A stall specialising in 1960s and 1970s radio and television.





5: Part of the BVWS wireless display.

6: A display of coloured Ekco radios.

7: The recently discovered green Ekco AD65 as featured in the Spring BVWS Bulletin. A larger picture is

illustrated on the rear page of this issue.

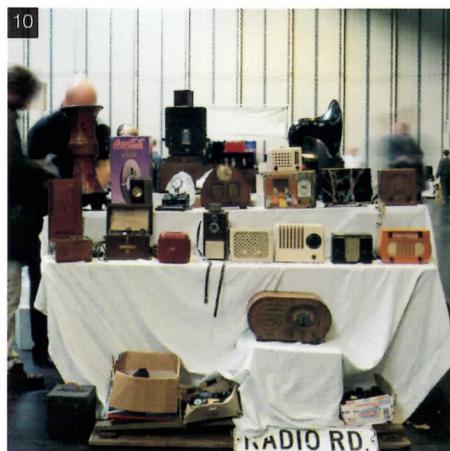
8: An extremely rare *Tuner SW Mk IV* crystal set was displayed as apt of the BVWS exhibition.

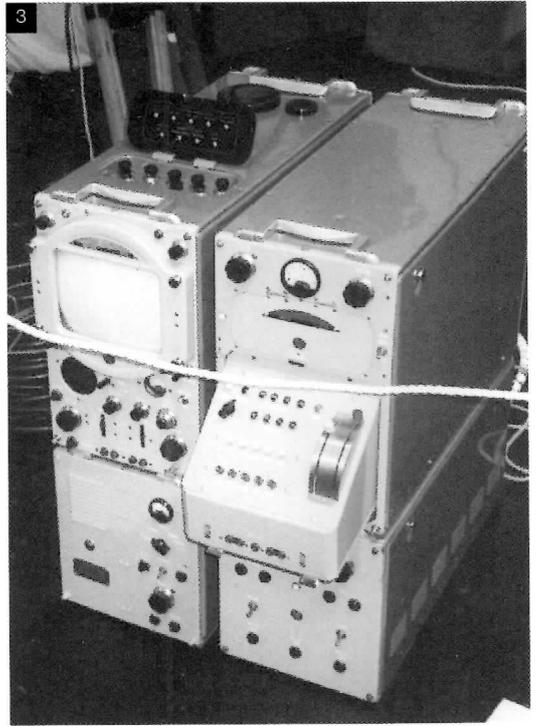
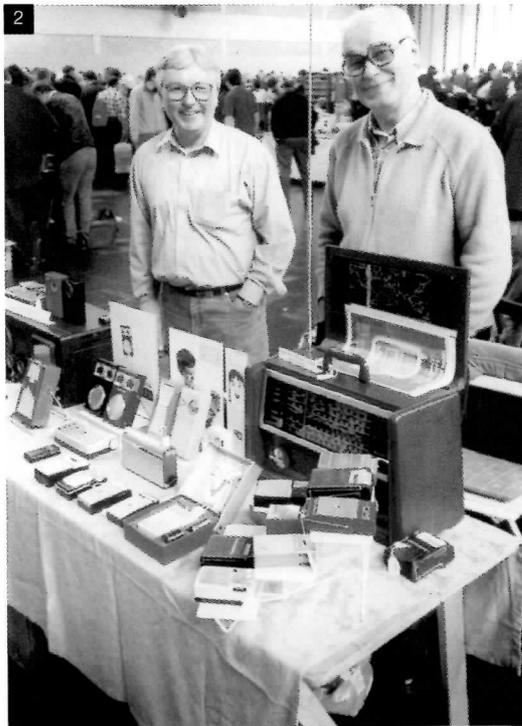
9: Part of Ivo Lemmens' stall showing two very nice

Philips sets, a French *Radiocapt* and a Russian *Red Star* - a set based on one of the French SNR sets.

10: Simon Wade's stall viewed from the side.

11: Rupert's 1920's stall plus a Revox A77 on the floor.





1: A working television forming part of the BVWS television display.

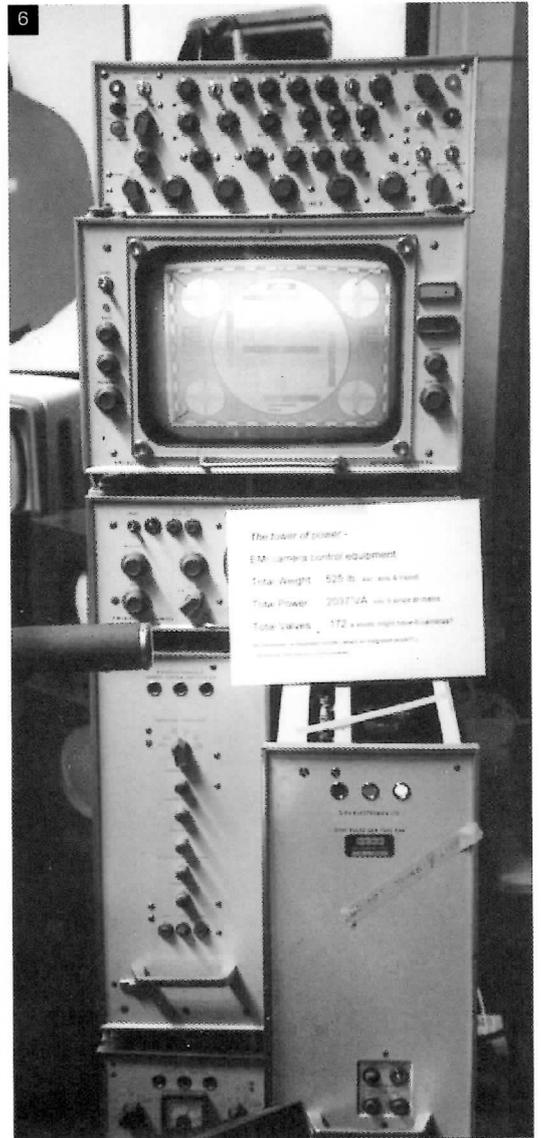
2: Bulletin contributor and transistor aficionado Jim Duckworth (left) and friend manning Jim's stall.

3: Equipment connected to the Pye television camera.

4: A detail of the Roberts Radio display.

5: Another detail of the Roberts Radio display.

6: The equipment that was connected to the working EMI camera flanking the BVWS stall. This feature was so popular that it proved near-impossible to get a photograph to do it justice as it was constantly surrounded by admirers throughout the day. 7: the EMI camera display caught at a rare people-free moment.



The tower of power -  
 EMI camera control equipment  
 Total Weight 525 lb. including  
 Total Power 2037VA  
 Total Valves 172 + many more valves!

# Spring Harpenden

Reviewed by Robert Chesters

Yet again, the annual Harpenden auction and AGM was well attended by both the "society faithful" and the keen collectors looking for that little something that will bring their lifelong quest that bit closer to fulfilment.

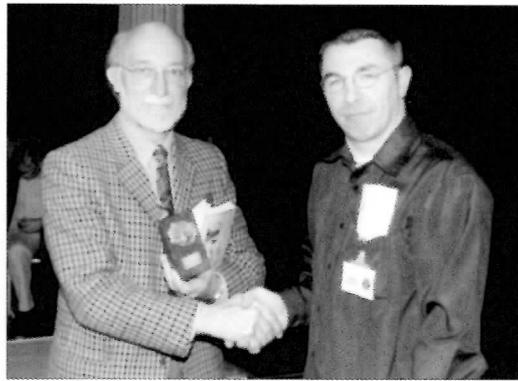
The auction contained a few unusual items including a Lissen "Egyptian Temple", a mint Ekco AC97, some intriguing '20's items and a host of the "up and coming" stars of the 1950's and '60's. I am almost forgetting to mention the note-worthy selection of meters and test equipment - not my bag but I saw a few collectors leaving with a strained but happy look on their faces as they lugged their useful but heavy bargains out of the hall.

I have to admit that the Ekco items - an AC97 and an AD65 in black and chrome, would have had me getting very excited a few years back when I was still looking for them avidly and quite unable to find anyone who wanted to sell them.

I suggest that a trip to Harpenden might be the best petrol money any aspiring collector could spend!

## The Pat Leggatt Award.

The Pat Leggatt Award was presented by the chairman, Mike Barker, to Barry Vyse for his article about Marconi/Osram Valves. The award commemorates the late Pat Leggatt who greatly encouraged those who sought to spread the word about Wireless History - I think that he would have greatly approved of this choice.



# Back On the Air

'On The Air', the vintage radio business owned by BWWS member Steve Harris has finally re-opened in new specially converted premises at Hawarden, just outside Chester.

For the last six months building work has been going on to complete the 'Vintage Technology Centre', described as Britain's biggest vintage radio shop. The new 2000sq. ft. premises comprise a showroom, workshops and offices.

Steve intends to concentrate on the bi-monthly catalogue magazine, 'Airwaves', and the website [www.vintageradio.co.uk](http://www.vintageradio.co.uk), rather than on retail trade, but would be delighted to show BWWS members round the extensive stocks of radios, gramophones and related items. (Please telephone or e-mail first.)

Most BWWS members will have heard of On the Air, established in Chester for 10 Years and started by former TV lighting director Steve as an extension of a life long interest in old technology. Although started as a

business trading in wireless the operation expanded to open the Broadcasting Museum in Chester in 1994.

The Museum attracted visitors from all over the world, but last year due to the expiry of the lease it was closed down and the exhibits bought by the BBC, which considered the collection to be a unique record of British broadcasting history and of national interest. Mr Harris has continued his original course as a specialist dealer in broadcasting collectables, and now as a director of On The Air Ltd has started a new venture combining the nostalgia of yesterday's technology with the very latest, the world wide web.

On The Air has for some years produced AIRWAVES, a magazine for vintage radio enthusiasts, and by means of this and the website, collectors as far away as Japan and New Zealand have been able to find rare items from On The Air's wide ranging stock. The new premises comprise restoration workshops and a showroom, but the majority of customers will be served by mail order.

An Open Day was held on April 21st, when a number of guests attended an informal celebration of the opening of the new showroom.

Above, clockwise from top left: Barry Vyse shaking hands with Mike Barker after receiving the pat Leggatt award for most outstanding article. Some 1920's lots, The Harpenden Hall, Carl Glover and Simon Wade share a joke, Gerry Wells examining the goods for auction.



# The Tube and either side of it

by Mike Donohue

**As a six year old in 1938 I recall my first view of television. We had been for a ride in my granfathers Austin12 and coming back from Epping Forest through North Chingford we stopped opposite The Green at a shop called 'Escotts'. I could not tell you anything about the rest of the products on display, but there, standing alone was this magic box and moving pictures, a Mickey Mouse cartoon. Now, even at this far removed, not all of the magic has evaporated. Some sense of that moment still lingers and permeates whatever quest my hobby leads me into.**

Below: After World War II Do-It-Yourself Television kits were extremely popular with the amateur constructor. A glut of ex-military components often led to affordable bargains in what was then an expensive luxury. The advert illustrated below is typical of post war kits.

During the war an elderly lady who lodged with us gave me a crystal set. I recall it was about the length of a modern keyboard, had an all wood cabinet, was taller at the back than the front and had a pull down slatted shutter from back to front and an open crystal and cats whisker and of course a pair of headphones. I was about 9 or 10 years old, a keen experimenter. The first experiment went thus. The headphones terminated in two metal pins suitable for fixing to the brass terminals on the set and quite long. Mains supplies were normally through 2 or 3 pin open sockets, I wanted to find out what happened if you put one pin in each of the smaller holes in the socket! With one in each hand I did and found out quickly the answer. Shaken by

this revelation I needed a drink so I grabbed my bottle of Tizer for a "pick me up"!

In 1947 there was a German POW camp on Chingford Plains. By this time they were allowed considerable freedom of movement and we used to have three or four at our house from time to time. Among them was a young soldier, I would think only a couple of years older than myself, who had been involved with tanks (Radar?) at the end of the war. Available here, government surplus, was a small unit containing a green screen electrostatic crt of 3 or 4 ins diameter, which I believe was an ex-tank item. "Hans" built for me my first crude oscilloscope using a TH41 thyratron and I recall taking him up to Lisle St (at that time a Mecca for Gov Surp equipment) for some piece of gear he wanted for himself. He was repatriated not long after this and I lost all contact with him after my wallet was stolen (At the Crooks Ferry at Edmonton) with all his personal details.

Having left school in 1948 and become an "Apprentice" in domestic Radio/TV repairs, one of the engineers gave me a 1938 EMI crt, which I now know was a 3/2. The challenge then was to build a working set around this crt. Whatever I did had to be done in my bedroom, there was no other space, so the project unfolded along a marble slab, which was the top of an old washstand. The "Heart" of this was a kit from Premier Radio of Fleet St, who were offering either a VCR 97 electrostatic/green screen version or an alternative for magnetic deflection. I cannot remember the time scale involved in building this giant affair. I have only one photograph existing of part of it, which just emphasises the sheer bulk of everything 'home made' at that time. The good news was that it worked and the tube worked albeit with a large diameter ion burn, which I am told is 'par for the course'.

Again more magic. Neighbours kids squatting on my bedroom floor watching the screen. Who cared about ion burns, everything spread out on an old washstand. This was an experience!

## The "TELE-VIEWER"

### 5 CHANNEL TELEVISOR

A Design of a Complete 12 in. or 9 in.

#### SUPERHET T/V RECEIVER FOR THE HOME CONSTRUCTOR

This receiver has been developed after most careful research and affords a high standard of Television entertainment by producing a picture of really outstanding quality.

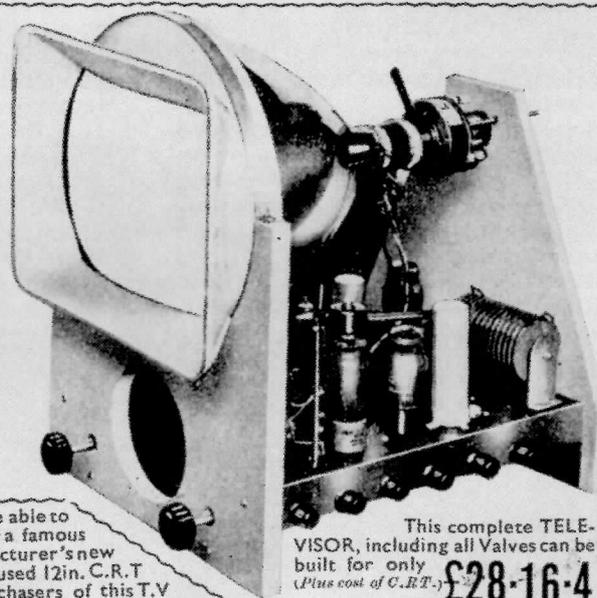
We confidently believe that not only have we achieved a T.V. Receiver that surpasses in efficiency any other designed for the home constructor, but that successful construction, even by the most inexperienced, is assured by the step by step wiring detail and diagrams provided, and at about half the cost of the nearest comparable commercial receiver.

Here are some of the features which combine to make this such a fine receiver :

- The Superhet circuit easily tuned to any of the five channels, i.e. LONDON, SUTTON COLDFIELD, HOLME MOSS, WENVOE and KIRK-O-SHOTTS. (The extreme ease of tuning is accomplished by the provision of pre-aligned I.F.T.'s.)
- A lifelike, almost stereoscopic, picture quality made possible by the following factors :
  - a. Excellent band width of I.F. circuits.
  - b. A really efficient video amplifier.
  - c. C.R.T. Grid modulated from low impedance source.
  - d. High E.H.T. voltage (approx. 10 kV.).

The picture brilliance is also much above the average and enables comfortable viewing with normal room lighting or daylight.

- FIRM picture "HOLD" circuits (Frame-Line) ensure a steady picture, free from bounce or flicker even under the most adverse conditions met with in "fringe" areas and excellent "interlace" ensures the absence of "liney effect."
- Negative feedback is used in the audio frequency circuits which provide 2/3 watts of High Quality Sound.
- Entire receiver built on two chassis units, each measuring 14½ in. x 6½ in. x 3½ in.
- Rigid C.R.T. mounting enables entire receiver to be safely handled with tube in position.
- All pre-set controls are mounted on side of chassis enabling all adjustments to be carried out whilst facing the C.R. Tube.



We are able to offer a famous manufacturer's new and unused 12in. C.R.T. to purchasers of this T.V. at the specially reduced price of **£12/19/6**

This complete TELEVISOR, including all Valves can be built for only **£28-16-4** (Plus cost of C.R.T.)

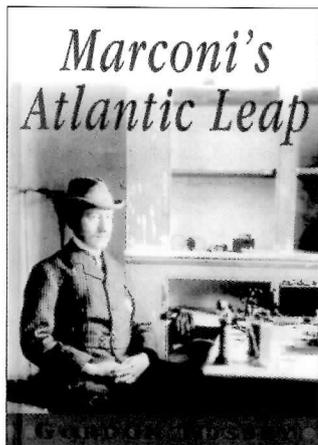
As no hire purchase terms are available the receiver can be bought in five separate stages (practical diagrams and circuits are provided for each stage) thus enabling hire purchase interest rates to be avoided. The complete set of ASSEMBLY INSTRUCTIONS is now available, price 5/-. The instructions include really detailed PRACTICAL LAYOUTS, WIRING DATA AND COMPONENT PRICE LIST.

ALL COMPONENTS ARE AVAILABLE FOR INDIVIDUAL PURCHASE. A CABINET WILL ALSO BE AVAILABLE.

**STERN RADIO LTD.**  
109 & 115, FLEET STREET, E.C.4  
Tel. : CENTRAL 5812-3-4

## Marconi's Atlantic Leap

Reviewed by Rod Burman



"Marconi's Atlantic Leap" by Gordon Bussey and published by Marconi Communications, 96pp in hard cover is an eminently readable short book covering the activities of Guglielmo Marconi and the fledgling Marconi Company leading up to and immediately after the great achievement of successfully transmitting wireless signals across the Atlantic in December 1901.

The author, in addition to making full use of the Marconi plc archive has tracked down and included in the book a number of relevant photographs never previously published.

Although this is not a technical book it covers in considerable detail the trials, tribulations and frustrations of Marconi in proving what he always believed was possible. Despite the doubts of many eminent scientists, Marconi was certain that wireless waves would follow the curvature of the earth and he was determined to prove the so called "experts" wrong.

Notwithstanding this achievement many people still doubted whether Marconi had in fact heard the signals

from Poldhu or merely confused the three dots of the letter "S" with atmospheric. However early in the following year whilst sailing to the U.S.A. on the S.S. Philadelphia he received signals from Poldhu at over 2000 miles distance, this using a much smaller receiving aerial.

The cable companies who at that time had a monopoly on transatlantic communications certainly believed in Marconi's success as they tried hard to close him down by legal means and as a result their shares fell heavily on the London and New York stock exchanges.

This well presented book published in the centenary year of the original achievement is a must for anyone with even a passing interest in the great pioneer of wireless communications.

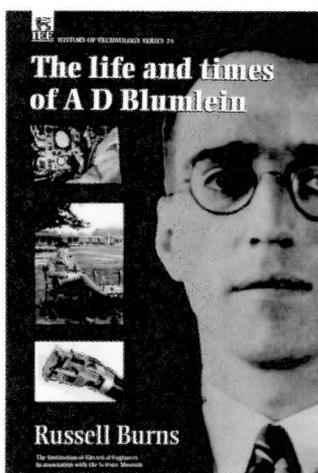
Gordon Bussey's painstaking research has brought together a unique collection of photographs and documents combined with a highly readable text which shows how Guglielmo Marconi's determination started the communications revolution which we all take for granted one hundred years later.

Price is £6.99 post paid from Marconi Communications, New Century Park Coventry, CV3 1HJ. ISBN No.0-95389-670-6.

## The life and times of Alan Dower Blumlein

by Russell Burns

Reviewed by Jeffrey Borinsky MIEE CEng



Genius is a mystery to us ordinary mortals. The subject of this detailed biography was without doubt possessed of genius and the aim has been not only to chronicle the man and his achievements but also attempt to illuminate the nature of genius itself.

That genius is the outstanding 20th century engineer who has been denied a biography for a very long time. His name is Alan Dower Blumlein and he died tragically young. There have been earlier attempts at a biography, reputable and otherwise, which did not reach publication. Now, after an eternal wait, we have two. There is no serious rivalry between the two volumes. Burns's book is thoroughly researched, accurate, and comprehensive. It is difficult to be so complimentary about the other.

We gain a thorough picture of Blumlein both as man and engineer. There are just a few areas where perhaps Burns's coverage is less detailed than Alexander's. Commemorations of Blumlein's work and the abortive biographical work by Thompson are given relatively little space by Burns. This is a comment rather than a criticism and does not detract from the book.

Most of the book is devoted to charting Blumlein's achievements and placing them solidly in their historical context. These range from his early work on long distance phone lines through stereophony and television to centimetric radar. In some cases, such as the history

of radar, there is perhaps a little bit too much context that is remote from the main subject. The bulk of the book is a very readable history; engineering detail has not been omitted but instead largely confined to separate chapters and notes which could be skipped by the less technical reader.

The writing style is slightly academic but not oppressively so and the text is enlivened with numerous anecdotes and quotes from original sources. The book is amply illustrated with both drawings and photographs. There are comprehensive bibliographic and patent references.

The book strays into philosophical territory on the nature of genius. Blumlein's sheer inventiveness and immense practical abilities are legendary. EMI was a notably secretive organisation so there are few contemporary published papers by Blumlein. This must be set against his huge number of patents and the excellent EMI archives.

Any look at the life of Blumlein must pose the question: "What if?" Where would he have shone his intense light after the war? Perhaps there are some clues in the fact that some who worked with him went on to distinguish themselves in the infant computer industry.

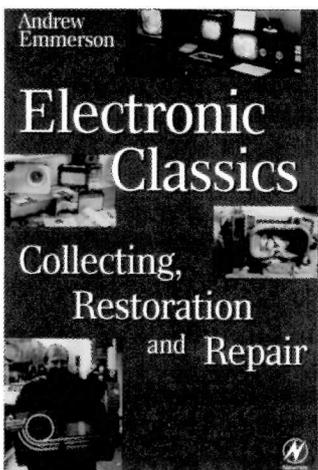
This is an essential book for everyone with a feeling for the history of engineering but as so often with IEE publishing the price is a deterrent. If you are saving your pennies to buy just one biography of Blumlein. I recommend that you raid your piggy bank to get this one.

Institution of Electrical Engineers 1999  
ISBN 0 85296 773 X  
Hardback pp 560, £60 (discount to IEE members)

## Electronic Classics Collecting, restoration and Repair.

By Andrew Emmerson

Reviewed by Robert Chesters



For those of you who have been seeking a book that tells you how to go about restoring, or getting restored, a piece of vintage equipment - this is the book for you.

First, let's make something totally clear, the author has not sought to provide a comprehensive guide to individual radio manufacturers and their specific sets. That has been done to a greater or lesser extent in other books. No, this is about how to avoid electrocution, how to identify a valve when the lettering is worn off, how to wire a telephone for modern use and the things that you always wanted to know but couldn't find anyone to ask.

Interestingly, it gives hints about collecting internationally as well as just the usual skulking about in

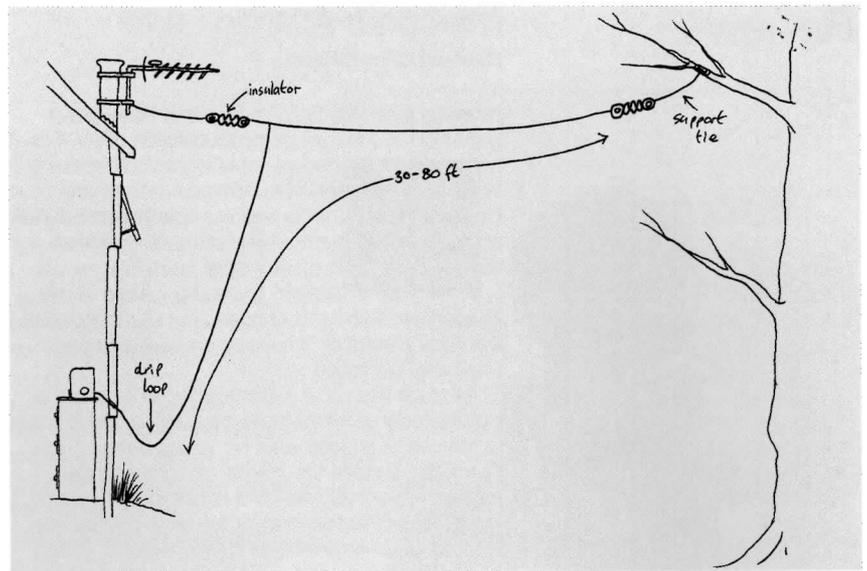
Blighty. To help with the acquisition of 'wild game' there is a list of events overseas and various sources of information about the sets once they have been added to the 'trophy cabinet'.

There are some very handy tips about metal surfaces, plastics and their individual properties and various wooden finishes. I felt that I had gained knowledge of real use and importance after only a few hours of reading - in fact, I found myself on first inspection flipping around thinking "Oh that's handy" and before I knew it day had become night and it was time for me to light a candle and find my way to bed.

This book will not confuse you with complicated explanations of unnecessary electronic theory, it will not bore you with minute differentiations between models and it will not try to sell you anything (although it does have some handy auction tips for when you go buying). It is a book written by an interested collector who has succeeded in communicating his interest and enthusiasm for the subject.

# Installing aerials and earths - a forgotten skill?

by Ian Liston-Smith with diagrams by Paul Stewart



Above: An ideal outdoor aerial

Many vintage radios (particularly those made before the 1950s) require an aerial. These can be as elaborate as you like, but the general rule is to suspend them out doors, the higher the better. Additionally they should be suspended away from buildings, TV aerials, telephone and mains wiring because these all radiate interference to a greater or lesser extent.

Almost any kind of wire is suitable, provided it consists of one continuous length. Any joints in the aerial wire tend to corrode and become noisy. Special hard drawn copper aerial wire is available, but it's heavy, difficult to handle and not really suitable for a domestic arrangement. Multi-stranded PVC covered equipment wire (16/0.2 or 24/0.2) is cheap and perfectly satisfactory. The only disadvantage being that a length of more than about 40 feet will sag under its own weight after a day or two, but if it's re-tightened it won't usually stretch further.

Avoid single cored or light duty multi-stranded wire, as these types tend to break after a few weeks of swaying about outdoors.

For greatest efficiency the aerial should be suspended at the far end by a non-conducting weatherproof line, so that the aerial wire is at least three feet from the supporting structure. The use of insulators between the aerial wire and support tie is good practice, but these are not strictly necessary unless the suspending tie wire also conducts. If this is the case, insulators will be required.

Porcelain egg insulators are difficult or impossible to find now, but plastic ribbed aerial insulators are available from Maplin Electronic Supplies for about £1.00 each and also various aerial accessories suppliers that advertise in the pages of hobby radio magazines.

The length of the aerial is not critical, and anything from 30 to 80 feet will be adequate. Neither does it need to be straight if you don't have much room, but avoid bends of more than about 90° if possible as, theoretically at least, currents flowing in the aerial will then tend to cancel out if bends are greater than this. Don't worry about its directional properties either - an aerial in a domestic setting is unlikely to be long enough to be anything other than roughly omnidirectional.

At the house end, the aerial wire should be supported in a similar way, with a 'drip loop' as shown in the diagram. This will prevent rain running down the wire and indoors. The aerial should pass through the window via an insulated tube, although again this is not absolutely essential.

Ideally, to minimise pick-up of indoor electrical interference, the set should be placed near the aerial's point of entry.

If an outdoor aerial is not possible however, there is an alternative.

Many radio books of the 1930s and 1940s suggest tucking the aerial around the picture rail, but when was the last time you saw one of those? And in any case, this was well before the era of the switched mode power supply. These devices (even the 'approved' types) generate radio interference and are common in modern home entertainment equipment, PCs, etc., making the home an electrically noisy environment.

You might be lucky and not pick up this type of interference with a wire strung around the room, and even with a simple indoor aerial you should at least be able to receive the strongest local stations, which is all most listeners want anyway.

A trick I have found to be very handy in electrically noisy indoor locations is as follows; loop the aerial wire from the aerial socket, around say a window or alcove, and back to the earth socket via a 0.01 µF 1kV capacitor. The actual signal pick-up might be less, but the interference is usually very much less. This isn't how the aerial input circuits are meant to be used, and no doubt does nasty things to their tuning and 'Q' while connected in this way. Nonetheless, I have found that this unconventional method works on most of my sets.

If the set is designed for use with an aerial, an earth socket usually is provided too. Use it if possible, as it increases the efficiency of the aerial.

A good earth requires a low resistance connection to the ground. An electrical connection to a water pipe used to be adequate, but in many homes these pipes often consist of plastic sections and cannot be relied upon to provide an electrical earth.

Gas pipes should be avoided if for no other reason than that the pipe joints may not have electrical continuity.

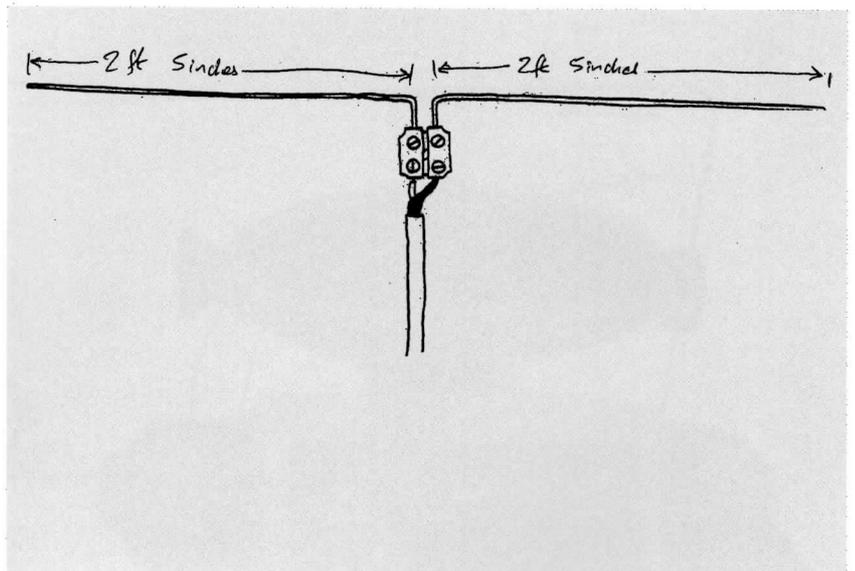
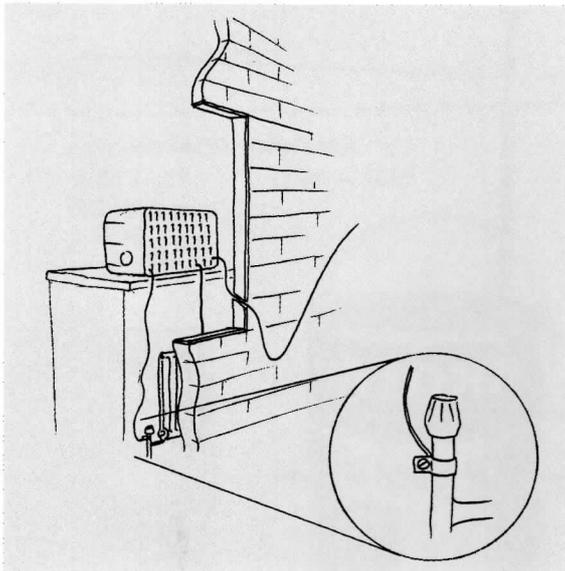
If the set in question has a mains earth, this might be sufficient without an additional earth connection.

However, if you want to connect an earth and no suitable water pipe is available, the alternative is to install a 'proper' earth, as described in many old radio books.

This consists of a length of copper pipe banged into the ground a few feet from the house and the ground around it kept damp. The more you can bang in without it buckling the better, four feet being about the minimum that will be useful. Two or more pipes can be used, spaced a few feet apart and all connected together. Alternatively, any large non-ferrous buried metal object will do.

The earth lead is best soldered to the buried objects, but good metal-to-metal contact with clean jubilee clips work just as well. The contact areas should then be sealed against the weather with self-amalgamating tape

A trick I have found to be very handy in electrically noisy indoor locations is as follows; loop the aerial wire from the aerial socket, around say a window or alcove, and back to the earth socket via a 0.01 µF 1kV capacitor. The actual signal pick-up might be less, but the interference is usually very much less.



or grease, etc., to stop corrosion.

A counterpoise earth is another option. This consists of 20 feet or more of wire running on or just under the surface, and preferably under the aerial. This need not be bare wire; any PVC covered type will do the job and it won't corrode or disintegrate. The capacitance between the conductor and the surrounding earth will be adequate as an RF earth.

As with the aerial lead, the radio should be placed as near as possible to where the earth enters the house. Note: Do not attach an earth directly to the chassis of a live chassis receiver. Any earth socket on these sets is connected to the chassis via a high voltage capacitor which should be checked for leakage before using the earth socket.

If your radio was built after 1955 and is capable of FM reception, it will certainly benefit from an additional VHF aerial. Some of these sets have an internal plate or wire that is intended to be adequate if you live in a strong signal area. However, a significant improvement will be achieved if a simple half-wave dipole is used if an outdoor VHF aerial is not available.

If the VHF aerial terminals are side by side, then the aerial input impedance is probably  $300\Omega$ . In that case a cheap ribbon cable folded dipole aerial may be bought from a hi-fi shop and attached, although this may well require removal of the fitted plug as it is unlikely to fit an old set.

These ribbon aerials are designed to be stuck to the

wall adjacent to the radio, and orientated for best reception, usually in a 'T' shape with the arms horizontal.

If a Belling-Lee (TV type) coax socket is fitted to the radio, the impedance here is  $75\Omega$ . This is designed for a Yagi aerial mounted outside via  $75\Omega$  coax. But a simple  $75\Omega$  dipole can be constructed and will pick up plenty of local stations if a proper VHF aerial is unavailable.

A good place to mount such a simple dipole aerial is in the loft. Theoretically, mounting above the roof is better, but the extra gain acquired probably won't be worth the effort of mounting such a simple aerial on a pole, running cable and waterproofing the connections.

To make a  $75\Omega$  dipole, cut two lengths of thick wire (a straightened-out wire coat hanger for example) to 750mm (about 2 feet 5 inches). Using a 'choc-block', connect the coax inner to one section and the outer braid to the other.

When mounting, try to keep it away from large metal objects and orientate the aerial to give best reception of the wanted stations. This will probably be with the cut wires approximately horizontal.

Many of us won't have the space to install the ideal aerial system. Despite that, the ideas here suggest simple alternatives to bits of wire just dangling out of the backs of our radios and should bring a dramatic improvement to reception.

Above: Earthing using a radiator pipe.

Above right: A simple VHF/FM dipole aerial.

If the set is designed for use with an aerial, an earth socket usually is provided too. Use it if possible, as it increases the efficiency of the aerial.

## Talking About Wireless Special

At this year's September Harpenden meeting Don McLean will give his superbly illustrated lecture "Restoring Baird's Image" The subject is the restoration of the recordings made on disc of the Baird 30 line TV system. He will also sign copies of his book of the same title.

The NBTVA (Narrow Band Television Association) will be displaying 30 line mechanical television.

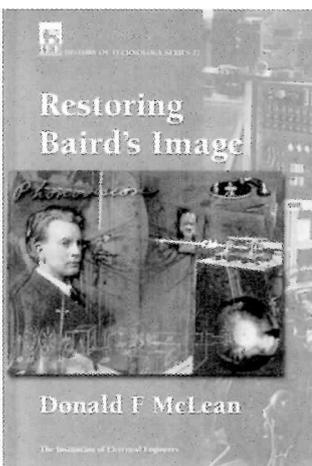
There will be an Institution of Electrical Engineers bookstall selling Don McLean's book and other IEE publications of historical interest, probably with a discount on the published price.

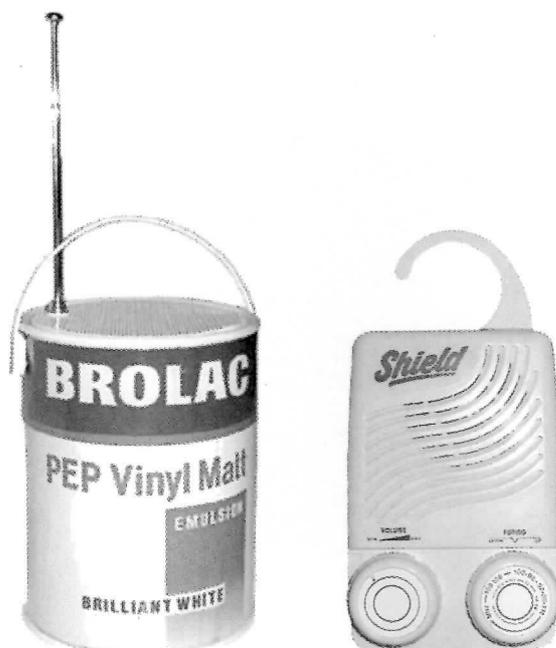
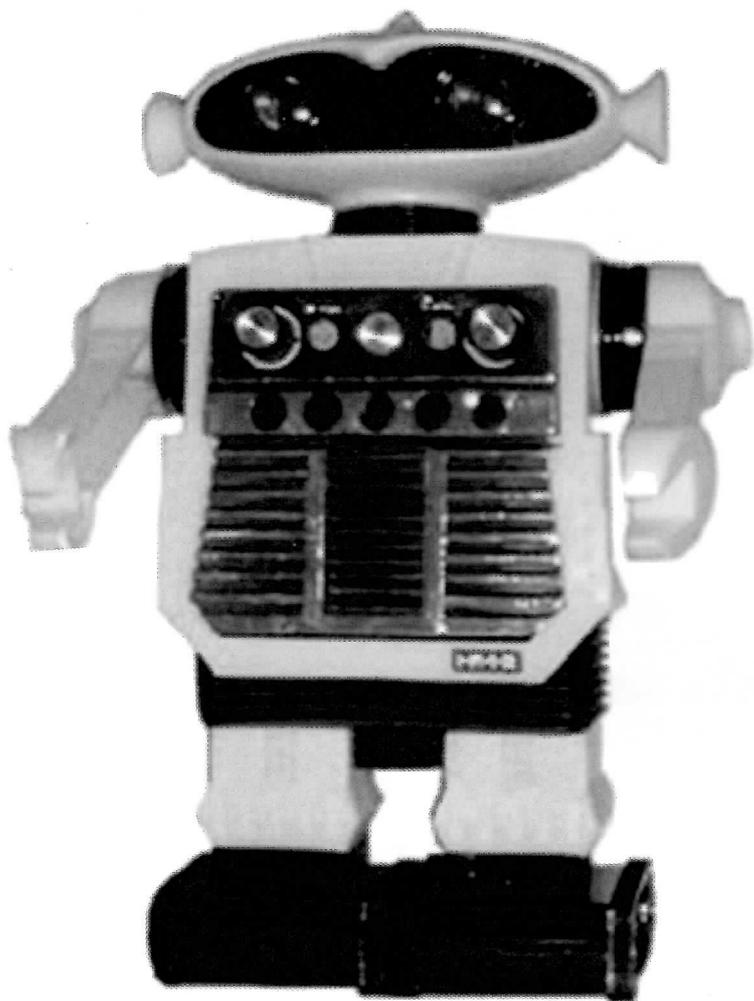
Our main Talking About Wireless series will resume at the November meeting.

## 'Radio Week' in Cornwall

From Sunday 12th to Saturday 18th August, Porthcurno Museum of Submarine Telegraphy will be holding a special 'Radio Week' to enable visitors to find out more about radio, it is being organised to mark the centenary of Marconi's first radio signal across the Atlantic. A temporary radio station, call sign 'GB2PK', will be in operation in the pavilion of the former Cable and Wireless sports field, there will be an exhibition and demonstration of radio controlled models, a refreshment tent and a variety of games and other exhibits weather permitting.

Porthcurno's involvement with radio goes back a to 1902 when the Eastern Telegraph Company began spying on Marconi's activities on the Lizard using their own radio mast and hut at 'Wireless point'. In 1929 the Eastern Telegraph Company merged with Marconi's wireless network thus forming 'Cable and Wireless'.





# Novelty Radios

by Chris and Angela Davies

**We've been interested in radios since I can remember. When I started work in the industry I lost interest to some degree. My wife at the time collected antiques and in her visits to car boot sales and junk shops picked up a few old wooden and Bakelite radios. I still have one she picked up for 50p; it must be worth a lot more now.**

This rekindled my interest. The cheap availability didn't last long, people soon realised their value and often got a little too greedy. Price and lack of space soon put a stop to this collection.

I went on to collect transistor radios, cheaper and much easier to store. As I could remember these sets from my childhood they had much more relevance to me as well. To this day I still have a chest full of them.

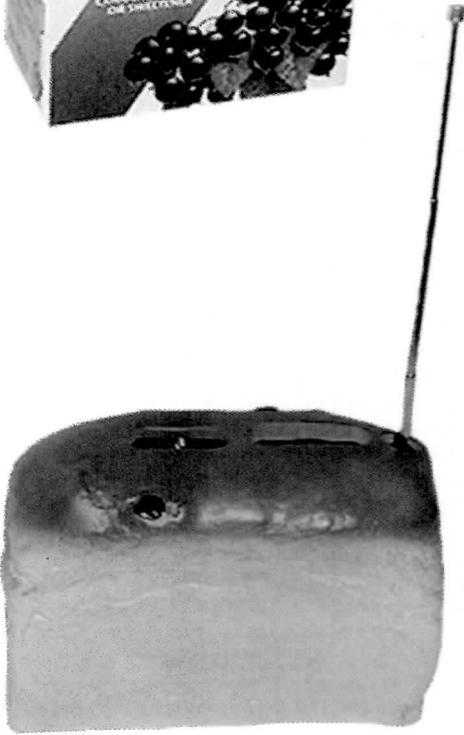
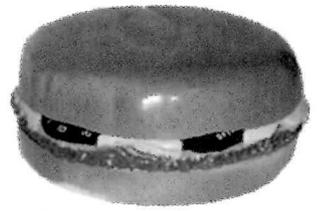
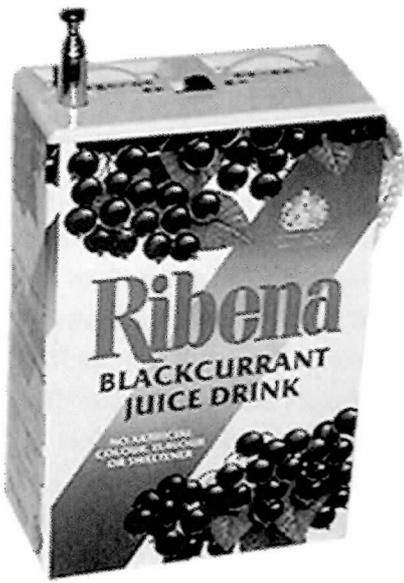
Some of my favourites include an Ekco Diamante radio, an Ekco 208 with a preset for 208 metres, (as featured on Thames News), a Bush TR 130 that has Radio Caroline marked on the dial, a Roberts R200 like the one my parents owned and a Stella tape recorder that was too expensive for me at the time.

It was not long before I discovered novelty radios. Purists probably would not call any of these a vintage wireless; however, many are unobtainable now, and by their seemingly disposable nature and the rapid progress of technology, these radios will not have to wait long to get their vintage status. Almost anything seems to come in the guise of a novelty radio, from loaves of bread to a Simpsons set.

The four-pack of duff beer cans is the volume control. The table lamp is the tuning dial. The aerial on top of the T.V. slides and sets the alarm. The T.V. lights up as the alarm sounds. The Pork Rinds bag is snooze and LCD backlight.

I bought the loaf of bread at a Harpenden swap meet, I don't know its origin, and there is no sign of advertising. Food and drink as in life seem a common theme in radios. I also bought a hamburger radio at Harpenden. Good as the catering is there, most of the food I've purchased has been in the form of radios! The hamburger containing a 6-transistor MW radio is not that recent, judging by the components, but is typical of its era.

Drink. What's your poison? Coca-Cola, Ribena, Grolsch radios all, and I have them! To obtain the Ribena radio, tokens had to be collected. This is often the case and it is worth watching out for promotional packs. I don't like Ribena; you'd be surprised how many discarded Ribena cartons there were in the gutter. I did my bit cleaning up. I always look in supermarkets for these promotions, collect so many tokens, get a radio. These offers are not that uncommon, usually for a very limited time, and guaranteed to be something you don't want. It's best to



buy the required number of whatever product at the time; you may never see the promotional packs again. You can always give your neighbours the unwanted shower gel, cereals, or whatever. I had a year's supply of Shield soap at one time, and now have an AM/FM Shield radio. There were many pendant radios given away with breakfast cereals. I haven't seen these promotions for a while but the radios seem quite readily available second hand and seem to go for about £5 now. I've collected lunch boxes, radio hats and cans, all sorts. There are many variations of each genre; the possibilities of becoming obsessed are endless.

You can always buy new novelty radios of various types. These seem to be getting more bizarre. There are many catalogue companies and gift shops selling them now, so drop a few hints to your nearest and dearest. I was lucky when I remarried, in that Angela became as fascinated with my novelty radio collection as me and I now have lots of these. It's easy getting me a present! For example I have a radio with tubes that have to be pushed in for tuning and volume, and radios following particular themes. We've many bathroom radios, which for some reason, in addition to being shower-proof all incorporate a panic button. More and more variations of these are appearing, fish, frogs, penguins, and more practically, mirrors and toilet roll holders. Some are very elaborate, even incorporating a CD player into something you can hang in the shower; next birthday present maybe! Whoever spends long enough in the shower to listen to a CD?

There are a lot of radios that could be categorised as childrens'. These are probably quite rare in good

condition! Some are of TV/film characters e.g. The Simpsons, Thundercats, Transformers, Ghostbusters and so on. We've got a robot with flashing eyes, and a dancing robot. Some others are aimed at younger children, a Sesame Street cassette player and a cassette player with karaoke and flashing lights. Animals are quite a popular category. These come in many forms, be it plastic mascots, fluffy hats, or shoulder bags. We've quite a few of these, not including the bathroom aquatic variety.

There really are many categories. We have for example, timepieces, space, see-through, and "beyond description" because some radios really are just that.

It would be very difficult to display all of these radios around the house; just the dusting would be daunting enough! We have come across the ideal solution. Armed with a digital camera, we have created a website. Instead of sitting in front of the television we sit in front of the computer screen, adding radios from our collection. With over 150 in the collection and more being added all the time it's a never-ending task.

If you have found this article interesting and would like to see more of the collection, visit the website at "[www.noveltysite.co.uk](http://www.noveltysite.co.uk)" Not only do we hope that you enjoy it but that other readers will be encouraged to put some of their collection on a website for all to see. It's really not that difficult.



# An Invisible Repair

by John Clappison

**Recently, I went to a local Amateur Radio Rally (the ones that sell computer parts). One stall actually had some old radios on it with nothing much of interest I thought, until I spotted this green KB FB10 right at the back and behind a Bush TR230 that had seen better days. I asked the stall holder if I could take a closer look. He handed it over and my heart sank as I saw the full frontal view. As you can see from the photograph this radio had been damaged and crudely repaired. My brain went into overdrive, if it were cheap enough I could use it as an experiment in the repair of Thermosetting Plastic. But what would my wife say? Just the same as if it were a perfect boxed FB10 for £1 “What do you want another radio for!” and “How much!” Anyway five minutes later and £14 lighter it was in the back of my car.**



The FB 10 after its careful and time-consuming repair.

At home I had my doubts; the bottom rail had been broken in two and an attempt had been made to repair it with an epoxy type of glue. The parts were over 1mm out of being flush. The brown glue had oozed out and looked terrible.

My first job was to dismantle the set. The base, chassis and speaker are held together with only three screws. The speaker cover was glued inside the front of the case and I had to carefully prise it off with the help of a screwdriver. The glass scale is held in with four small metal spring clips which I decided to leave, not wanting to risk damaging a perfect glass. I masked both sides of the glass with tape and paper taking care not to get any tape on the print side of the glass. I also masked the card at the back. I now had to part the damaged pieces, which I did by heating the case with my old fan heater (while directing the heat away from the glass)

This softened the glue enough for me to break the joint. I picked the glue off the ends of the broken pieces a bit at a time with a small screwdriver. Choosing not to use abrasive paper at this point, I was trying to leave the

parts to be joined as original as possible to aid the glueing. With all the old glue removed I mixed some Araldite and applied it to both surfaces to be joined. The assembled parts will set quicker if warmed slightly for a few minutes, the things that my old fan heater gets used for when it is not under my work bench keeping my feet warm! Any excess glue can be cut off before it is fully set. After leaving overnight, the glue was scraped out to just below the surface using the end of a needle file. I filled in the gouge mark to slightly above the surface using Milliput. This is a two part epoxy putty made in four grades. Use the finest - superfine white - it responds to water at all stages of mixing, applying and working. This should set in two to three hours without shrinking. When the putty is set it can be sanded with a coarse grade of wet and dry paper wrapped round a small sanding block using a circular motion and a little water. Finish off with a fine grade wet and dry taking off a little at a time, frequently checking the progress. The best way I find to check for a uniform surface is to slide a wet finger over the surface to feel any irregularities rather than to try and see any faults. The edge of the filler where it joins the original surface at this stage will be “stepped”. Use car primer to spray paint over the filler and on to the case. Do not mask the area around the repair. I did and this left a straight edge of paint down the sides of the repair which could not be completely removed. I tried “feathering” this mark with wet and dry paper but the mark would not disappear, only fade. It would seem that the primer is harder than the Urea Formaldehyde case, the slightest touch to the original surface with the wet and dry paper and the mark deepens. If the repair is still visible use more primer and rub down again with wet and dry paper. This is a tedious job but well worth the effort if the repair is to be undetectable.

At this stage of the repair I could have changed the colour of the set. But I decided it was easier to stay with the original green; there would be no need to undercoat the case and any subsequent scratches would not reveal the original colour.

A quick trip to the specialist paint shop with the case to use as a colour sample. At the shop the assistant recommended a synthetic paint, this was mixed and put into a four hundred ml aerosol. This cost less than eight pounds and will be enough to spray a few sets.

Back home and I gave the case a quick rub over with a fine grade wire wool. Then a thorough degreasing and the case was ready for painting. I sprayed a little paint over the repairs to see what sort of coverage it would give. The results were very encouraging. The white Milliput and grey primer were completely covered, the

repair was undetectable. The whole case was now ready to be sprayed. My workshop, paint and the case had been at room temperature for over two hours to eliminate any problem with condensation. I placed the case on a large piece of cardboard with four pencils under the corners to keep the case clear of the cardboard. The cardboard enabled me to rotate the set to aid the spraying. I sprayed on the first light coat of paint. After about ten minutes the paint was dry enough for a second light coat. I managed not to get any paint runs. After letting the paint dry overnight I carefully removed the masking tape, and cleaned the glass. The speaker baffle had been cleaned and was glued in using an impact adhesive.

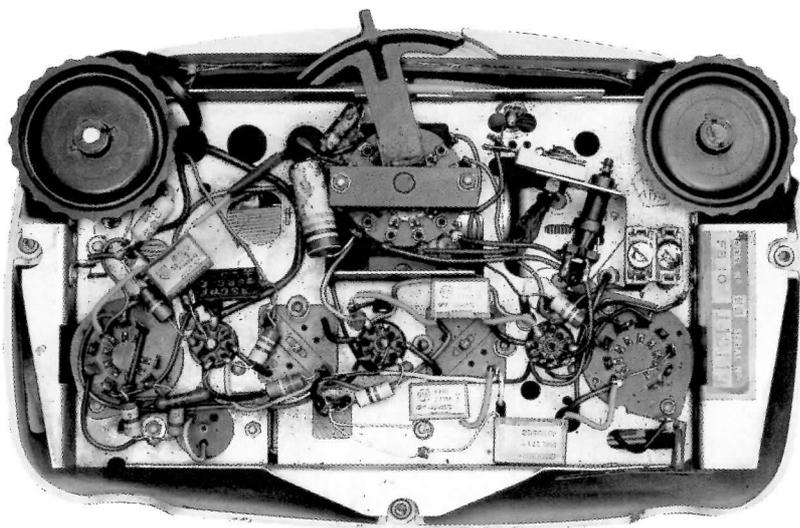
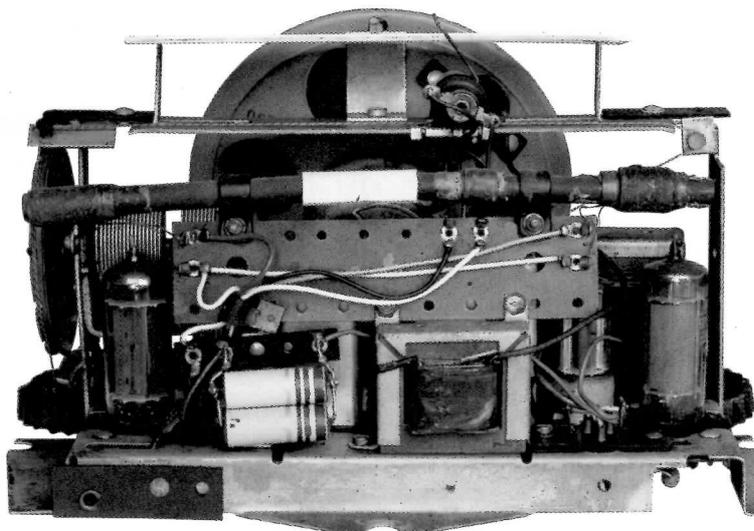
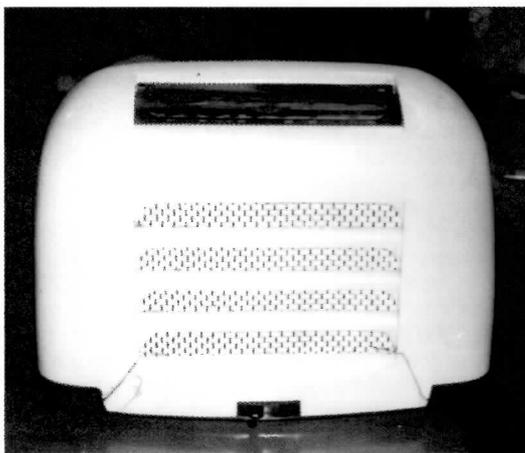
When replacing the chassis care should be taken to make sure the "live chassis" is properly located around the raised parts of the case to isolate the three fixing screws from the chassis. Also on the subject of safety, the Milliput, Araldite and spray paints all have various warnings in their instructions. Also be cautious what type of material heat is used on. Try the hot needle test, that is while holding a needle in a pair of pliers heat it then press it into an inconspicuous part of the case. If it melts don't use heat. If it does not make a mark it should be all right to use heat with care.

I am pleased with the result so far but still have the electrical side to sort out. This is described in the BVWS Bulletin volume 24 number 2 where Ian Liston-Smith discusses in great detail the FB10 chassis.

Below left: The same radio before its miraculous transformation.

Below: Chassis viewed from behind.

Bottom: chassis from below.



## BVWS Minutes

Minutes of BVWS Committee meeting held on Thursday 19th April 2001 at 5 Templewood, Ealing.

**Present:** Mike Barker (chair), Jeffrey Borinsky, Ian Higginbottom, Guy Peskett, Carl Glover, Robert Chesters.

### 1 Apologies for absence:

Terry Martini, Steve Sidaway, Steve Pendlebury.

### 2 The Minutes of the meeting held on 15 February 2001 at Templewood were accepted as a true record.

Matters arising; none not covered by agenda items.

### 3 A report on membership matters received from SP by email was read.

By the 18th April 1327 subscriptions had been received and 120 renewals were still outstanding. SP had received a number of complaints from members who didn't like the procedure for obtaining a replacement renewal form after they had thrown away or

lost the one sent to them. He had refrained from mentioning to those members the timewasting and nuisance caused by such carelessness.

### 4 JB tabled his final report for the year ended April 2001.

This was not significantly different from the interim report given at the AGM and confirmed the health of the Society's finances.

The timing of the annual discussion of financial projections was discussed. It was agreed that in future this would take place at the November meeting.

### 5 Bulletin Report

It was reported that late arrival of the last Bulletin had lead to a number of enquiries

from members who were worried that theirs might have gone astray. In discussion fears were expressed that unless more vigorous action was taken by the editor the next issue would also be late.

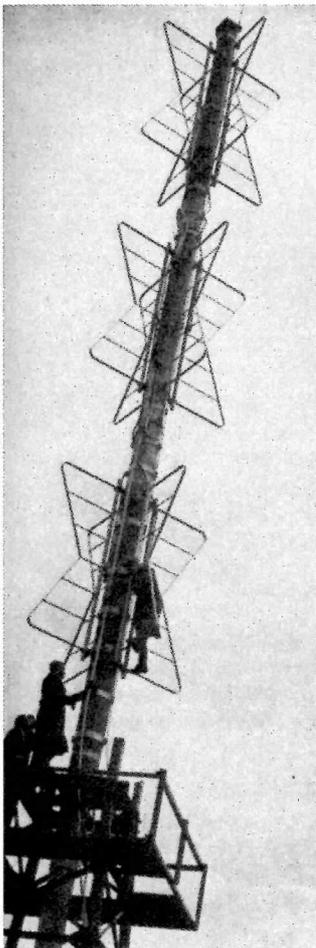
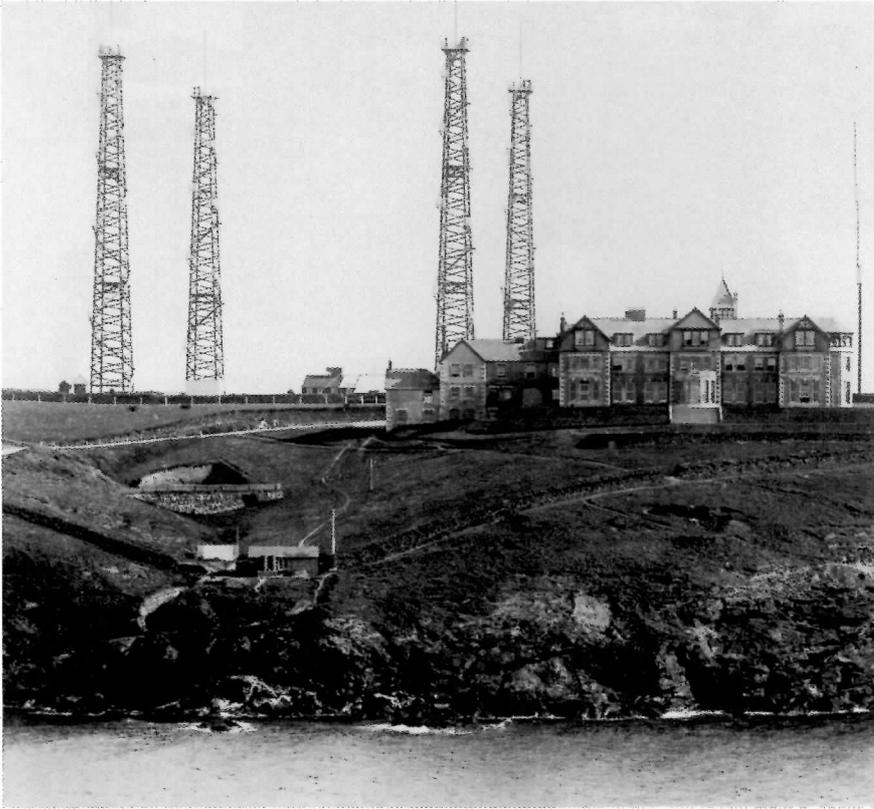
### 6 A long discussion took place of the arrangements for the Society's forthcoming exhibition at the May NVCF celebrating our 25th anniversary.

### 7 AOB, none

8 The next meeting will be held at the Chairman's house in Swindon following the Wootton Bassett swapmeet (Sunday 15 July). The meeting closed at 23.25

# Aerial Erectors

By Bill Smith



When the BBC 405 line transmissions commenced in this area, we in the television trade were somewhat caught out as regards the question of the erection of the multitude of aerials which were now required. Mr Watson, our general manager was convinced that due to the salt content in this Northerly exposed part of the country, the aluminium aerials would not last long due to the effects of corrosion. He therefore set about having our considerable stock of aerials protected with weather seal paint. His theory turned out to be correct as regards the corrosion and he took great delight in pointing out his painted aerials, which remained aloft for years in comparison with the untreated ones. However in regards time and expense the practice was discontinued when sales of sets took off and all available hands were required to erect the necessary aerials. This in itself was a major problem as (in this area at any rate) there were no aerial erectors as such and the work had to be carried out by our own staff. Consequently I found myself left alone in the workshop, the apprentices and the outside engineers (sometimes rather unkindly known as Valve Pushers), now being engaged full time as aerial erectors.

As you can imagine, our stock of ladders and such was understandably rather limited and the more adventurous of our workmen would think nothing of running up the roofs, albeit while wearing soft-shoes. The local council, fearing for damage to the slates on their property issued an edict to the effect that a qualified Slater had to be present while aerials were being erected. This meant employing a Slater and we had one seconded to us by a local firm who spent years working for us. Gradually however as ITV arrived and another aerial and diplexer were required, aerial erectors were employed became accepted as a separate trade. Not that there were any qualifications required for such, as anyone with a set of ladders a

head for heights, and a modicum of intelligence could provide a service.

Talking of Cowboys, I remember an experience I had while on holiday around about this time. I had got tired of the usual round of looking around ladies clothing shops, (my wife's idea of a holiday!), and had sneaked away to a local hostelry for a quiet pint. It was one of those older establishments with those little partitioned booths, which were supposed to provide some seclusion to the punter. As I was sipping my beverage (real ale it was!) I could not but overhear the conversation of a couple of a couple of males in the adjoining booth. I know that like I, you will be amazed to learn that they were both aerial erectors and very much of the cowboy variety!

One of them was bemoaning the fact that business had been poor of late and was asking his crony how things were going with him. "Couldn't be better mate... I'm seriously thinking of taking on a lad to help out!" he declared. "Go on! Pull the other one, you can't be that busy!" said his friend, "What's your secret then?" By the sound of their voices it was obvious to me that they had imbibed of a few and that they were becoming more convivial. The other lowered his voice and rasped out in a loud conspiratorial whisper, "When I'm on the roofs I take a box of pins with me and push one or two through the middle of some of the neighbouring down leads... not many you understand... just one here and there!" "I then hang around the area in my van until I'm approached and asked if I am free to fix their aerials, which of course I do cheaply and efficiently!" Then he added, "Word gets around and before you know it... you're in business... money for old rope!" "But how do you explain how you are able to fix things so speedily?" asked his partner. His mate chuckled and said, "Why I tell them that there was a short circuit or that two wires were touching... truth in't it!"

I must admit to being sickened by the blatant effrontery of the man but had to give him ten out of ten for his sheer ingenuity. Never in a million years would I have thought of neat, money making wheeze like that. I wonder if he was ever found out?

Mind you aerial erectors were not all rogues like the aforementioned couple. As 625 line and colour arrived there was an even bigger demand for the service of aerial erectors, and a number of out of town operators made an appearance.

Such a one was Roger who started up in a small way by squatting in a derelict property and doing for himself and even kipping in a sleeping bag on the floor of what was his storeroom. My employer took pity on him, and made use of his services until he became established. Shortly afterwards I recall repairing a Television for a lady and remarking that it was time that she had her aerial seen to but she wouldn't have any of it. Like many in the area, she was deeply religious as was evident from the many saintly paintings adorning the walls of her living room.

I was busy gathering up my tools when there was a knock at the door and the aforementioned Roger was ushered in. Being new to the area he required information on a street location and seeing my van he knew that I would be able to give him directions. As we spoke my eyes were directed to a painting of Jesus, which was positioned directly over Rogers's head, and I was immediately struck by the likeness of their features. However I was not the only one to notice the amazing similarity, as the lady of the house began fussing over Roger, and when she found out that he was employed in erecting aerials she immediately engaged him to attend to her one. I left her rushing around making tea for her caller and made my way to my van thinking, "Nice one Roger... with looks like that you're bound to succeed here!"

Indeed he did succeed, as in a very short time he had found new premises, bought a house and new van, and had employed two of a staff. However when there was a downturn in trade he upped sticks as they say and departed for pastures new.

Mrs Wilson was a lady not to be trifled with, as it

was obvious that she considered herself above the mere locals. Hadn't she and her husband spent many, many years abroad where he had been employed as a Civil Engineer, and was it not the case that they had met everyone who amounted to anything? I remember being called in to her ageing 26 inch Bush colour TV which she had been told was not worth spending money on and being given a list of faults which, if carried out would set things to rights. As the CRT was knackered and the pots in the dynamic convergence panel were all dodgy (remember how the panel used to swing upwards to enable adjustment!) I enquired as to her source of information. "Oh!" She said, "I have just had my aerial attended to by that nice Mr Bloggs who has recently moved into the area... such a clever man... with a degree and letters after his name!" Being rather puzzled as to how an aerial erector would have a degree I asked Mrs Wilson how she came to know this. Producing the local newspaper she pointed to an advertisement that proclaimed: -

AERIALS EXPERTLY ERECTED  
By  
JOE BLOGGS - CCTV

Although the following story does not concern aerial erections, the above mention of the dynamic convergence panel immediately brought it to mind. I

was called in to a Bush colour TV which unlike the above hybrid, was a later solid state one but with a similar swing up panel. On switching on, a view not unlike the breakdown of the positron but of a much more severe nature was apparent. As the original complaint was of the picture unlocking vertically, I was at a loss as to how this came about. On questioning the customer he sheepishly admitted to taking off the back to look for the frame hold control, which he was familiar with in his old black and white set. Unfortunately in his quest to find the elusive control he had managed to tweak all of the convergence pots hence the resultant mess! Those of you who remember the soul destroying, time consuming, sequential dynamic convergence adjustments carried out on these early models, will appreciate my annoyance on this occasion. However as the test card was broadcast in the mornings in those days I applied myself to the task and made a reasonable success of the chore. Having said that it is true to say that one never got it 100% right on those older models!

# An 'All Electric' company makes battery history

by Robert Chesters



Above: the Ekco P63 "Princess" portable of 1949. A late Wells Coates design and one of his last for Ekco.

Left: the Serge Chermayeff designed cabinet of the B74 - interestingly enough Chermayeff always referred to his design as the "Model 74" and never to the voltage requirement.

Ekco had some funny ideas about history. Not least their position in it. They had acquired the notion that if they had not made a battery set then there was some historical importance attached to breaking with their own self imposed practice. This was of course just a bit of hype on their part, back in 1933.

The company had founded their business on battery elimination, E.K. Cole himself having seen the potential of the new supply of mains electricity becoming more widely available in the mid-'twenties. They had gone on to produce several mains powered sets (initially the primary market was for DC mains type receivers) the first being the "Mains Drive" models (an example of which can be seen in the Prittlewell Priory Museum in Southend). These sets, while reflecting the vision of the company founders, did have a serious drawback.

What was the drawback? They were unavailable to

the household without mains electricity. It is almost so prosaic a point as to be easily overlooked. How many people remember even in the 1940's traipsing to the local garage or other such place to have their parents' wireless battery recharged? Judging from the number of stories I have heard from those who remember the '30's & '40's (I don't by the way) it would seem that virtually the entire country was still using battery powered wireless up until 1960! However, when Ekco did finally make battery history it seems that they underplayed it somewhat. The P63, designed by Wells Coates was housed in a portable cabinet which both reflected Coates' interest in the idea of a wireless cabinet that was the same from both front and back and more importantly anticipated the portable designs of the "Transistor Era". I wonder what kind of a fuss they would have made had they realised?



# Letters

## Dear Editor

Re: "Some Bush wirelesses of the 1940s"

I read through Mike's Gohl's article; within the text it is asked what era the DAC73 hails.

It most definitely is a War-time production set; the Bush "70-series" sets were announced during June 1940 (see contemporary issues of "Wireless & Electrical Trader" for more detail). They would appear to have remained in production until about mid-1941; even with a radiogram version in both AC (RG73) and AC/DC (DRG73) supply variants.

As to the AC73; there was no such beast-but there was a PB73 for AC only. I have an example of this set.

Mike's comment about the PB83 "...being designed prior to World War 2 but for whatever reason never released..." makes me think that really it is about time that the myth of there being no domestic receiver production at all, seemingly from 3rd September 1939 to 8th May 1945 really was dispelled once and for all. There was, admittedly in sometimes very limited amount, production by various companies right through the early War years up to about 1943; I have a 1942 production Cossor in my collection (the 77B) and I know Murphy produced some sets in this era; the big A78C was even produced briefly in 1943. 1944 seems to be about the only year where there isn't any evidence of domestic production other than our own "co-operative set", the Wartime Civilian Receiver.

Returning to the PB83, its styling cues are reminiscent of the Bush 60-series sets of 1939-40; its model number would suggest that it was destined to have been a release for the 1942 season had not the War dictated otherwise. I have an immediately post-war leaflet with this model and the AC81 in it, dated 1945.

Hopefully, when time is less at a premium, all this information can be viewed on my nascent website illustrating the history of the Bush company and their sets.

Regards,  
Mike Izcky

## Dear Editor

Re: Nevil Maskelyne: Wireless Telegraphy.

I am currently undertaking biographical research on the early career of Mr. Nevil Maskelyne with a particular emphasis on his involvement in the development of wireless telegraphy systems between 1899 and 1911.

My understanding is that Nevil Maskelyne was the son of John Nevil Maskelyne and the father of Jasper Maskelyne. All three were closely associated with magic during their long careers.

I would be most interested to know if any members had material on Nevil Maskelyne and other members of the Maskelyne family that could assist me in my ongoing research. There is some evidence to suggest John Nevil used an early form of radiotelegraphy in a mind reading act and in the period 1899-1900 was directly involved in wireless telegraphy experiments with his son Nevil conducted from a balloon. Nevil Maskelyne was associated with a number of experimental wireless telegraphy systems used by the Eastern Telegraph Company (1903), the De Forest Wireless Syndicate (1904-1906), the Amalgamated

Wireless Telegraph Company (1906-1908) and the British Radio Telegraph and Telephone Company (1909-1911). Nevil was also directly associated with the infamous jamming of Professor Fleming's demonstration of Marconi equipment at the Royal Institution in June 1903.

I am a member of both the BVWS and the AWA and have recently published an article in the AWA Review on an early British wireless telegraph company. I would be very grateful for any assistance members would be able to give me in my continuing research.

Yours Sincerely,  
Graeme Bartram

## Dear Editor

Can you please help. I have found a radio made by 'The British Thomson-Houston Co Ltd. serial No R73022, type VR2 Form BA. There is a logo B T H - BBC

Do you have anything on the history of this set? Where do I find the circuits? Are the valves still available?

Many thanks  
Colin M Reynolds.

## Dear Editor, Radio Interference

I have been experiencing interference on radio reception for some time during the evening hours, this affects both F.M. and A.M. At first, it was merely a source of annoyance when listening in for short periods but I then realised it was occurring for up to three hours on most evenings. Moreover, when timed, it was found to occur with a regular periodicity of between five and six and a half minutes on various occasions.

I would be grateful for any suggestions from members.

Yours sincerely,  
Tony Voysey

## Dear Editor

Could you place the following thank-you letter in the next BVWS bulletin, thank you .

Many, many thank you's to all those people who replied to John Wickham's letter in BVWS vol 25 #4 Winter 2000, who sought information on my behalf. Their information has been very much appreciated.

Can anyone help with service sheets or any information on the Dynatron Transistor in the following picture?

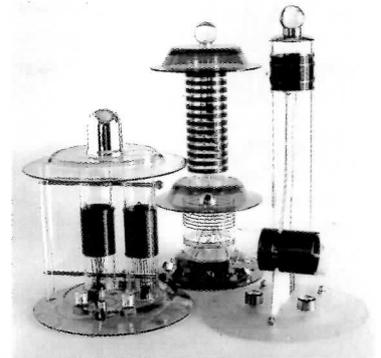
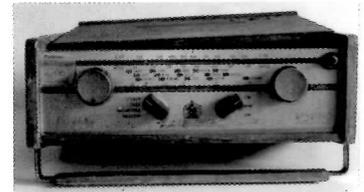
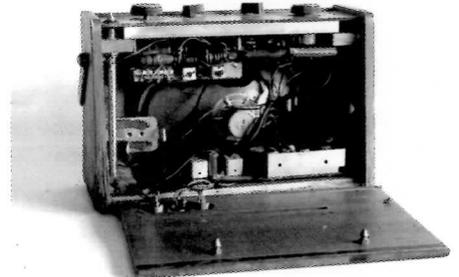
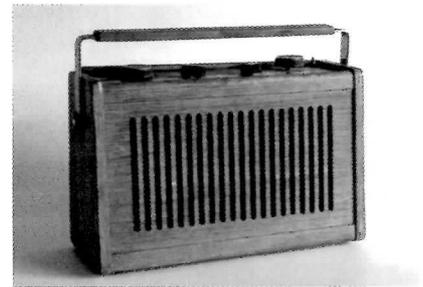
As I have received so much help already I feel hopeful that I may be successful in my request for a copy of plans of a Crystal Set printed in 'The Amateur Mechanic' of 1918, a picture of which is published in Robert Hawes' and Gad Sassower's Book, 'Bakelite Radios', 1996, on page 19; it is also in the book 'Radio Art', on page 17.

Thank you for your time,

May your aims be of higher frequency....  
Leonard Jannese

PS:

I've enclosed a Calendar with several of the Crystal Sets that I have built, the other image contains a permeability tuner unit Crystal Set (ex-automotive radio) There is also a matching speaker horn that this set drives which you may find of interest.



## Dear Editor

You may find the enclosed pictures of interest. They are of a shop I found in Liverpool.

I found it quite by accident and I was amazed by just how many radios there were in the one place. Most seem to be in poor condition, but complete.

Maybe your readers will spot something of interest - no green Ecos though I'm afraid to say.

Great magazine!

Regards  
Chris Blackburn

## Dear Editor

I visited the Vintage Technology Fair at Blackpool last Sunday and took the opportunity to join your society. My friend Geoff Pollitt, who joined last year had previously shown me some of the BVWS Bulletins and what really impressed me was the quality of the photography on the covers.

The pictures are all first class and they provide a superb setting for the rest of the magazine which is itself an excellent publication. There is a distinct 'house style' about it which exudes quality, which I'm sure can't be easy to attain.

You are credited in the Spring issue with cover photography and graphic design and I assume that these are your normal roles in the Society. I would therefore like to take the opportunity to say thank you for doing a marvellous job.

I look forward to receiving my next quarterly bulletin and in particular the top class pictures on the cover.

Kind Regards  
Alan Schofield

#### Dear Editor

Thank you for the complimentary copy of Gordon Bussey's book "Marconi's Atlantic Leap", a wonderful surprise when I arrived home late this evening to find it propped-up on my doorstep. I do not remember reading anything in the Bulletin regarding this splendid gesture, but then I am a "vintage 1925 model" and can remember vividly our first wireless set in 1928, but not where I put anything safely, yesterday.

Last night on my way home I called in WH Smith as I fancied a wireless magazine to read in bed, I spotted 'Short Wave Magazine' which I'm quite sure I haven't picked up in 25 years. So I decided to 'update' a few grey cells, which started when the assistant asked for "£3.25 please Sir!" As it turned out it was worth every penny, how things have changed; it would seem that you get very little change from £1000 for a good set now, but what a mouth watering batch of advertisements and interesting articles. I've only read half the magazine, but tonight it's Marconi's turn and a free book at that! I've peeped at all the photographs which are truly fascinating. Whilst on the subject of



photographs I think the Bulletin front and back cover pictures are brilliant - always.

Once again many thanks for giving so much pleasure.

Yours sincerely  
Douglas Atfield.

*Please remember that there is a new Editor:*

*Correspondence to be sent to:  
Carl Glover, 33 Rangers square,  
London, SE10 8HR*

*email: choris.b@virgin.net*

# We want your articles!

Share your interests with your  
fellow BVWS members.

We accept: Type, handwriting, fax, email, floppy disc, CD

Send your articles to:  
Carl Glover, 33 Rangers Square, London SE10 8HR  
Tel/Fax: 020 8469 2904  
choris.b@virgin.net

## Talking About Wireless Special

Harpenden 2nd September 2001  
12:15pm in the small hall.

Don McLean will give his superbly illustrated lecture "Restoring Baird's Image" The subject is the restoration of the recordings made on disc of the Baird 30 line TV system. He will also sign copies of his book of the same title.

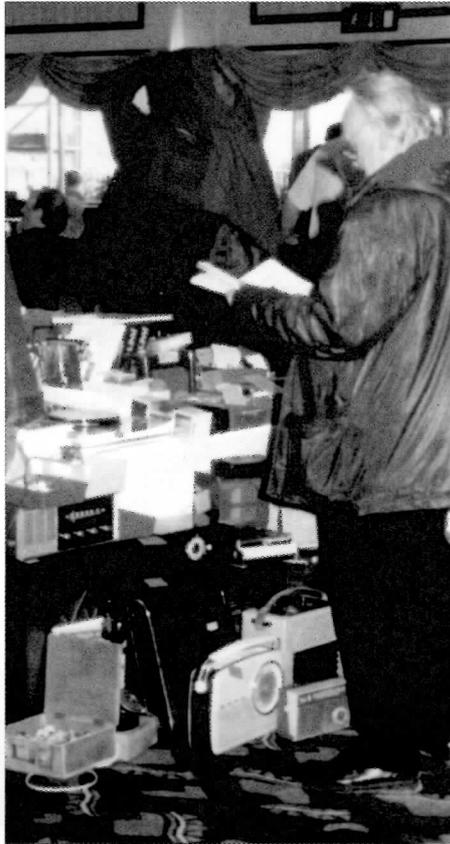
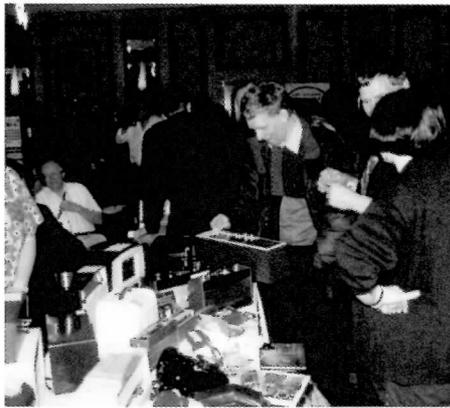


The NBTVA (Narrow Band Television Association) will be displaying 30 line mechanical television.

There will be an Institution of Electrical Engineers bookstall selling Don McLean's book and other IEE publications of historical interest, probably with a discount on the published price.

Our main Talking About Wireless series will resume at the November meeting.

## Pictures from Blackpool



## Words from the departing Editor

Time flies and it has not seemed like a year and a half since I took over the editorship of the Bulletin. However, in the last few months I have massively increased my lecturing commitment and due to the pressures of work, life and other engagements I reluctantly feel that I can no longer continue to edit the Bulletin. This does not mean I want to withdraw from the Bulletin altogether. I hope to be the first of several correspondents who will help the editor by procuring and commissioning material for the Bulletin. Perhaps you might feel you are the person to be the "Pre-Broadcast Correspondent" or the "Restoration Correspondent". You could make a valuable contribution and make our Bulletin even better.

Anyway, onto the matter in hand. Recently, I found myself watching children's TV on a Saturday morning (being a lecturer by profession, I like to keep abreast of what young people are

picking up from television as I may well be teaching them in a few years time - that's my excuse anyway). I was amazed to discover that the cartoon "Weekenders" was being set in a theme park.

Not actually out of the ordinary for an American cartoon you might say. This turned out to be a trip to "Tesla Park" and Tesla was being heralded (quite rightly some would say) as the inventor of both alternating current and radio. It is especially astonishing as it was being presented as a piece of information that a child would want to know rather than ought to know. I feel that the educationalist lobby is finally making some headway again as to influencing what goes into children's TV. Eventually, programme makers in Britain might realise that shouting and flinging "gunge" about was great 25 years ago but it really is time to start making children's entertainment a little less mindless. It is my belief

that TV encourages a relaxation that allows learning at a subconscious level to take place particularly in youth and disseminating the message that gunk and garrulousness are great attributes is a complete waste of a great opportunity.

Of course the impending centenary of Marconi's first transatlantic message makes this all the more germane and also links nicely to Anthony Constable's article on the same. I trust that members will find it as interesting, timely and informative as I have done. This is also the twenty fifth anniversary of the founding of the BVWS and as such should offer us a great opportunity to celebrate. For all of you who were at the NEC this April you would have seen the wireless and television display to commemorate the event. If not, your chance to see the glittering stars of radio has not been totally missed as we have a number of pictures in the NEC photo section.



Visit Britain's largest  
**Vintage Radio Shop**  
 Without even leaving your home!



**SUBSCRIBE TO  
 AIRWAVES**

- ▶ Britain's widest range of Radio, TV and Gramophone collectables for sale in every issue - 6 issues per year.
- ▶ Illustrated with accurate descriptions and prices.
- ▶ Interesting articles on all aspects of vintage technology.
- ▶ Annual subscription fully refundable against purchases.
- ▶ Top prices paid for quality items - collections bought.

Send S.A.E. for details and sample copy

**ON THE AIR**

*The Vintage Technology Centre*

The Highway, Hawarden (nr. Chester) CH5 3DN

Tel/Fax (+44) (0) 1244 530300

[www.vintageradio.co.uk](http://www.vintageradio.co.uk)



**YOUR WIRELESS  
 RESTORED**

FIVE YEAR GUARANTEE

FREE ESTIMATES  
 NATIONAL COLLECTION & DELIVERY

Customers include Harrods, the BBC  
 and leading collectors worldwide.

**RADIOCRAFT**  
[www.radiocraft.co.uk](http://www.radiocraft.co.uk)

Main Street Sedgberrow WR11 6UF  
 Tel: 01386 882280  
 Email: [steve@radiocraft.co.uk](mailto:steve@radiocraft.co.uk)

Past achievements include the 'Retrovisor' retro tv  
 and the 'Copycoder' optical encryption/decryption  
 panel. Radiocraft was established in 1986 by  
 proprietor Steve Ostler (BVWS member).

**Back  
 issues**

Vol 10 Numbers 2, 3 & 4 Inc. The KB Masterpiece, Extinct Species "A Monster Defiant".

Vol 11 Numbers 1, 2, 3, 4 Inc. BTH VR3 (1924) receiver, Marconi's 1897 tests, Origin of the term 'Radio', Baird or Jenkins first with TV?

Vol 12 Numbers 1, 2, 3, 4 Inc. the

Emor Globe, The Fultograph, Ekco Coloured Cabinets.

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

Vol 14 Numbers 1, 2, 3, 4 Inc. Cable broadcasting in the 1930's, The story of the Screen Grid.

Vol 15 Numbers 2, 3, 4 Inc. The wartime Civilian Receiver, Cohers in action, Vintage Vision.

Vol 16 Numbers 1, 2, 3, 4 Inc. The Stenode, The Philips 2511, Inside

the Round Ekco's.

Vol 17 Numbers 1, 3, 4, 5, 6 Inc. Wattless Mains Droppers, The First Philips set, Receiver Techniques.

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

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

Vol 20 Numbers 1, 2, 4, 5, 6 Inc. Radio Instruments Ltd., Japanese shirt pocket radios, Philco 'peoples set', notes on piano-keys, the story of Pilot Radio, the Ever Ready company from the inside, the Cambridge international, the AWA Radiolette, this Murphy tunes itself!

Vol 21 Numbers 1, 2, 3, 4 Inc. Marconi in postcards, the Defiant M900, GPO registration No.s, Personal portables, the transmission of time signals by wireless, the Ekco A23, historic equipment from the early marine era, the birth pains of radio, inside the BM20, plastics, Ferdinand Braun, pioneer of wireless telegraphy, that was the weekend that was, the first bakelite radios<sup>37</sup>

BVWS - the first five years, the world of cathedrals, Pam 710.

Vol 22 Numbers 1, 2, 3, 4 inc. Another AD65 story, the Marconiphone P20B & P17B, listening in, communication *with* wires, the story of Sudbury radio supply, French collection, Zenith Trans-oceanics, Farnham show, Alba's baby, the first Murphy television receiver, AJS receivers, Fellows magneto Company, Ekco RS3, Black Propaganda.

Vol 23 Number 1 inc. Sonora Sonorette, Bush SUG3, RNAS Transmitter type 52b, North American 'Woodies'.

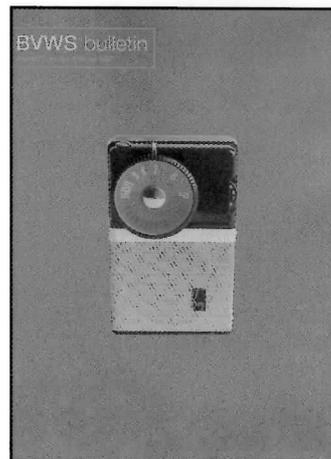
**Supplements:**

- 1 'The story of Burndept'.
- 2 'WW 1927 data sheet'
- 3 'Seeing by wireless' the story of Baird Television
- 4 reproduction Marconi catalogue

Earlier Bulletins and supplements are priced at £2:00 each + postage. Bulletins from volume 21 onwards are priced at £2.50 each. + postage.

**Postage:**

for individual bulletins add 50p, for 2-5 bulletins add £1, for 6 or more add an extra 20p each. 23 Rosendale Road, West Dulwich London SE21 8DS Telephone 0181 670 3667. Cheques to be made payable to 'The Vintage Wireless Museum'.



## News and Meetings

### The keeper of the list

Martyn Bennett still has the role of custodian of the BVWS list of G.P.O. Registration Numbers. As many members will know the project of assembling this list was started in the early days of the BVWS and, more recently, has been enthusiastically carried on by Pat Leggatt.

Members are strongly urged to help build the list, whenever they get the opportunity, particularly as it is something that will help with the identification of vintage wireless in years to come. The list is by no means complete and (to the knowledge of the editor) the GPO no longer have a record of the numbers granted to wireless manufacturers. The BVWS Handbook contains the current listings - one in numerical order and one ordered by name.



Please let Martyn have any additions, or suggestions for corrections, by mail or over the phone.

### Contact address:

Martyn Bennett, 58 Church Road, Fleet, Hampshire GU13 8LB  
telephone: 01252-613660  
e-mail: martyB@globalnet.co.uk

### Harpenden meetings

Autumn is heralded with a swapmeet on **2nd September** also featuring Gerry's workshop, and the year finishes with a swapmeet on the **25th of November**.

### Wootton Bassett meetings 2001

Mike Barker will be organising a swapmeet on Sunday **15th July** which will give the dedicated another chance to buy more goodies for their collections and Sunday **December 2nd**.

### NVCF 2001

Jonathan Hill will be organising the next NVCF on Sunday **23rd September** Please see advert on page 2 for further details.

### Blackpool meeting cancelled

Some late breaking news has come in concerning the Vintage technology fairs held at Blackpool organised by John McGlynn and Brian Chesters. Due to a change of policy by the management of the DeVere Hotel there will be no further events held at Blackpool. This will no doubt disappoint those who made the effort to attend what many found to be an extremely enjoyable event. The organisers would like to thank all those who took stalls or visited the event for their support and look forward to seeing them in the course of future business.

If anyone has any plans to run a similar fair at a different venue in the North West then John and Brian are more than happy to make their database of contacts (advertisers and stall holders) available to them.

### Harpenden meetings 2002

For those of you looking forward to next year's Harpendens already have no fear the popular event will be going on as ever next year. Following the excellent response to the "Talking about Wireless" series of lectures, we might even see a few more exhibitions being staged - watch this space for details.

### New Articles

*If you have anything interesting to say concerning Wireless, Television, Broadcasting, Collecting etc. please send it to the Editor for future publication in the BVWS Bulletin. Your article can be just a few paragraphs long if you think it conveys its message to your fellow members.*

*Also if you have any photographic material that would look good in the Bulletin, don't hesitate to post it to the Editor. The chances are that I will definitely use it!*

*Please send to: Carl Glover, 33 Rangers Square, London SE10 8HR. Tel: 020 8469 2904 email: choris.b@virgin.net*

**WANTED**  
All Things Ekco  
Robert Chesters 01244 675826  
bakelite.ekcos@virgin.net

## The Bygone Radio Shop

(Prop. Nicholas Walter)

100s Vintage/Classic radios from the '30's and '40's from Original Sources  
Restoration and Repair Service  
Radio Collections Bought Outright

Shop hours: Mon-Sat 9.00 - 12.30 excl. Wed

The Bygone Radio Shop  
296 Cheriton Road, Folkestone, Kent CT19 4DP  
Tel: (01303) 277716

Swapmeet at

## Wootton Bassett

The Memorial Hall, Station Road, Wootton Bassett  
(3 miles from M4 Junction 16, turn left after Town Hall)

15th July 2001

doors open at 10.30 to 3.30 (auction 1.30)

£2 entry - no booking required  
£12 for stall plus helper

stallholders please book by telephone or letter  
phonecalls after 6pm please

Mike Barker: 59 Dunsford Close, Swindon, Wilts SN1 4PW.  
Telephone 01793 541634

## Workshops at The Vintage Wireless Museum

April 15th, August 12th, September 30th and December 16th.

25 Pounds per head, to include all minor components, refreshments throughout the day and meals.

**No transistors, Stereo or other modern equipment.**

Please let Gerry know what you are bringing when you book  
23 Rosendale Road, West Dulwich, London SE21 8DS.  
Telephone 020 8670 3667

## The Saga of Marconi Osram Valve A HISTORY OF VALVE MAKING

By Barry Vyse & George Jessop

As serialized in the bulletin



"A fascinating and beautifully illustrated book, written by two people with an inside knowledge of the Marconi-Osram Valve Company. A 'must' for everyone remotely interested in valves".  
**Keith Thrower, Fellow Science Museum.**

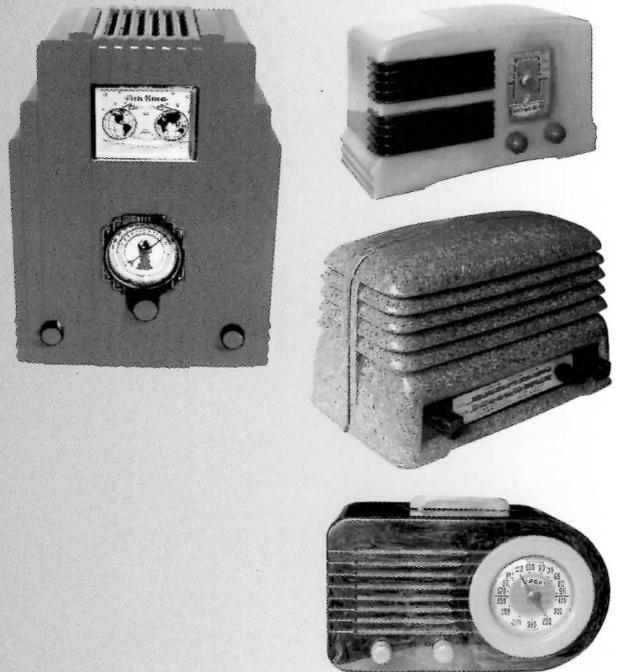
Available in Hardback £35 and Softback £25  
Add £4.13 per book for delivery by first class mail

**To order your copy call 020 8933 0918**

or fax to 020 8866 4334 e-mail [vyse.co@virgin.net](mailto:vyse.co@virgin.net)  
or send cheque made payable to: Vyse Ltd  
14 Cranbourne Drive, Pinner, Middx, HA5 1BZ.

For more info see website at  
<http://freespace.virgin.net/vyse.co/mov.htm>

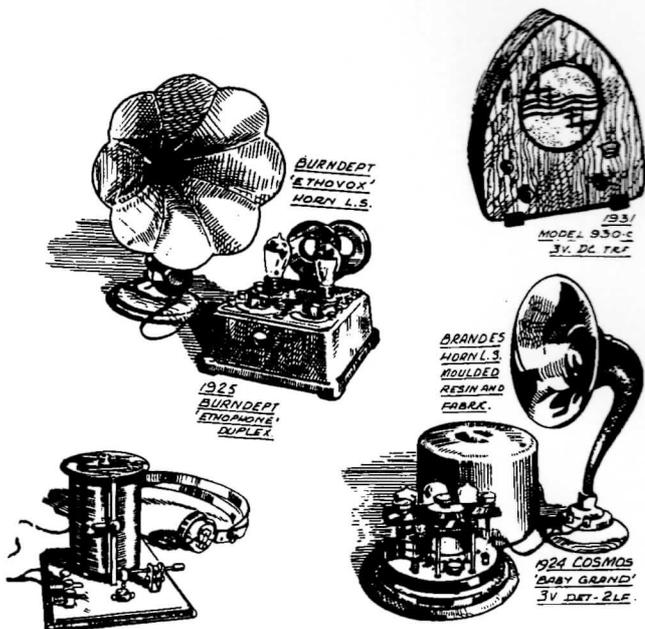
## Wanted by collector



Top prices paid for  
Coloured KB BM20's, Air King 'skyscraper'  
Catalin Sets and Coloured Bakelites  
Carl Glover c/o Runciter Corporation, 33 Rangers Square  
London SE10 8HR | Tel / Fax: 020 8469 2904  
[choris.b@virgin.net](mailto:choris.b@virgin.net)

## BVWS POSTERS

3 designs depicting wireless sets from  
the 1920's, 1930's and 1940's onwards



£6 per set at BVWS meetings  
£10 per set mail order including postage

Mike Barker: 59 Dunsford Close, Swindon. Wilts SN1 4PW.  
Telephone 01793 541634

## Coming soon...



### 'Tickling the Crystal'

240 pages of GPO No. era British crystal sets  
over 200 full-page photographs

