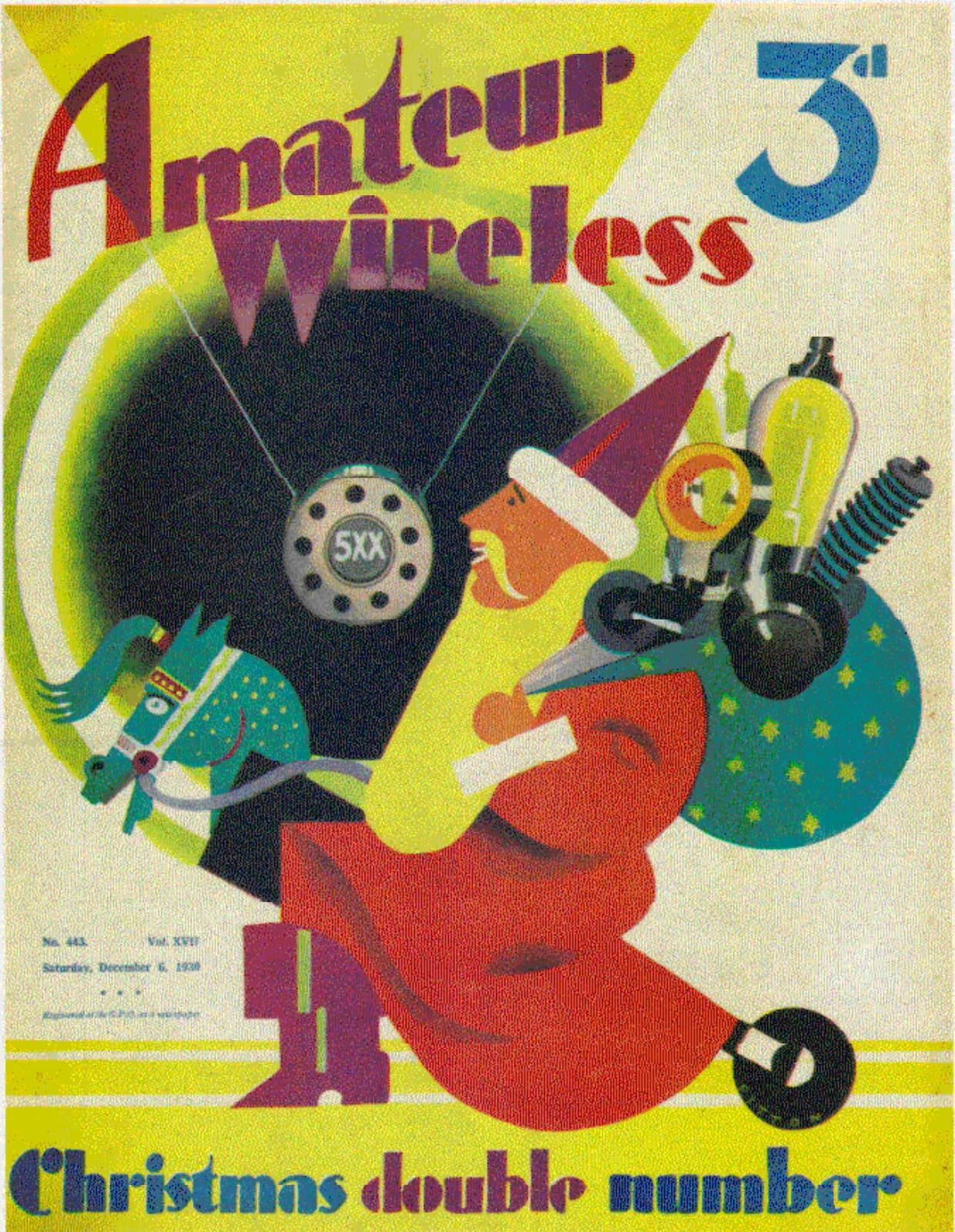


# VINTAGE WIRELESS



No. 443. Vol. XXIV

Saturday, December 6, 1998

Registered at the G.P.O. as a magazine

**BULLETIN OF THE BRITISH  
VINTAGE WIRELESS SOCIETY**

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Layout and design: Robert Hawes

**BRITISH VINTAGE WIRELESS SOCIETY**

**Caretaker Committee**

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Tel: 0932 862592.

Deputy Chairman: Gordon Bussey.

Treasurer: David Read.

Committee Member: Dr. Tom Going.

The following provide services for the Committee.

Robert Hawes, 63 Manor Road, Tottenham, London, N17 OJH. (Editor) Gerald Wells, 23 Rosendale Road, W.Dulwich, London SE21 8DS. (Membership Secretary).

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British Vintage Wireless Society  
Volume 19 no. 6. 12.94**

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© BVWS 1994

**COVER STORY:**



Our front page is a reproduction of the cover of “Amateur Wireless” of 6th December, 1930. The design reflects the influences of “The Shock of the New” of that time: the jazzy assault of both the Art Deco style and the bold colours and geometric shapes of the early cubist artists like Picasso and Braque. Such eye-catching design might have been acceptable on such magazine covers but was not generally allowed into people’s living-rooms, where the taste of most ordinary people was much more conservative. Evidence of this is found inside of the magazine, where the advertisements for commercially-produced radio-sets depict the popular styles as mock-Jacobean and Queen Anne, veneered in dark oak, walnut and mahogany and adorned with fretwork grilles, although a few sets are offered in bakelite cabinets at the same price – and in the same dark brown colour. But such sets were still beyond the income of the average man, who therefore went in for self-assembly which was made easy with the complete kits of parts advertised in this and other magazines. The kits were aimed at enthusiasts who had basic constructional skills but needed help with the electronics. Everything was provided except perhaps valves and batteries – and all the constructor needed was a screwdriver and a pair of pliers. Kit-manufacturers and the magazine offered an advice service which could include an offer to “get your set going” for a small fee. The magazine also offers kits for building large loudspeakers using dope-stiffened canvas diaphragms driven by moving-iron movements, for people who wanted better sound than could be obtained from the tinny horn-speakers which were still in production. Mains units to convert battery sets were popular as more and more homes were beginning to “go electric”. In addition to the articles on set-building, the magazine also carries a feature describing the progress on the building the new BBC Broadcasting House, London, including the large underground “echo-chambers”. Another article tells how McMichael Radio had installed an experimental wireless service in a train for use by first-class passengers, who listened on earphones to Daventry and Paris.

Original kindly lent by Ray Herbert.



Edited, designed and produced by Robert Hawes, to whom Editorial matters should be addressed: 63 Manor Road, London N17 0JH.

### Important Statement from The Chairman of the Emergency Committee

Those members who were not at the Harpenden AGM meeting will be wondering, with justification, exactly what is going on. Due to the very large number of nominees for election to the Committee (twenty four) it had been decided by the previous Committee to hold a postal ballot. The legality of this was contested by a number of members, and chaos threatened. No satisfactory solution could be found to this situation, and in place of the formal AGM an Emergency Committee was formed to avoid the threatened dissolution of the Society. It consists of myself as Chairman, Gordon Bussey as Deputy Chairman, David Read as Treasurer and Dr. Tom Going as Ordinary Member. This Committee was voted in by a show of hands and authorised to manage the affairs of the Society until a full elected Committee is elected.

Whilst the majority of the Committee of 1994 agreed to the formation of the Emergency Committee the Chairman and Treasurer did not and therefore stood down and disassociated themselves from the arrangements. It is very regrettable that things have come this far, but under the circumstances nothing else seemed to be possible.

As it was obvious that the previous Committee had not the full confidence of all members it was suggested by Dr. Tom Going that we should hand the election of the Committee members over to the Electoral Reform Society. This was agreed and we are now in the process of organising a postal ballot in the interest of transparency and to ensure trust in all aspects of managing the Society. As this ballot is so important to the continued

existence of the Society it is essential that as many members as possible should vote. Short CVs of all the candidates will accompany the ballot papers which you will receive in February.

All members of the Society are conscious of the debt we owe to the hard-working officers of the Society and their helpers, and it is a matter of particular regret when personal differences come into the picture. The Committee would like to express their particular thanks to Pat Leggatt and Alan Carter for all the hard work they have contributed to the Society over the years. It is a matter of regret that they felt it necessary to resign. Members should be aware that the organising of a successful Society entails a lot of hard and invisible work with little or no apparent gratitude.

Geoffrey Dixon-Nuttall

### March Auction meeting

Some dates have already been fixed for meetings at Harpenden for 1995. The first will be a major Auction and mini swapmeet on 12th March and the information and application forms for this are being circulated with this Bulletin. Members are urged to get together their lot items for the sale and to send details to the auctioneer's clerk on the appropriate forms as soon as possible to avoid disappointment. The event is always over-subscribed and the number of lots have to be restricted in order to finish the sale in a reasonable time. Lots should be briefly described and will be included in a catalogue to be sent out to those who send an SAE in advance of the sale. Members are also requested to take care over the descriptions they give of items to avoid misunderstanding. The Auction will be held in the main hall but on the same day, 12th March, there will be a minor swapmeet in the small hall, which will be restricted to books, ephemera, valves, spares and radio-related novelties etc. You will need to let the organiser know in advance if you wish to have a table there. Full catering will be provided all day, from cooked breakfasts and lunches to

late afternoon tea - and there will be ample opportunity for socialising.

### Further meetings

Dates so far arranged for other meetings at Harpenden are: 11th June and 24th September. Another meeting has yet to be fixed for the end of the year. All meetings, are of course open only to members.

### Crystal Palace Journal

An excellent special edition of the magazine of the Crystal Palace Foundation has been produced to commemorate the early broadcasting experiments there and especially the pioneering work of John Logie Baird in television there.

The well-produced and nicely illustrated 31-page magazine contains articles on Baird by BVWS honorary member Ray Herbert and on the sound radio transmission history.

Extra copies have been printed in the anticipation that Society members and others will wish to have a copy, but if you would like to have a copy you are urged to apply quickly. It is available at £2.25 from Melvyn Harrison. Crystal Palace Museum, London SE19 2EA.

### Exhibition

An exhibition called "Making Waves, the story of Radio", on loan from Southend Museum Service, is now on at Kingston Museum, Wheatfield Way, Kingston-upon-Thames and continues until 4th March.

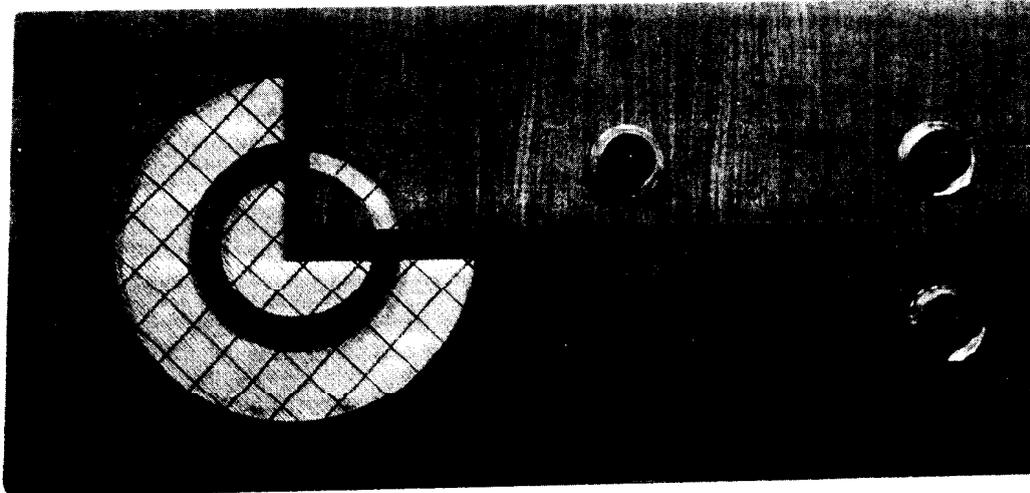
It includes posters, photographs and working exhibits including a crystal set, a simple TRF set, a Morse sounder and a radio-controlled car. In addition, BVWS member Peter Brunning has lent some display sets from the Thirties.

Admission to the exhibition is free and it is open daily except Wednesdays from 10am till 5pm. Enquiries can be made to Tracey Mardles, public services manager on 081-546 5386.

### Charles Neale

We are sorry to hear of the death of Charles Neale, aged 84 at his home in Bromley, Kent. He was a member for very many years and will be remembered as a friendly visitor to meetings, always willing to share his extensive knowledge with other members. He was also a music-lover who built up a splendid "classic" system to play his large collection of records, sharing his pleasure at little concerts for his friends. We shall miss him. Our sympathy goes to his widow, Dorothy.

# News



### Murphy Classics:

Above: The model A8 eight-valve superhet, designed in 1932 by R. D. Russell and reflecting the then avant-garde geometrical art-forms of the "Modern" painters. Mike Barker's restoration project brought its own arts-and-crafts problem: a new loudspeaker-cloth had to be created. Mike's mother, Edna, wove an exact copy of the old. Their combined efforts won them the "Radiophile" *concours d'élégance*.

Right: The A70 5-valve superhet of 1939 with a cabinet of steam-bent plywood which departed from the square-cornered look, seeming to compete with plastics in forming curvilinear shapes — at least on one dimension.

Below: The TRF model A3, the first of a series for which the company commissioned furniture — designer Gordon Russell. The dealers were not impressed and it was christened "The Pentonville" — but worked well and sold well.

Below right: The A24 superhet of 1934 in a cabinet of contrasting woods which stuck out as a "piece of craftsmanship" among contemporary bakelite sets that were beginning to take on the machine-age "Art Deco" look.

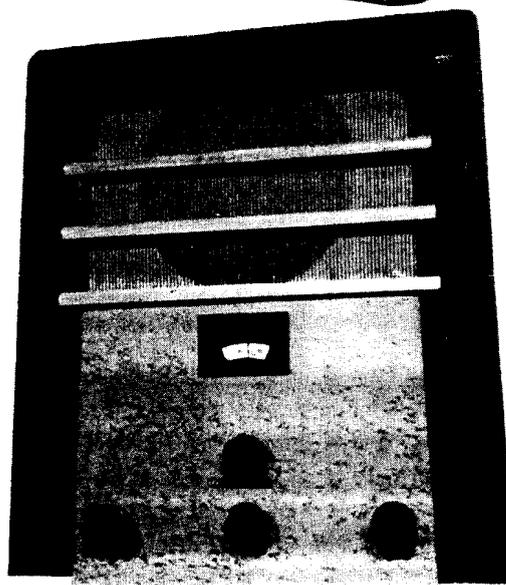
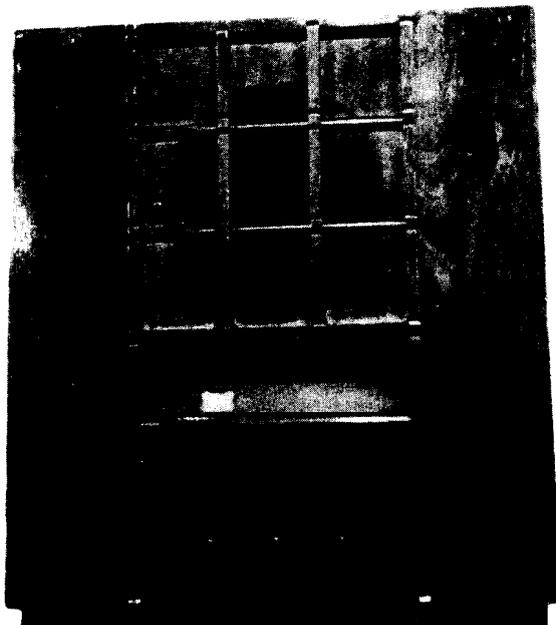
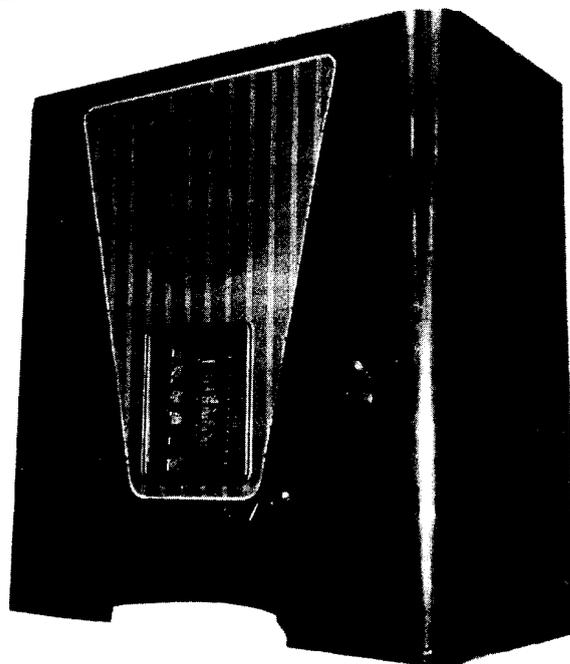




Photo: Robert Haues

## 'A first-class job....'

The Society's "Swapmeet" organised by Mike Barker at Wootton Bassett, proved to be a rather historic occasion as well as an enjoyable social event, and an opportunity to talk about all kinds of wireless topics.

Mike specialises in collecting and restoring Murphy receivers and put on a special display of almost 40 items from his collection at the meeting and was delighted when Frank Murphy's daughter Joan Long — a member of the Society — accepted an invitation to attend.

It was surely the biggest display of Murphy radios ever shown and they all came from Mike's collection of 100 table models, consoles, radiograms and transistor receivers, which is almost complete from the first of 1930 to a transistor model of 1968. Almost all of them are authentically restored and working.

Joan Long congratulated Mike and presented him with a copy of her biography of her father "A First

*Mrs. Joan Long, daughter of Frank Murphy, pictured with Mike Barker, against a background of famous Murphy receivers.*

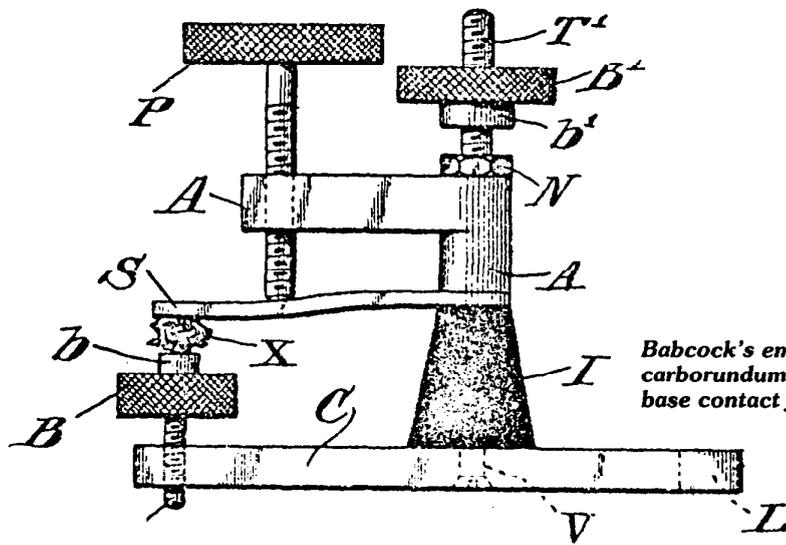
Class Job". The book tells how he sank his modest savings into a business which challenged the industry in the Thirties, turned it into a highly individual company with a £1 million turnover, then suddenly resigned for what seemed philosophical reasons. In the depression years, he waged a personal war against unemployment in the industry and pioneered ideas of industrial relations which were far ahead of their time, setting up a network of dealers dedicated to quality and good service. This made his name a household word. Just why Frank Murphy gave it all up and willingly lost everything, still puzzles people, but his daughter explained: "He left Murphy Radio because an ordinary limited liability company could not allow its workers and shareholders to express their individuality in the service of society; he left the country of his birth because he thought that post-war Britain did not believe in the freedom of its citizens to express their individuality. He felt, and I think rightly, that if people spend their lives in a work situation based on dictatorship — however benevolent — then eventually the attitudes they adopt at work will seep through to the wider spheres of

national and international government, and ultimately the centuries-old right of individual liberty which has characterised the western democracies will disappear."

Frank Murphy's quest for quality in both 'the works' of sets and their splendidly special appearance, was graphically and aurally demonstrated at the exhibition. The sets looked good and sounded good — a tribute to a man who encouraged individuality, employed innovative designers who pursued the avant-garde rather than the what was currently popular in a mass-production environment and was dedicated to producing 'a first-class job' in a factory environment where employees were treated as individuals rather than part of the factory machinery.

*Note: Copies of Joan Long's book 'A First Class Job' are still obtainable from her at a reduced price of £4 plus £1.50 postage (UK), at 5c Weybourne Road, Sherringham, Norfolk NR26 8HF. They will also be available at Society meetings.*

# Workshop Experiment



C. D. BABCOCK.  
WAVE RESPONSIVE DEVICE.  
APPLICATION FILED AUG. 27, 1908.

901,942.

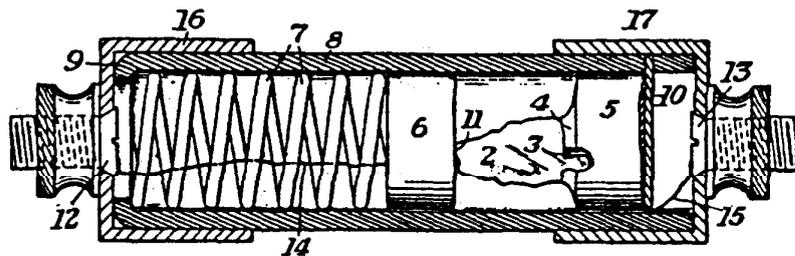
Patented Oct. 27, 1908.

*Babcock's eminently practical construction of adjustable carborundum detector, lacking only a satisfactory ohmic base contact for the crystal.*

THE CARBORUNDUM COMPANY PERMANENT DETECTOR

M. L. HARTMANN ET AL  
DETECTOR

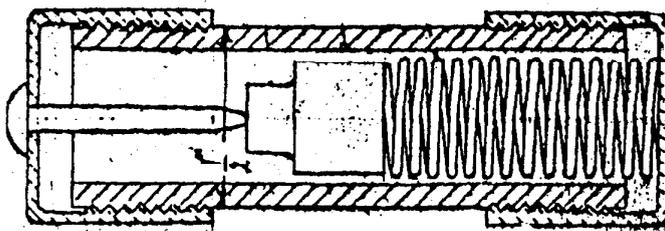
Filed Feb. 21, 1925



*Two different designs of permanent carborundum detector marketed commercially 50 to 60 years ago.*

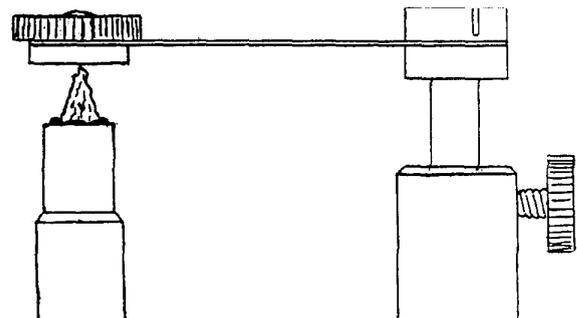
1,708,572

April 9, 1929.



THE GLOBAL CORPORATION CARBORUNDUM DETECTOR OF 1934

*A simple open-construction design of carborundum detector adopted by Marconi.*



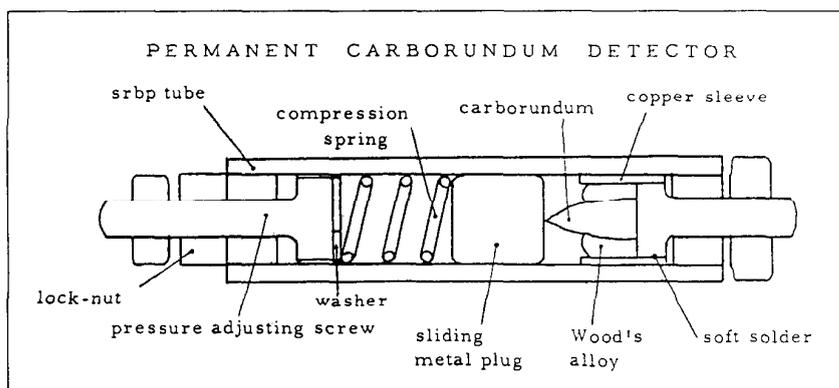
## Workshop Experiment

# Make your own Permanent Carborundum Detector

by Desmond Thackeray

Carborundum detectors are so rugged as to be virtually indestructible, and don't seem to suffer from the contamination problems that afflict sulphide detectors such as pyrites and galena. Permanent forms were produced by the Carborundum Companies of England and the USA in the Thirties, and many appear to be as satisfactory electrically today as they must have been originally.

However, one cannot be sure how a newly constructed detector will behave without making a number for one's self. And so I constructed four myself to compare with those kindly lent me by a number of BVWS members. At the time I had only a vague idea what must be inside the commercial article, though this knowledge was subsequently reinforced by copies of the relevant patents, and eventually the gift of a damaged sample that could be dismantled. Permanence was originally achieved by swaging the end caps on to the tubular body, and in some samples they were also pinned transversely. This suggests great confidence in production repeatability, which I didn't aspire to for my own experimental versions, where the contact pressure is screw adjusted, and the construction will survive disassembly. However the body tube can, if so desired, be the same size (2" in length and 1/2" in diameter) as the vintage product. The cross-sectional diagram is largely self explanatory. Instead of end caps carrying terminals, the alternative stratagem of brass machine screws and hexagonal nuts is shown, the screws being used head facing head and carried by nuts which are firmly pressed into the ends of the synthetic resin-bonded tubing. It saves some wasted time if useless pieces of carborundum are rejected beforehand, as a result of a sorting process using an ohm-meter/megohm-meter. Prodding around, one hopes to find pieces which conduct moderately well, but do not appear to be short-circuiting the meter prods. A few of the likely pieces can then be mounted in Wood's alloy or soft solder and pressed against a counter electrode for a more controlled test. Hopefully, one should then find at



least one piece which shows a "resistance" of less than 1000 ohms in one direction and more than 100,000 ohms in the other. My best pieces were a translucent greyish or bluey-green at the sharp or pointed end and looked slightly graphitic at the fatter or base end (which probably makes for a good ohmic connection to the mounting alloy). With a promising sample pressed into the mounting tube, the counter-electrode is held against it by screwing down on the spring with the "free" screw little by little. As contact pressure increases the ohm-meter reading will drop, perhaps even as low as 200 ohms without gross diminution of the reverse resistance reading. However, if one goes too far, one can always retract the screw again, and even dismantle to rotate the counter-electrode to an undamaged position or clean out any bits of carborundum which may have been cracked off the crystal. Having marked the two ends of a successful "homebrew" with polarity, it is then time to check its performance as a wireless detector, preferably by comparison with a modern semiconductor diode.

A microammeter in series with the headphones is a useful auxiliary, both as a check on received signal strength, and also on the forward bias needed by the detector before it will rectify small signals. Somewhere between 4 and 10 microamperes bias is usually satisfactory, if 4000 ohm phones are used; though the corresponding voltage will lie, quite unpredictably, somewhere between 200 and 800 millivolts. "Modern" germanium diodes, such as the 1N34A, scarcely need any forward bias under these conditions, but it will be an advantage to use some with a silicon diode. Receiving a strong signal from the BBC on 909 kHz, the carborundum detectors then seem to perform just as well as their modern counterpart. However, on weak signals they do not do so well, though still outperforming a tungsten filament diode detector (which has too low a conductance for

efficient headphone reception). Occasionally I have come across a carborundum sample which made a detector requiring only a very small bias voltage, and none at all on strong signals. The Carborundum Company actually published the d.c. characteristics for one such in their literature, and a surviving example is now known to me. I have also come across samples of carborundum in early non-permanent detectors which are hardly conducting at all. That such "rejects" were not uncommon is suggested by occasional critical remarks in the literature of the time. Unhappy the wireless operator whose whole stock of spare crystals contained no really good pieces! One sees why large ships were apt to carry Fleming diodes and a "Maggie", despite their own particular disadvantages vis-a-vis the carborundum crystal. One is left wondering also why the surviving permanent detector (the Westector) should have been the copper oxide and copper sulphide forms, at least until germanium and silicon technology was finally mastered. Carborundum still has the advantage that the raw material is plentifully available at negligible cost; but the selection and mounting of suitable samples would be too labour-intensive for today's needs, and the product perhaps a little over-large when compared with the latest contact detectors, the Schottky diodes. "Small is beautiful" so they say. But looking at a block of magnificent carborundum crystals I must agree that the beauty is really in the mind of the beholder. As well as thanking those members of BVWS who lent me their precious detectors for electrical measurements, I am also indebted to the librarians of the two Carborundum Companies, and J.D. Conradi of Arendal Smeltewerk a/s, as well as to other friends for information and references generously supplied.

# Looking Back

## Wireless at Gamages: Xmas 1913

Members over 50 will know what a great loss we all suffered when Gamages departmental store of Holborn, London, closed down around the 1950's. This store was unlike any other in specialising, not in glamour, but in solid, practical 'things'; like Hornby trains, Meccano sets, and accessories for cars, bikes and motor bikes; they even sold their own brand of motorbike at £50 complete.

They also pioneered many cultural developments, of which wireless was the most innovative. Here we reproduce pictures of some of the items offered in the Gamages Christmas Catalogue of 1913. Altogether, there are no less than 10 pages of interest to vintage equipment enthusiasts and we hope to publish these in bulletins from time to time, beginning with this selection.

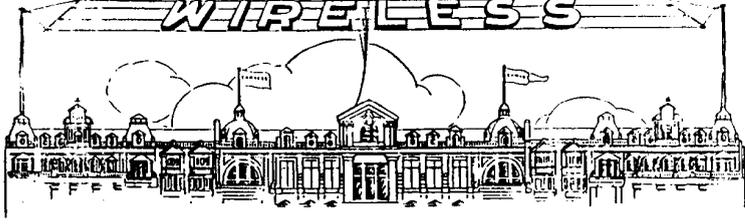
One of our founder-members, **Dennis W. P. Grey**, sends us the illustrations with the following comments:

Three pre-war store catalogues have been reprinted superbly by David and Charles. The other two are the Army and Navy catalogue of about 1890, and one of early Harrods goods. All have features that reflect the life and times of their originals. Unfortunately they are out of print but you may find them in libraries.

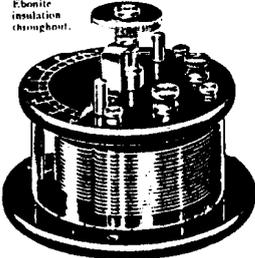
The Gamage catalogue was originally published every Christmas and could be had for one shilling at the store, or one and threepence posted to one's home. All were goldmines of interest and information for children of all ages from 5 to 105! Their coverage of model trains and Meccano accessories rivalled anything, including the toymakers' own catalogues of the times, and the big layouts and working models in the store were magical. Bleriot flew the Channel in 1909 and by 1912, Gamages had a full-page of model planes both land-based and sea planes with floats, that would take-off and land, using their elastic-band motors.

The Harrods Catalogue illuminates the social structures of the day with pages of detailed clothes for ser-

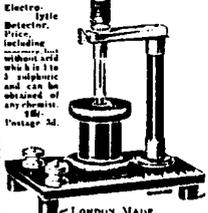
GAMAGES OF HOLBORN. — 50 — BENETFINKS OF CHEAPSIDE.



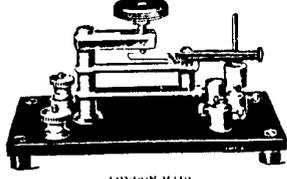
### Apparatus for Wireless Telegraphy.



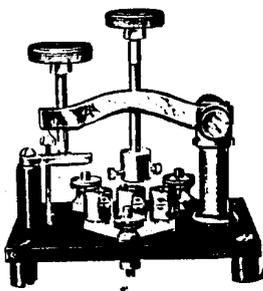
**Receiving Condenser.** LONDON MADE. Hardened zinc Vanes, interstretted with ebonite sheet, making such close contact that they keep in any desired place regardless of the position of the instrument. Plates of polished vulcanite, lacquered brass fittings. Capacity 0015 M.F. 55/-. 0028 M.F. 60/-.  
Ebonite insulation throughout.



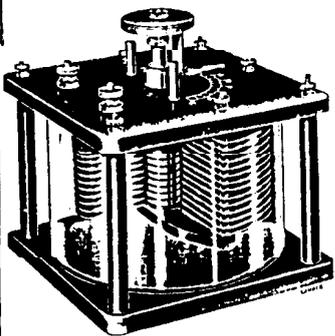
**Electrolytic Detector.** LONDON MADE. This instrument is considered by many to be the best of all detectors, and it certainly has the advantage of maintaining good contact of different metals when transmitting. A battery is essential with this instrument and a Potentiometer should always be used which prevents humming in the 'phones, and also protects the Woolston wire. Ebonite Container Case and Base, metal parts highly finished, lacquered brass. Price, including without and with a 1/2 in. 2 in. adjustment and can be obtained of any chemist. Price 3d. Postage 3d.



**Crystal Detector.** LONDON MADE. This Detector has proved well designed and sensitive instrument. It has a cups fitted with crystals, the upper one when removed discloses a gold point which is for use with Silicon. 1/4 by 1/2 in. Ebonite Base, brass parts burnished and gold lacquered. 15/-



**Crystal Detector.** LONDON MADE. This although a small instrument 3/4 by 2 by 2 in., is an efficient piece of apparatus and suitable for small stations. Polished mahogany base, furnished and lacquered brass work, ebonite knob. 8/-. Post 3d.



**Variable Condensers.** LONDON MADE. Ebonite insulation throughout with exception of base. Brasswork burnished and lacquered. Air or Oil Dielectric. Fitted with Ebonite Screw Cap for filling vessel. Glass vessel Rotary type, with moving vanes, perfect insulation and high efficiency. Capacity 002 m.f., with 3 fixed and 8 moving vanes, 4 1/2 in. Height 6 in., length 6 in., width 3 1/2 in. Capacity 004 m.f., with 18 fixed and 15 moving vanes. Height 6 1/2 in., Length 6 1/2 in., Width 6 in. Price 50/-. Do., With Brass Vanes and Massive Ebonite construction Throughout. Engraving House Calibration. Price 84/-. Capacity stated is obtained when castor oil is used as dielectric.



**Rotary Receiving Condenser.** LONDON MADE. Ebonite insulation throughout with exception of base. Brasswork burnished and lacquered. Capacity 0003 M.F. Price 20/-.  
Ebonite Top and Bottom Plates

vants, and exotic foods, but for me the pièce-de-résistance is the Army and Navy catalogue.

Leafing through this 'manual of action' one feels the throb of the old British Empire and the pax Britannica. Here are some 30-40 different sizes of "officers writing cases" complete with travelling desktops and unspillable inkwells. There is a picture of "Sanders of the River" writing his despatches each night by the light of his hurricane lamp, behind mosquito nets in his tent in the jungle. Here are the

collapsible washstands at which gentlemen shaved and sought to present themselves properly turned-out for dinner. Turn another page and here the officer returning from leave in London could select the latest Smith-and-Wesson or Webley pistol and consider a new elephant-gun with alternative cartridges for big game, small game, or crocodiles.

The Army and Navy stores, it is worth recalling, was set-up by officers for the purpose of getting their port and cigars at reduced prices. Good show, chaps!

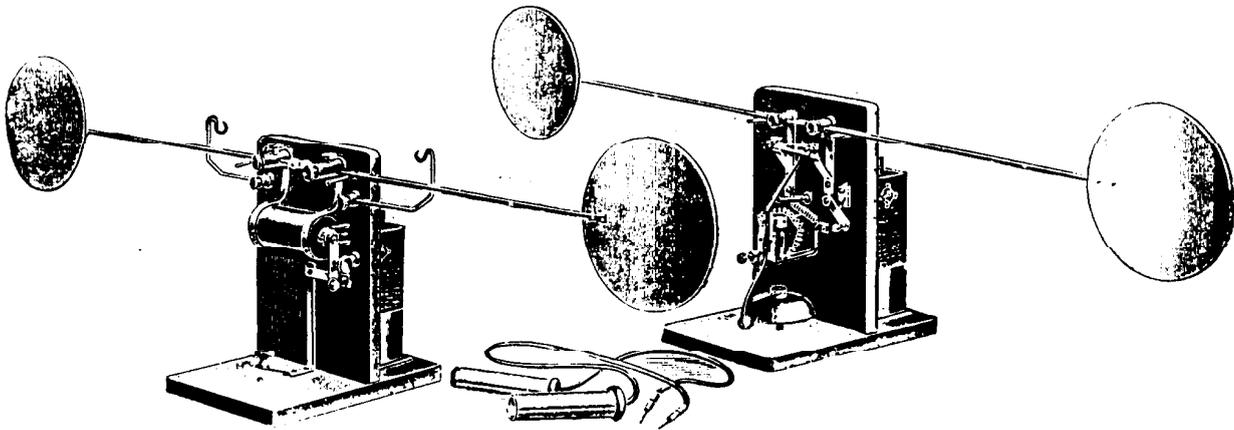
# Looking Back

GAMAGES OF HOLBORN.

— 56 —

BENEFINKS OF CHEAPSIDE.

## WIRELESS TELEGRAPH (No. Ty. 10250.)



### Complete Apparatus for Wireless Telegraphy.

Consisting of—

**Sender** with Tapping Key, Spark Coil, and Condensers.

**Receiver** with Coherer, Electric Bell with Decoherer.

Both Sender and Receiver fitted with Antennae and Aluminium discs, and with dependable batteries. Working capacity up to about 10 yards distance.

The Sender is provided with a pair of handles thus converting it into an Induction or Electrifying Apparatus when required, and with a pair of brass hooks to take Vacuum tubes.

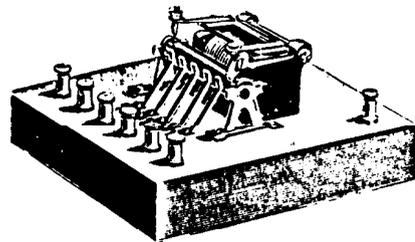
Price .. .. .

**16/6**

Postage 10d.

### Wireless Distance Switch.

This apparatus is connected with both the receiver of a wireless telegraphy station and with any other objective such as electromotor, incandescent lamp, electric bell, etc. This apparatus can be worked or disconnected through the electric waves from the sender by means of the receiver of the wireless station; also suitable for setting electric railways to work.

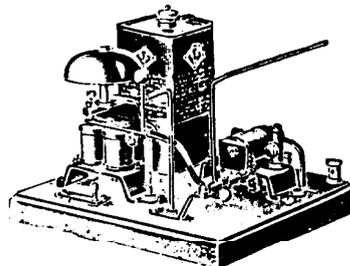
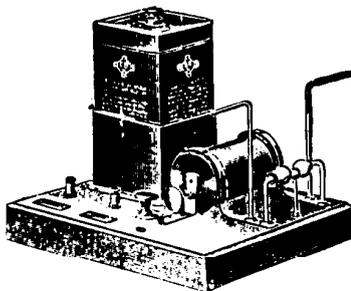


Original and instructive, fitted for 5 connections, on polished wooden base 5½ in. long 4¼ in. wide. Price **7/6** each. Postage 4d.

### Complete Apparatus for Wireless Telegraphy.

No. Ty. 14757/1.

#### Complete Apparatus for Wireless Telegraphy.



Consisting of **Sender** with Tapping Key, Ruhmkorff-Spark-Coil, Condenser. Durable Dry Battery, Air Wire and **Receiver** with Coherer, **Relay**, Electric Bell, Disconnecter, Air Wire and Dry Battery and clamps, to be connected with a Morse Writing Apparatus.

Everything finely finished, mounted on polished wooden bases and packed in strong box, working excellent over a distance of 20 yards, furnished with an explicit and interesting description of Wireless Telegraphy.

Price .. .. . **25/-** each.

## Round the Collections

### A varied Collection

by Andy Fowler  
of Portsmouth

I first became interested in wireless when I was five years old. I asked my Grandmother where the sound came from on her 1940's Bush radio. The reply was "There's a little man inside!"

Now tell me, even at the age of five, would YOU believe THAT! The next time she was out shopping, I had the radio turned round, took the back off, saw these big glass things, glowing away and was captivated.

I started collecting radios some 25 years ago, my first set being a late Twenties GECophone which I bought for two-shillings and sixpence, but only in the last ten years have I taken collecting and restoration work seriously. So seriously, in fact, that I had a purpose-built building constructed to house my current collection.

My radios are all painstakingly restored to be as close to manufacturers' specification as possible. currently about 150 sets, from Nineteen Twenties to the Sixties, including "novelty" radios.

I find some of the interest in collecting is tracing the history of each set — who owned it, where it came from. etc.. so it is particularly nice to find some documentation and packaging belonging to the sets. One set, for example, a Thirties Philco, had two tickets attached, one stating where it was bought and the other with details of the service department which finally serviced it, or rather — wrote it off — in the Fifties.

I found a cheap Japanese radio cassette recorder at a car boot sale, and converted it to a closed-circuit transmitter, so that BBC Archive cassettes or vintage music can be transmitted to appropriate radios according to period and tuned in. (More details on request.)

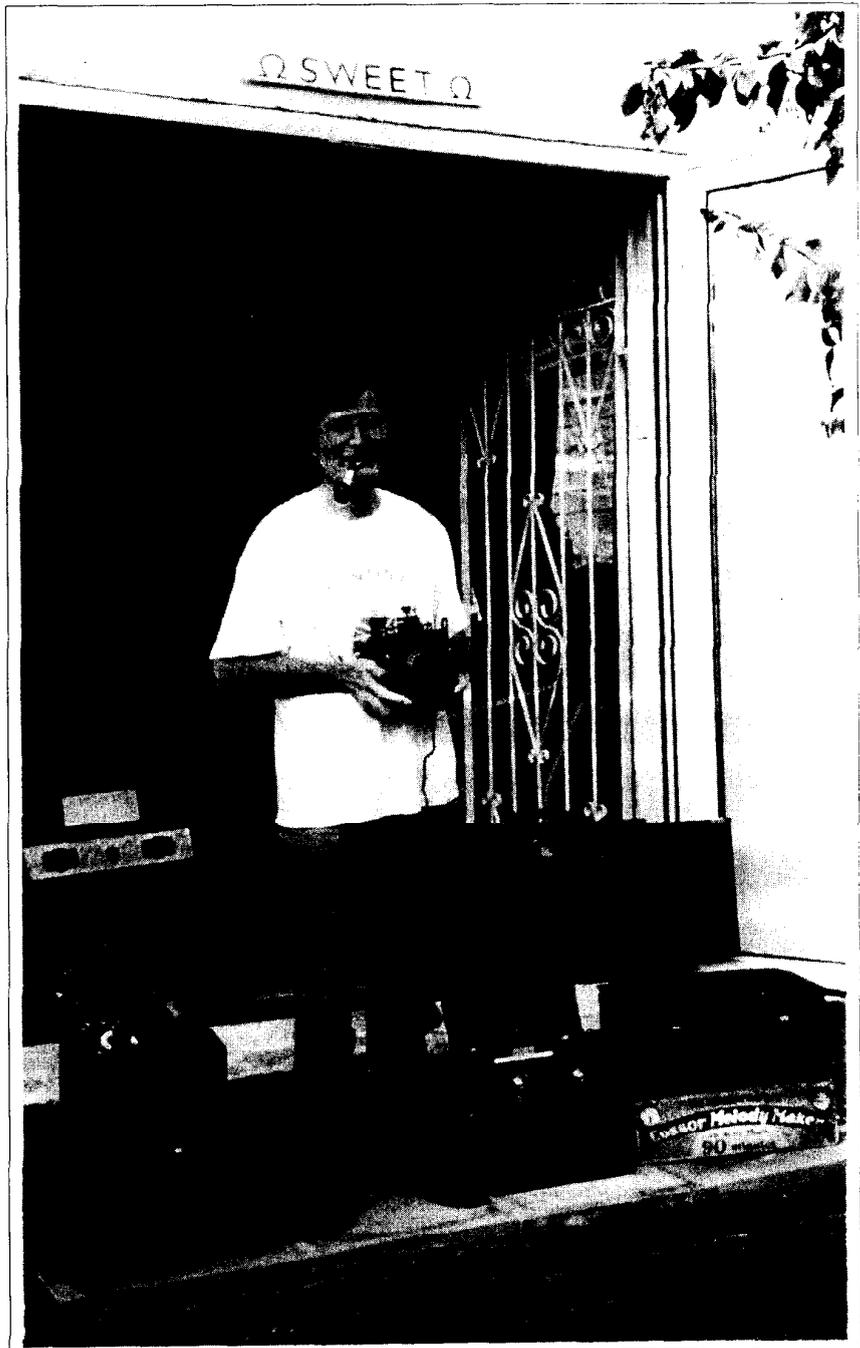


Photo: Robert Haues

**Andy Fowler at the door of his purpose-built museum at the end of his garden. Note the motto above the door: he is a serious collector but retains his sense of humour. He is pictured with a few favourite sets from his large collection: a Polar-twin, BTH twin-crystal, Marconiphone V2 and Melody Maker.**

My collection is quite comprehensive, and includes desirable sets of most makes, including bits and pieces like wave traps, earthing stakes, lightning conductors and also a Marconi shares certificate dated 1920.

I have shown part of my collection at "Open Days" at my place of work,

which just so happens to be: GEC-Marconi!

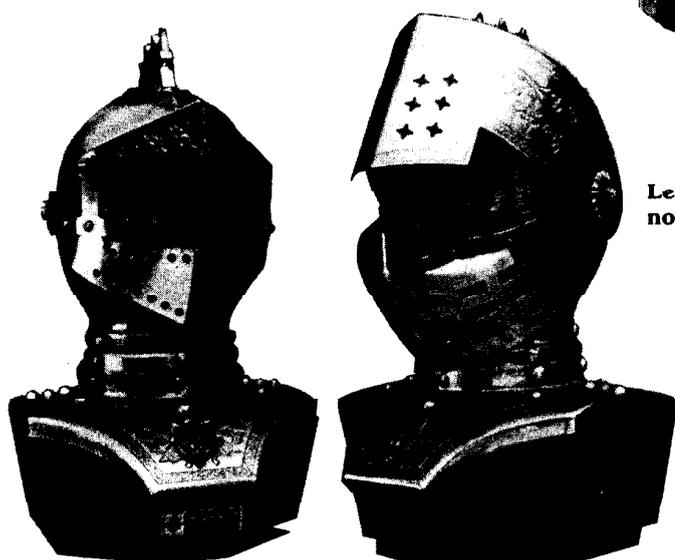
I would be pleased to show my collection to anyone who would be interested — via the BVWS.

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## Round the Collections

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Although Andy's collection is mainly of sets of the Twenties and Thirties, he also has an interest in transistor equipment — especially in miniaturisation, which he collects "just for fun". A favourite piece of "Kitsch" is the monster wrist-watch pictured right which is actually a radio.



Left: two "novelty" transistors which are not often seen in Britain.

Below: Andy's wife, Wendy, shares his interest in novelty radios, although she has her own collection — consisting of rare Avon cosmetics containers. She is holding a prize one which pretends to be a plastic cream container but is really a transistor radio. All the objects on the table are transistors too.



## Early Days of Wireless

# The Early Days of Wireless

"Home Built"

by Walter Dalton

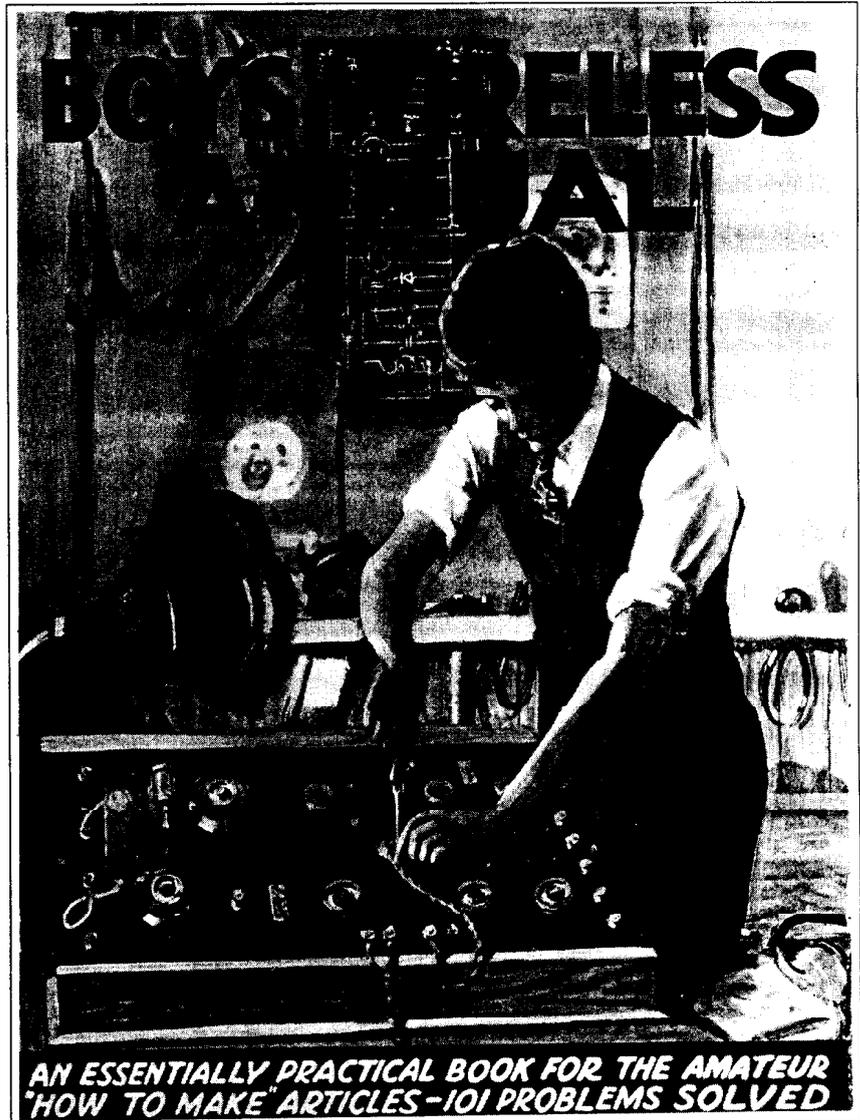
Before 1928 the majority of receivers were home-made or made by the boy-next-door – he also repaired it if it went wrong. These were all made from components which could be purchased from any hardware or cycle shop, or from the local garage, and each had an enthusiastic salesman who gave advice to all customers. In fact, such was his interest, any set brought to the shop was repaired, or correctly wired, free of charge.

Connections were not soldered, wires were held down by knurled nuts, and faults that occurred were mainly from loose wires, the aerial, earth, or loudspeaker being disconnected, or the batteries run-down; these could be seen – a burnt-out valve did not light-up.

The components rarely failed, for long before they gave trouble the set was modified to a new circuit using new components. When a factory-made set went wrong, the boy wired it to 'his own circuit' and rapid developments had usually caused this to give better results, giving more stations than before and enhancing the boy's reputation as a young genius.

The only tools required were a screwdriver, pliers, and a penknife, and all testing was by the rule of the wet-finger. If the valves lit, the grid of the last one was touched with a finger, suitably moistened, and a "plonk" was heard in the loudspeaker. The grids of the preceding valves were then touched in turn and a grid which gave no "plonks" was the faulty stage. Reaching the detector, the reaction was set at maximum and the aerial coil was touched to stop the valve oscillating.

Resistances and condensers, with a tolerance of  $\pm 200\%$  or more, gave no trouble as a rule, but occasionally a break could develop in a transformer winding. This was usually due to 'perspiration', on the fingers of a girl-winder in the factory, so when going to cure a receiver some boys carried a spare transformer. This was more to effect a cure than to confirm a diagnosis, for this



was one way of turning unwanted components into cash so that other components could be bought.

The coming of dull-emitter valves made a meter necessary: the valves did not light up brightly and a 2.5V flash-lamp bulb gave a poor indication of the state of a battery. All valves were very similar and the boy could substitute one of his own to prove another one was faulty.

Cheap meters with a full-scale deflection of 30 mA were made, with a spike at the bottom for the negative terminal and two flying leads for positive: black to 6V and red to 120V. Later two terminals were added at the top to read current. These cost 2s. 6d. (12.5p); a lot of money for a boy. Accurate meters were not needed, all faults were a 'dis' or a 'short'; when the anode of an r.c.c. stage read 10V, instead of 60V, this was about the reading expected.

Some amateurs had ex-government meters, f.s.d. 10 mA, with a number of

shunts and multipliers to read other currents and voltages, but the choice was limited. Microammeters, costing three guineas, were available but these, and the bridges for measuring L, C, and R, were only for laboratory work. There was a need for a meter to read small currents but rugged enough to be portable, and some makers started to produce small moving-coil meters with a full-scale deflection of 5 mA, 2000 ohms/volt. Low current meters for a.c. were not obtainable. Moving-iron and hot-wire meters required over 50 mA for full-scale, 200 ohms/volt, and the hot-wire meter burnt out with a very small overload. This problem was solved in 1928 by the use of tiny copper-oxide rectifiers, small enough to go inside the case of a d.c. meter, which enabled measurements over the whole of the audio range.

*More articles in this series to follow*

## A Pye phoenix

by Graham Dawson

I recently acquired a Pye QA AC/DC portable receiver of circa. 1937, a set which is fairly rare now, because of their reputation for catching fire due to overheating.

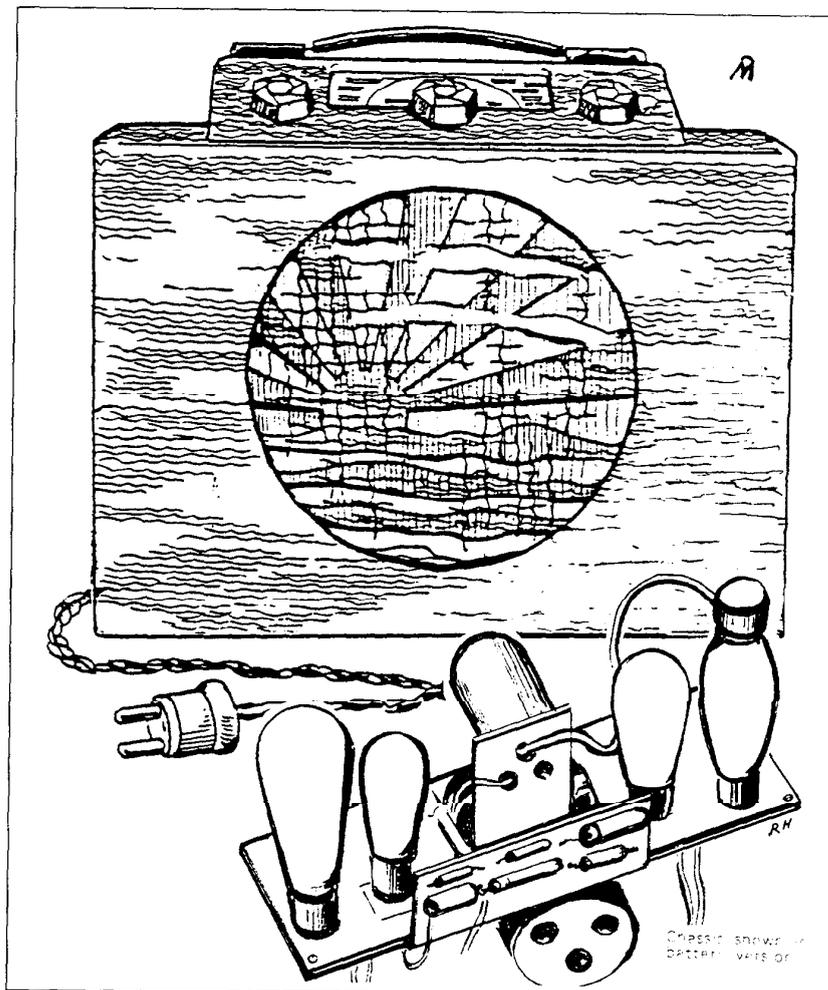
The set was in fair external condition, the most marked defect being a well worn carrying handle. Removing the back showed a dirty interior and the addition of a metal rectifier bolted below the mains dropping resistor. Although not originally familiar with the circuit, I felt a British 5 pin base adaptor plugged into a base on the chassis was somehow not quite right. Sure enough, whoever repaired this set at some time had removed the valve rectifier and substituted this metal version, using the plug to bridge the heater with a wire, and make the anode and cathode connections. In some ways this may have saved the set, because the extra load on the heater dropping resistor had burnt it out and left the heater chain open circuit.

Devotees of Pye receivers should skip the next paragraph and move to the next!

This is without doubt one of the worst-designed sets of the immediate pre war period. Firstly, over half the power consumed by the set is dissipated in a dropping resistor without adequate ventilation. The construction of the set is appalling and removal of the chassis entails disconnecting numerous leads and reaching difficult screws even after undoing everything in sight.

It might have been a Philips! The positioning of the valves is such that the rectifier and output valve almost touch each other and are less than half an inch from the top of the receiver. In an attempt to prevent burning of the side of the cabinet an asbestos sheet is glued next to the output valve, but does little for the top of the set. Finally, the set was a TRF at a time when Superhets were almost the norm, even in small budget receivers. I'll bet the service section hated them.

The challenge was to bring this externally attractive but internally rather nasty set back to life. Having



discovered the modification, I examined the receiver carefully for any other modifications. Gerald Wells sent me the circuit and I was now in a position to check everything. Only the main smoothing electrolytics had been changed, and surprisingly the others were still OK. Yes they were a little leaky, but bypassing a few hundred ohms, this hardly matters.

The volume control had been changed and a different value fitted. Since this receiver is a TRF set, volume is by control of the bias on the first stage. Instead of a 250 ohm pot, a 100 ohm had been fitted, which gave a much reduced control range because the voltage developed across the pot was less than half its intended value. It seems that whoever repaired this set put in any components he had to hand rather than the right ones. Also all "modifications" had been wired in using a white coated PVC wire rather than the rubber-covered original.

Rubber-covered wire is usually alright unless exposed to a lot of heat. In this case, the leads feeding the dropper just turned to dust when disturbed. I replaced these and any others that were suspect with some wire from a 3 core-lead, which I had saved. Also I could match the colours, which looked better. Having now satisfied myself that the set was reasonably complete, I turned my attention to the valves. Since I was going to have to obtain a new rectifier I decided to check the other valves on my tester. The set uses 200mA series heater valves which are not too common, so I was relieved to find the two RF pentodes type C50B and output valve C70D were in good health. I just needed a rectifier type C10B to get it working - I hoped. This proved difficult to find, but a V30 was sourced which is the same valve except with a 30 volt heater. Readers more familiar with Mullard valves will know these as SP13C, Pen 36C and UR1C types respectively.

Continued on next page >

## Servicing, News, Restoration tips

Continued from previous page

Since the dropping resistor was open-circuit I now needed a different value from the original. In the original set a 820 ohm was fitted, which passing 200 mA, dissipates 33 watts. In a small set no wonder they got hot! I calculated that if I could reduce some of this heat the set might last a little longer. Our old friend the diode "wattless" dropper came into play now. Past letters from members printed in the Bulletin have shown that a diode in series with the heaters reduces the effective mains voltage to 170. The heater chain voltage with the new rectifier added up to 88 volts, so 82 volts had to be dropped. Ohms law gives 82 divided by 2, which equals 410 ohms. Thus the new resistor would dissipate half that of the original, which is a worthwhile saving. I decided to back the cardboard screen behind the dropper with metal, and mount a modern high dissipation type on it. This allowed the original tubular type to be put back as a "dummy". Purists of restoration may frown at this method, but at least the set is now cooler and safer, and the receiving part still original. As a final safeguard I checked the paper condensers for leakage or short circuit and to my surprise they were alright.

The moment of truth was at hand. With the frame aerial connected on extended leads and the chassis sitting on the table I connected the mains lead to my variac and gradually wound up the volts. I have always found this the safest way to run up an old radio or TV and much kinder on old components.

After a few seconds the heaters started to warm up and as the rectifier passed current, so the radio came to life. Being TRF with no AGC, much use of the volume control is necessary between weak and strong stations, but in spite of it having only a frame aerial, there were lots of stations coming in. With the new rectifier valve and no series resistor in the HT circuit, the volts were rather higher than that quoted on the service sheet, but otherwise the set seemed to perform very well. Certainly the heat from the dropper was much less and in total the consumption about 50 watts, which while still a lot for a small cabinet is now less than as originally designed. With luck and the work I have performed on it, this set should give a few more years of intermittent service. ©

### News: a visit to a French "Harpenden"

During the weekend of 1/2 October Pat Leggatt and Ian Higginbottom attended a two-day meeting at the Chateau de Pignerolle, in the Loire Valley near Angers. This is the home of the Musée Européen de la Communication ("from tom-tom to satellite"), which contains the vast collection of historic radio and other communications items assembled by its curator, Guy Biraud. The leaflet describing the museum tells us that the chateau was pre-destined for its present purpose because it is adjacent to the bunker from which Admiral Dönitz controlled his North Atlantic U-boat fleet. The meetings were in the elegant orangery of the chateau, that on Saturday being a swapmeet of the Association des Amis du Musée de L'Electro-Acoustique, the French counterpart of BVWS. It was followed on Sunday by a public auction of about 120 lots of vintage scientific apparatus and other collectors' items, roughly half being wireless related. The genial and avuncular Guy Biraud was there to add weight and humour to the event. The French fashion in the 1920s-30s for superhets with bigrid "hétérodyne" valves was evident, and an example was acquired by Pat Leggatt.

At the auction, the highest price paid was £3650 for a 1924 Ducretet 4-valve "piano" receiver with external (but later) valves. A 1909 De Forest single-wing audion in original box, with intact filament, made £2060. This was claimed to be the first specimen offered at auction in France. The biggest shock for us was £320 paid for a 1947 GEC "fan heater" set (BC 4750). Other noteworthy items were a Radio-Jour crystal set £340 (three other French crystal sets fetched £95-165), Ducretet 1951 TV with magnifier £520, American Pilot miniature TV 1949 £420, Western Electric "Kone" speaker in new condition £195, Philips 4104 frame aerial £170, Philips 638A and 2515 each £175, Philips 461V £220, Philips 520A £120, Philips brown bakelite speakers ("shaving mirror" type) £120 & £140. Various horn speakers sold for £70-165 each. An unidentified 1920s 4-valve receiver in glass-sided "desk" cabinet made £335 (The prices listed exclude about 10% commission and assume roughly 8.5 francs = £1.)

The quality of items at the auction was generally high. The friendly

atmosphere and stylish venue are strongly recommended. A joint Anglo-French meeting (perhaps at Harpenden) was proposed to us by M. Poinsignor, president of the French Society, and remains to be considered in our future plans.

Ian Higginbottom

### Restoration tips

#### Removing scratches

To remove light scratches from painted or varnished surfaces, try FLASH cream. Its abrasive powers come about half way between 1200 grade "wet & dry" (used wet) and SOLVOL AUTOSOL. Used by itself, it leaves a satin finish (from Brian Pethers).

#### Refinishing:

The range of car paint aerosols is very useful. A good match for Pye MM panels is Ford Roman Bronze. Early Ekco chassis can be repainted quite well with Ford Silver Fox - but never use aluminium paint as it is too flashy. Ford Rio Brown is a useful dark chocolate colour, for speaker frames, etc. A good quick case refinish can be got as follows (cellulose finishes only); Remove all fittings. Check for loose joints, re-gluing where necessary, and fill any worn holes. Lightly sand with fine wet & dry, used wet. When dry the surface should be grey all over. Rub with a dry hand to make sure that the surface is dry, and to find any rough bits. Try not to blow off the dust, it helps to fill the holes! Respray with clear cellulose, only spraying whichever surface is horizontal; quite thick coats can be put on without runs like this. Rub down and re-spray until the surface is satisfactory, or until you get bored! Finally polish with "T-cut". This does not give a "new" finish, but puts back a good shine.

#### Screw threads:

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

Geoffrey Dixon-Nuttall

Readers' Letters **Feedback**

**Letter:**  
from *Bruce Adams*

**Servicing tips**

The "Comprehensive Fault Finding Guide" was very welcome as servicing is my specialist sphere of activity but several points call for clarification.

The Bush DAC90 output transformer primary should read 500v. A higher figure would indicate that the transformer was in terminal decline, the audible evidence would be "crackling".

A dealer is legally compelled to supply his employees with mains-isolating transformers. They are not expensive, every amateur should so equip his test-bench to reduce the electric shock hazard.

The point about the potential live chassis is well made but consider what would happen if a user reversed the two-pin mains connector and a child poked a metal object through the ventilation slots. Much better not to risk such a possibility by fitting a 6 amp Euro type three pin chassis plug and mains lead socket of the kind that are currently fitted to small domestic appliances.

The danger of the single-pole mains switch was noted but this eventuality should be avoided by fitting a double pole on-off switch plus volume control that anyway will be noisy; squirting with switch cleaner is a short term palliative!

Before switching on a set of unknown history or not having recent use, it is often possible to avoid unwanted replacement of the smoothing electrolytics by reforming them by running the receiver for an hour with a 100w bulb in series with the mains input.

I consider it good practice to replace all the waxed-paper form of capacitors as usually they will all be leaky. A newcomer will more likely have a digital multi-meter. He would find, when testing capacitors on the ohms range readings of the order of several megohms or infinity and conclude that all were in good condition. Testing with an analogue meter of the popular AVO 7 or 8 types also gives false readings as the terminal voltage is only 15 volts. Using an insulation tester such as a Megger producing 500 volts it would be quite likely that a reading of IMeg. on the AVO 8 would show as 20k or so on the insulation tester, giving a better indication of the capacitor's goodness

under actual circuit conditions. This test even faults those highly regarded metal-cased sprague and TCC types! Anybody who is brave enough to peak the I.F. transformers need have no qualms about the simple R.F. procedure of setting the dial pointer to a known medium wave station around 300 metres. Thus W.A.B.C. should be set on 303m (990 kcs) in the West Midlands, for example, then adjust TC3, the M.W. oscillator trimmer, for maximum and finally adjust TC1, the aerial trimmer. On long waves TC4 is adjusted on Radio Four. Then the aerial trimmer, TC2, is adjusted again to its maximum, with the set orientated to reduce the signal pick up. This gives more discernable results. What is the difficulty? I write as a Service Technician, in the trade since 1950. I find from repair jobs that I get from amateurs that disregard for electrical safety is commonplace, and feel that much more care is needed in this direction.

**Letter:**  
from *Graeme Bartram, 45 Marine Drive, Oatlet, NSW Australia 2223*

**Balsillie and Wireless**

I am currently undertaking research on the Australian inventor and engineer John Graeme Balsillie (1885-1924) who worked in Britain, Germany, Russia and China between 1904 and 1911.

J. G. Balsillie was most notably involved with the British Radio Telegraph and Telephone Company which marketed the 'Balsillie System' of wireless telegraphy in Britain between July 1909 and February 1911. This period of Balsillie's work in Britain was brought to a close with the celebrated decision of Mr. Justice Parker in *Marconi v. British Radio Telegraph and Telephone Company Ltd.* In September 1911 Balsillie returned to Australia and went on to establish a network of wireless telegraphy stations throughout Australia on behalf of the Federal Government.

The reason for my letter is to ask whether any of your members interested in early wireless telegraphy have come across the path of J. G. Balsillie in their research. I am particularly interested in following up any possible references or sources of information that your members may be aware of. As you can understand the trail has gone a little cold after 80 years! The most difficult period to gather information on has been for the period between 1904 and 1909.

I am interested in corresponding with any of your members or any institutions they can suggest that can shed light on Balsillie's life and work in the field of wireless telegraphy.



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