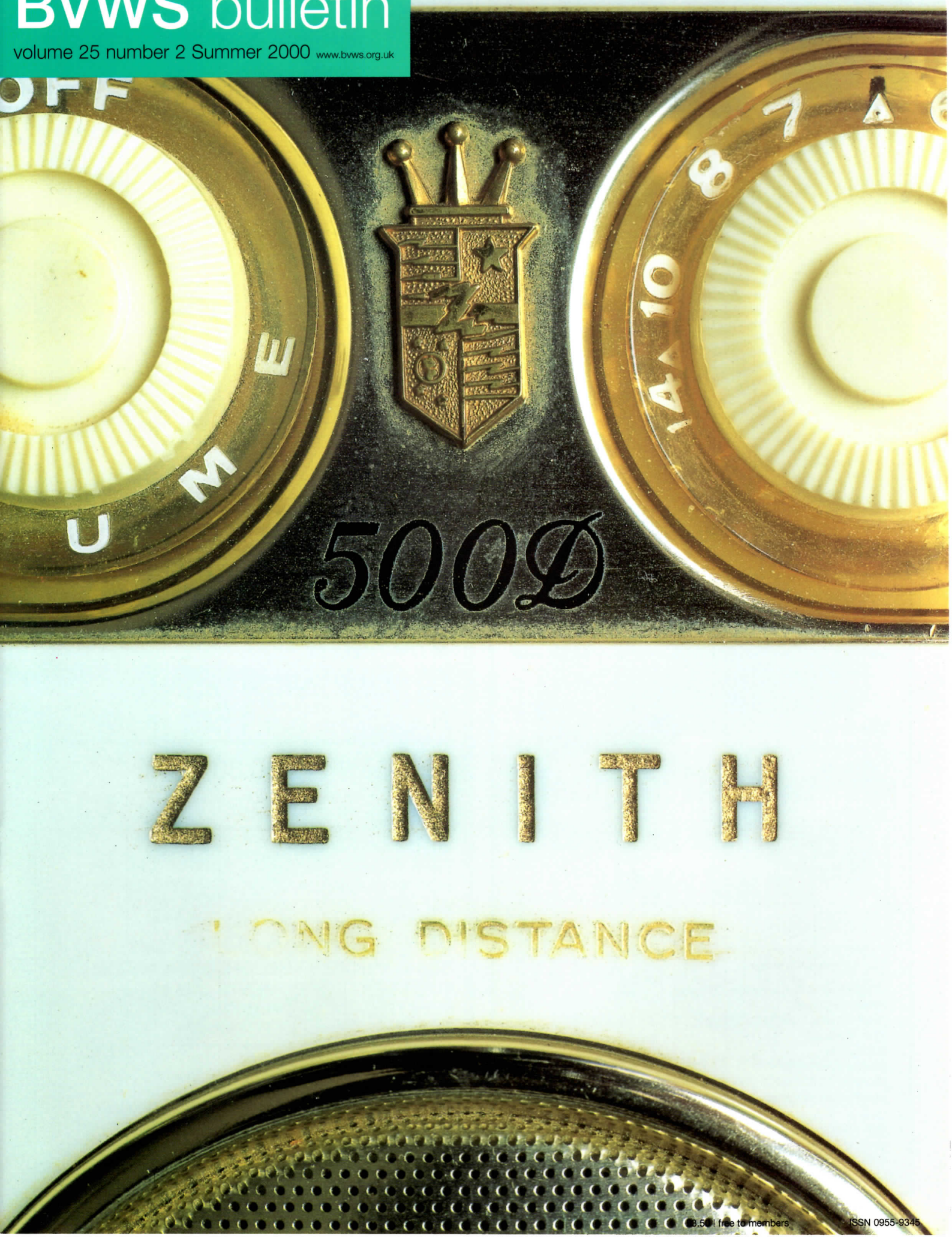
BVWS bulletin

volume 25 number 2 Summer 2000 www.bvws.org.uk



£3.50 | free to members ISSN 0955-9345

BVWS Committee

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

Bulletin Editor:
Robert Chesters,
32 Eaton Road,
Handbridge,
Chester
Cheshire
CH4 7EN
Tel: 01244 675826
bakelite.ekcos@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: 020 7251 3196
audiovisual@cellnetuk.com

Events Co-ordinator:
Steve Sidaway
Tel: 020 8943 1249

Membership Secretary:
Mike Barker,
59 Dunsford Close, Hillside
Park, Swindon.
Wilts SN1 4PW
Tel: 01793 541634
murphymad@aol.com

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

Bulletin Designer:
Carl Glover,
Tel/fax: 020 8469 2904
choris.b@virgin.net

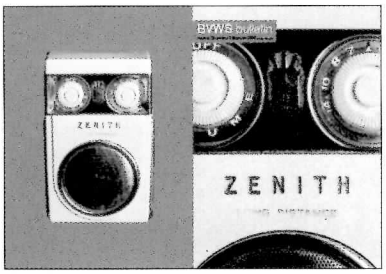
Committee Secretary
Guy Peskett
13 Warneford Road
Oxford
Oxon
OX4 1LT
Tel: 01865 247971
peskett@atm.ox.ac.uk

From the chair

Bulletin of the British Vintage Wireless Society
Volume 25 No.2 Summer 2000

www.bvws.org.uk

Separations by Cutting Edge
Printed by Apollo

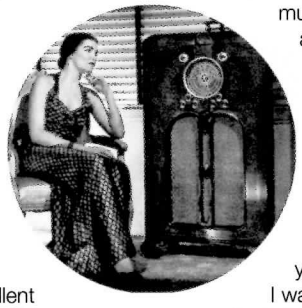


Front and rear cover: Zenith 'Owl Eye' Transistor portable radio

Front and rear cover photography by Mark Groep
Graphic Design by Carl Glover

Edited by Rob Chesters
Sub-Edited by Carl Glover.
Proofreading by Mike Barker and Ian Higginbottom.

This year has seen a buoyant start with well attended Vintage Radio events around the country. I must congratulate John McGlynn and Brian Chesters on their excellent event at Blackpool in March. The location, organisation and attendance was of a very high standard. Guy and myself had an interesting and rewarding day on the BVWS stall. Several new members were enrolled.



It was a chance to meet up and chat with people who normally do not venture to any of the Southern regional meetings, to find bargains and some hard to find items that seem to have dried up in the South. I came away with an excellent example of a Murphy B97 that is just like new inside and out except for a change of loudspeaker some years ago. This is rather curious in this battery set, as there is no apparent damage anywhere or any other signs of changes. The only notable fact is the new speaker is larger than the original. Perhaps audio improvement was the reason. The set does not seem to sound any better for the later speaker than it does with a correct unit back in its place.

Another excellent event was the NVCF at the NEC. Jonathan and his team did us proud once again with a well attended event, although getting up so early to be there is hard work; it seems to start earlier each year. Again a varied selection of equipment with the return of some Jukeboxes, this time in silence, which was a shame, but better than Jukebox wars!

I was fortunate enough to stumble on some boxes under a stall that had not received much attention and when opened amongst lots of other valves, a gaggle of 6 new Mazda 6M2 tuning indicators were found, used in some 1950's Murphy's so I was in heaven.

I can report that the production of the second Trader CD-ROM is well under way and will be finished in good time for post out with this years Christmas Bulletin.

I was saddened to hear that the Portishead meeting, scheduled for September 17th has had to be cancelled. Alex woolliams has decided not to move the date due to logistical problems, but to cancel the meeting and start the new year off with a meeting in Jan 2001.

I am eagerly looking forward to June, as Gerry always throws a great Garden Party at the Museum, which is then topped off with Harpenden the next day. So all that remains for me to say is, see you there!

Mike Barker

Contents

From beneath the Chair

Well here we are, right in the middle of 2000 AD. I have to admit that it doesn't feel the way I had expected, but some of the vehicles and domestic items would have looked very futuristic to me had I seen them twenty years ago. In fact it would have been quite unbelievable if someone had suggested that an object the size of a Sinclair ZX81 would be able to hold the amount of information that was then being held in one large building.

Then again that's the old days for you, never there when you need them.

However, the present is just as interesting and we have another year of fascinating wireless developments to catalogue. Every year another batch of items get that little bit more historically important and this year is more significant than most as a whole century of endeavours have just passed into history.

In keeping with this we have contributions on various subjects covering the entire span of the twentieth century from a Marconi coherer to the internet. We will not be publishing the plans for a computer that runs on thermionic valves just yet though.

We should welcome the arrival of Martyn Bennett as the Keeper of the List which is a role that he inherited from the late Pat Leggatt at the beginning of the year. If you come across any G.P.O. registration numbers that are not on the list then don't hesitate to contact Martyn at the address supplied by the letters page.

On a more sombre note there has recently been a theft from Bletchley Park of an Enigma machine. This is a particularly dastardly crime as it is the property of the nation - yep - you and I. This means that future researchers will be unable to gain access to an important source of primary material when investigating the technology that contributed on such a grand scale to our victory in probably the most significant struggle of the 20th Century.

This issue is only lacking one thing. What's that?

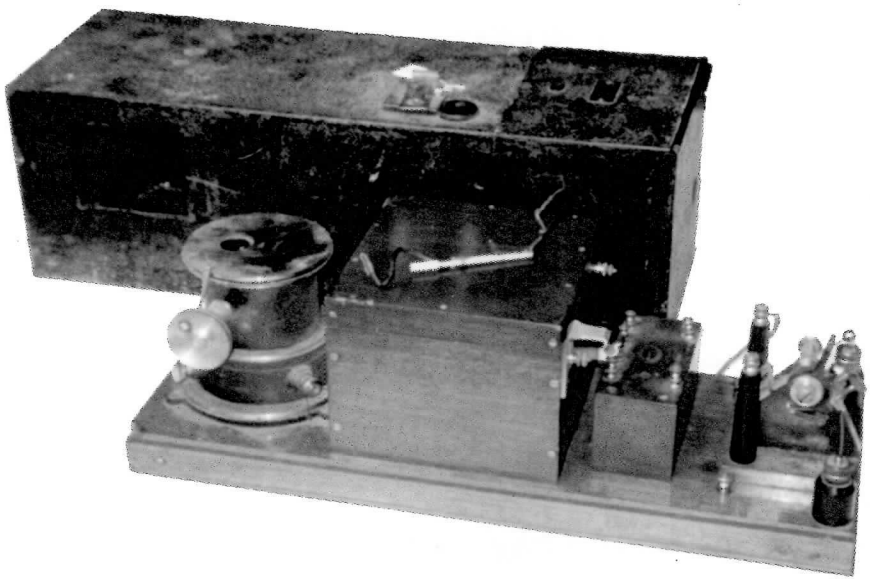
We need somebody to write more articles about domestic radios of the 1930's and 40's. Doesn't anybody collect them anymore?

I hope that you enjoy this issue. I know that I enjoyed reading the contributions as they came in.

Rob Chesters

Just shout out your name
or how to buy a Marconi coherer

text and photos by Jonathan Hill



Just a few days after coming back from running the National Vintage Communications Fair at Birmingham at the end of April, I suddenly found myself in the middle of a 640 mile round trip in pursuit of one of the earliest recorded radio receivers ever to come on to the market.

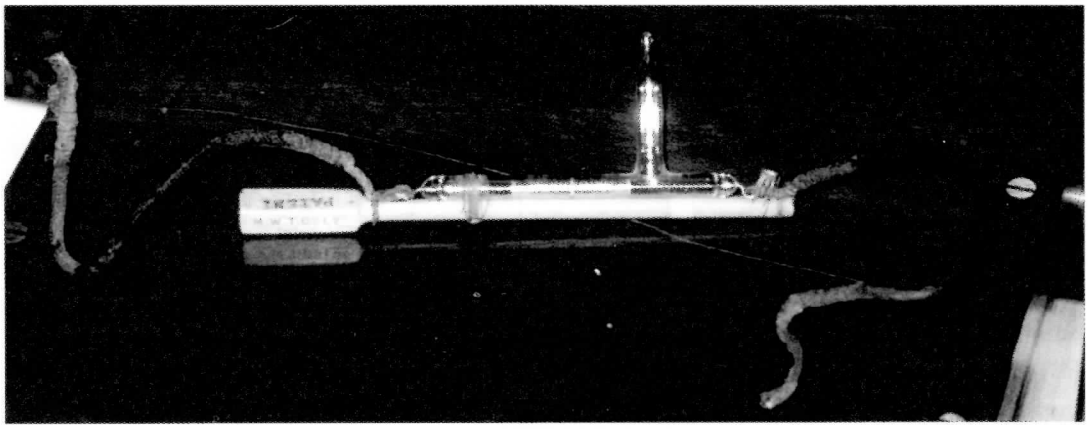
The Marconi coherer that fetched a staggering sum against an original estimate of £2-3,000

Looks familiar? Other lots at the auction

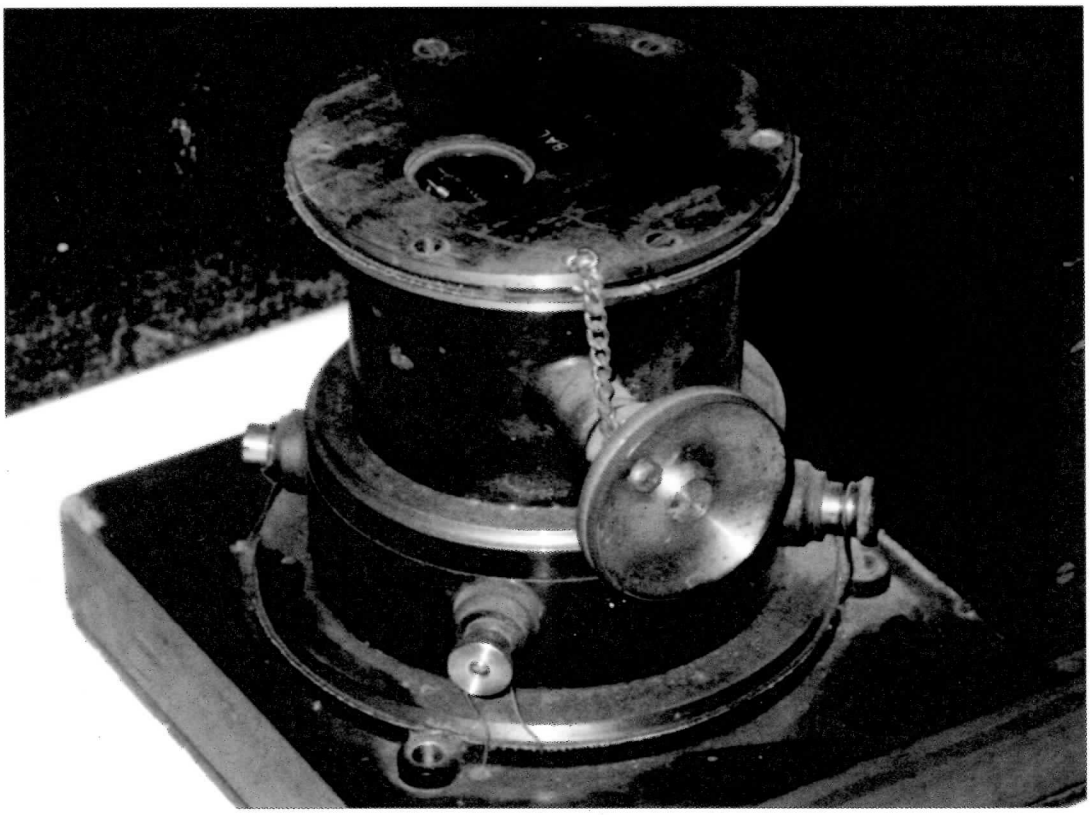
BVWS member, John Wickham, had sent me in the post a catalogue from the Norfolk auctioneers, G.A. Key, who were holding a collector's sale of "dolls, tinplate and old radios etc." on Thursday 4th May, at their salerooms in the town of Aylsham. John thought that, while I might fancy the Ekco AD36 or the Ultra T401, or any of the other 50 or so similar receivers offered, it would be Lot 427 which might catch my eye, especially as it was featured in full colour on the front cover of the catalogue.

The object of this attention was a Marconi Coherer Receiver - a deceptively simple-looking affair comprising a wooden baseboard, a battery box, a relay, a jigger box (aerial transformer) and a coherer/tapper assembly, and being sold complete with its original pressed steel case which no doubt had helped protect it all its long life from pests (both animal and human).

Coherer receivers possess first generation technology which even pre-dates the magnetic detector, the multiple tuner and the crystal detector. Therefore, they can be regarded as among the world's first commercially-produced radios and one of the earliest pieces of equipment to come from Marconi's Wireless Telegraph factory at Chelmsford when production began around the turn of the l9th century. Lot 427 was a slightly later version, serial number



The coherer itself



The coherer relay

1407, and dated 1906, but nevertheless, following Marconi's original late Victorian pattern. The evening before the sale, I had a chance to spend some time looking over the receiver and photographing it in the pleasant company of auctioneer Andrew Bullock, who had separated it from the other 1,500 lots and placed it for safer keeping in a building by itself. Andrew said that it belonged to an old boy who thought he bought it 60 years or so ago. "I saw the metal case, and thought, oh dear, not another magic lantern! But as soon as I opened the end and read the words 'Marconi's Wireless Telegraphy Co. Ltd.' stamped in the end of the baseboard, I realised that we had something special". In between Andrew bringing the receiver back to Aylsham and the day of the sale, it had received world-wide attention. Although G.A. Key might give the impression of being a laid-back ("you don't need a bidding number, just shout out your name"), quaint and rather sleepy type of country auctioneers, they do possess a trick or two up their sleeves - a web site! They are on the Internet, and ably demonstrated to those of us in the auction room the great communicative power of this most modern of technologies - and one particularly devastating when coupled with the mobile telephone.

Even five years ago, you might get lucky and sneak in through the backdoor of an auction room and buy the set of your dreams, simply because your rivals had missed the advert about it in the local paper. But today, putting something on the net is very like going up to the highest mountain peak and shouting through the world's biggest megaphone and telling the whole planet that you have something to sell.

And so it was, that while I was the only person bidding in the room, four other bidders were present in virtual reality - on the end of the telephone. I dropped out at £12,000, and the bidding quickly went up, and up until it stopped suddenly at £35,000. Adding a further 11.75% buyer's premium including VAT (£4,112.50p), the total sale price was £39,112.50p ($58,938.63¢) - a world record price for a radio, sold to ... well, who knows?

Footnote: For more information, you can contact Messrs G.A. Key, at Aylsham Salerooms, off PalmersLane, Aylsham, Norfolk, tel: 01263 733195 (web site http://catalogs.icollector.com/gakey - selected items from their sales catalogues may be viewed at http://www.aylshamsalerooms.co.uk, and you can even bid via on-line e.mail at bids@aylsham-salerooms.co.uk).

An earlier version of the coherer receiver dating from 1904 (with the position of the jigger box and coherer tapper assembly transposed) is pictured on page 91 of Peter Jensen's book Early Radio - In Marconi's Footsteps. There is also a good view of another coherer detector (page 90), and a coherer tapper unit (page 88).

Wireless and the Web

By Robert Chesters. Photos courtesy of Steve Harris and Gad Sassower

Recently the BVWS has reorganised the way in which the Bulletin is produced. It is now envisaged that a large amount of the production will be done via the internet. This does not of course mean that those of you who are not connected to "The Web" will be unable to contribute, but it does mean that if you are then you can save the cost of a stamp when sending letters or articles to the editor.

Everywhere everybody seems to be etailing and emailing, but for many it remains an inexplicable and some might even say irritating phenomenon. So, what's in "The Internet" for the vintage wireless enthusiast?

Gad sassowers' shop "Decodence" in Islington - one of the few shops that retail vintage radios

In many respects the internet is little different from owning say, a fax machine; it allows communication at speed between individuals. To do this one does not require a PhD in computer science, merely a compatible computer and software (I would strongly recommend the Imac - but that's just a personal thing). Once you find an internet service provider - many provide the service free or at a nominal charge, and establish an account, then you're in the game. That may sound simple but that really is it.

Where the internet differs from a fax machine is in it's ability to handle much larger packages of information that alter in real time as one is accessing or has accessed them, this is how most "internet sites" perform. All I mean by this is that the information is being updated constantly and can provide moving

Above: 'On the Air' the only surviving specialist.radio shop How desirable is it to "Handle the goods" before sale?

Left: An Emerson 'Big Miracle' available from the USA, in many different colour combinations; but is it perfect?

pictures and colourful graphics - no black and white heat sensitive paper this.

Right, so that's the internet in a nut-shell - a communication system. Now what does this mean for vintage wireless collectors and conservators?

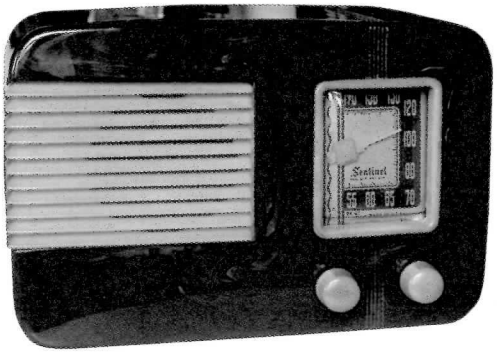
Well, firstly the collector is able to access the information that he or she wants from the various sites. around the world. If you have a problem with a wireless - how does one prevent or at least slow the rate of decay of say a celluloid dial scale, then a trip to a few museum sites might be in order. The conservation department will have a "web page" that may have information about the care of celluloid objects in their collection. Bingo! You may have an answer.

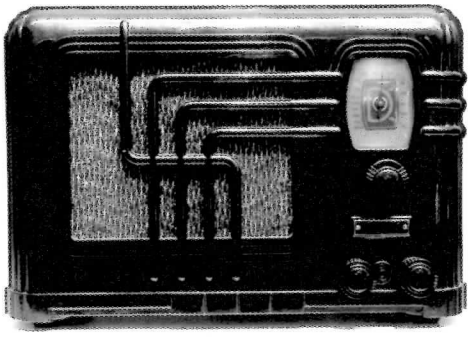
Of course, the thing that you will have heard most about will have been the possiblity of buying your goodies themselves over the Net.

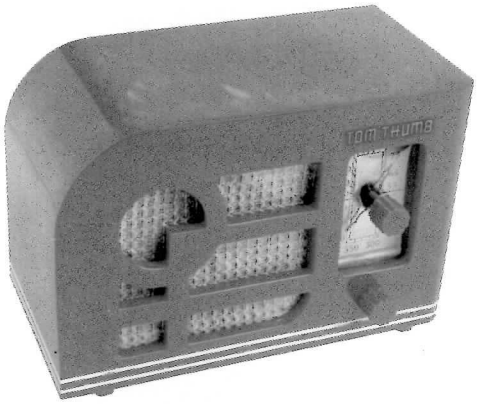
Several people have experience of the Net: Gad Sassower of Decodence, doesn't like the Net, mainly because he sees it as a field in which to buy and the items offered for sale are not guaranteed to be in the condition stated by the vendor. For instance, the case of an American seller sending him a Catalin radio, which had been bought for a lot of money but arrived cracked. This, the vendor claimed, had occured in transit. However, Gad's expertise as a dealer/collector of plastics and Catalin particularly, told him that the breaks had all the qualities of old damage. What can one do? It is simply impossible to handle the goods. This is where buying from a reputable source is invaluable. On the other hand one is well served by buying from a shop where an item can be properly inspected

Another user of the net is BVWS member, Simon Wade. Simon will be known to many of you as the one

You may wish to buy radios of this type, but where does one find them outside of their natural habitat. The net perhaps?







at Harpenden with all the American radios. He has some very forthright views and his opinion on the internet is essentially no different. He has embraced the new technology whole heartedly, spending about seven hours a day on the internet. Although he spends a lot of time trawling the bit stream for wirelesses he rarely sells items himself. More than a collector or a conventional dealer, more a "Radio Broker". (This obviously relies upon mutual agreement between parties).

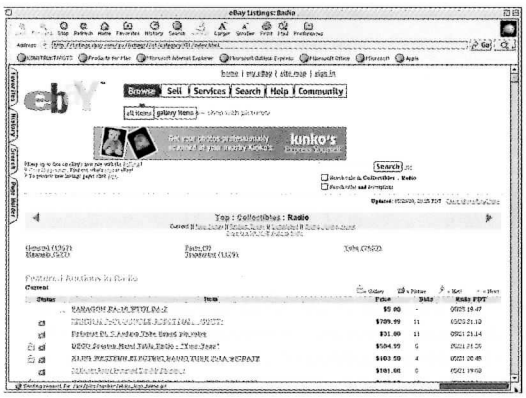
There are many dangers inherent in the internet site. It could limit the effect of the different exchange rates around the World. i.e. one may find that a site offering goods at set rates will mean that goods wind up having a universal price. (Could bring an end to the "Holiday Bargain"). Hence the unattractiveness of the wireless website that sells items at a fixed price. Steve Harris of On the Air takes a slightly different view: "the internet is basically mail order, and On The Air has been doing that for years. My publication, 'Airwaves' , has become the shop window, seen by more real enthusiasts than would visit a shop in any location. The website will just be an extension of Airwaves . I don't want it to replace the printed version - in fact I already get subscription enquiries over the net.How ethical is this? Is it a truly ethical question? i.e. is it to the benefit of the majority if prices remain different around the world? Many would say that it ensures the possibility of "The Bargain"

The Mystique of the Net

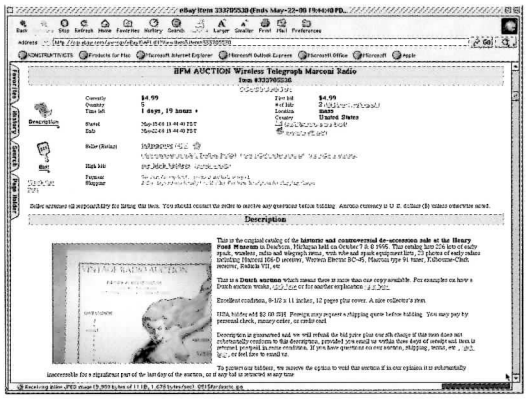
It currently possesses a certain "otherness" among many people (particularly the over 40s) when one considers the strangeness of the internet then certainly it is something apart from us. For instance Simon recalls the sale of a blue catalin Emerson "Tombstone" without ever actually touching the thing itself. A truly virtual event where the item was bought from the seller and delivered to another customer without the tedious messing about with reshipping .

Steve Harris, curator of the On the Air Broadcasting Museum in Chester would agree with this idea:

"I am not convinced that it is the universal answer to mankind's problems, but for collectors and dealers in specialised items, the internet presents more real possibilities than it does even for some big businesses. I have been a full-time dealer in vintage wireless for over ten years, and am all too familiar with the problems of trying to maintain a viable business in a specialised field. The choices available in the past have been to take stalls at antique and collector's fairs, or to open a shop. I have done both, and know the advantages and problems. A website is ludicrously cheap in comparison with other forms of commercial promotion - an advert in a local paper would cost more. As a means of displaying my wares to an international audience, it had to be done. I registered the domain name www.vintageradio.co.uk in 1998, but



Left: the 'ebay' auction site is probably the best-known location for 'on-line' purchasing. The radio section is enormous with hundreds of new radios appearing every day. The pictures illustrate ebay's radio section, then a search made for 'Marconi' which lists several items and finally a specific (in this case a Marconi-related) item.



have only just got an introductory page online - I intend to make it a major presence after the big move ahead for my business."

It might be better if one thinks of it as a servant to collecting or to dealing in radios, as in reality the internet is just an extension and progression of fax machines and filing systems. A tool to be used. Providing that one remembers this it becomes a bit less daunting

Simon Wade is soon to be founding "The Vintage Wireless Exchange" as a web site. Could it mean the end for the traditional antique dealer? Some have observed that if the prospective vendor decides to sell direct to the purchaser then there is no place for the person who used to rely on buying a thing and then waiting until the right person came along. Which is the way that many people acquire their radios.

Antiques may become even more of a long term investment market for those who collect for profit (and lets face it there are plenty who do that).

I will leave the last bit of input to Steve Harris

"The internet is ideal for trading compact, light goods which can be bought without seeing them, hence the success of on-line book and CD shops. But old radios are not like that. They are fragile, often heavy and therefore expensive to ship. Often the value is low relative to the transport cost, and most importantly, as a buyer, can you rely on the seller's description? I have spent a long time building up my business, aiming to build a good reputation, which is very important in a small world like vintage radio. No deal is worth getting yourself a bad name, either in cyberspace or the real world. I am much happier for my customers to see the item for themselves before they buy, but the next best thing is to give as good a description as possible.

More and more sales have been conducted using e-mail. A very useful feature is the ability to send detailed photographs to an individual enquirer. It all helps to make a customer sure whether or not they want something before making a commitment.

Whatever means is used to promote a business, the importance of a good reputation and reliability will be as important as ever. Trustworthiness and fair dealing will be seen as a vital factor, after more and more instances are publicised of people getting ripped off over the web. It is obviously going to be a problem. Already, some collectors have had their fingers burned with online auctions and 'collectors' offering misdescribed items on newsgroups".

There will be many different types of people trading and communicating via the internet. Some honest and some not. Unfortunately the anonymity offered by the net lends itself well to those who would seek to deceive. At this time the internet is still in its infancy and for it to be a real success it is more important than ever, for us all to be as good as our word.

With special thanks to Gad Sassower, Steve Harris and Simon Wade.

The Broken Tuning Scale

by Bill Milne

We all must fear the problem of the broken glass tuning scale as it comes a close second to those scales that have 'cast off' some of their letters or numbers. In the second instance you can only pray that the local art shop has some suitable coloured lettering and numbers in a similar typeface and size in one of the popular ranges of press down transfers. All you need then is a light and steady hand, a great deal of patience and a lot of luck.

In all these instances a spare scale is just about the most unlikely thing on the planet. Though if one can be borrowed, a coloured copy on to acetate, full size if possible, can be made. More about that later. Assuming a spare is not available and all the pieces are still around one is left with the task of turning the broken glass into a complete scale virtually undetectable from new.

First gather all the pieces with lettering, numbers and large coloured areas and clean only the 'front' surface with meths or isopropanol. Next, still only touching the front surface, wipe over with de-ionised or distilled water using a lint free cloth; old well-washed cotton bed-linen is a good source of this. At this stage be careful not to lose any transfer paint overhanging broken edges. Isopropanol and meths are available from the chemist and a local motor store will have the distilled water.

Step three is to put each of the pieces into separate envelopes and then find a local colour photo-copy shop and ask whether they can copy on to the acetate sheets that are used for overhead projector cells or the front of presentation folders. Also discover when they have a quiet period during the day. It is a good idea to try and get them interested in what you might be doing.

Assuming all is well, take the pieces and remove them from their envelopes and get the copier to systematically arrange them upside down on the glass platen. Be careful not to scratch either the platen or pieces themselves as both are precious. In fact the proprietor might choose to protect this valuable surface by putting another transparent layer between it and the image. Having assembled the pieces, ask for a 100% black and white copy just to check that the 'jigsaw' is correct.

At this stage you will have found out the copy size you require: A3, A4 or A5. An A3 copy is twice the size of a regular magazine page and will cost up to 20pence. Having checked the copy ask for a full size colour acetate copy and, if the glass platen is very green, ask for a couple of steps off from 'Normal' to compensate. Of course if you have borrowed a complete scale then all you do is line it up and press the copy button. This copy will cost about £2.00 plus £2.50 for the acetate sheet itself. You may be

continued on page 34

Confessions of a wireless fiend

by Paul Stewart

It could be said that, as collectors and BVWS members, we are somewhat spoilt due to the healthy smattering of events that fill each year, catering for our needs. But what about in-between the Harpendens and the NVCF?

A selection of bakelite radios gathered up over the last few years

I have been collecting radios for more than ten years now, but when I think of my initial antics it is enough to make me cringe. It could be said that as collectors we are somewhat spoilt due to the healthy smattering of events that fill each year catering for our needs. But what about in-between the Harpendens and NVCFs?

I soon discovered that to satisfy my "wireless-a-month" addiction I had better resort to additional methods. While asking the entire staff in my office one afternoon if anyone had any relatives who may have any wireless sets in their loft for the umpteenth time, a colleague asked, "Have you tried that yellow ad paper?".

To my horror, on purchasing that weeks edition, under a section headed "RADIOS", a description of a bakelite radio in my area, for £20 leapt out of the page at me. I rang the number only to find that it had been sold. This did not stop me from demanding a full description from the puzzled man - I even asked if he had any more. The final nail in the coffin was that in the end he let it go for £10. I couldn't believe that a paper which I had thought only contained advertisements for broken food mixers and jigsaw puzzles with a couple of pieces missing held so many radio opportunities. This was my answer.

Every Wednesday was the same. Leave a little earlier for work, pop into the newsagent, then into the office to scour the pages. Weeks would pass where nothing pre-1970 would come up but then something caught me eye which at first seemed strange: "Bush DAC 10"said the text. I assumed that the advertiser or telephonist entering the information had made an error, or an as yet unknown make of radio existed that duplicated Bush model numbers. I assumed the former and made a 'phone call which confirmed that it was indeed a Bush. After checking his price of £30 the man gave me directions and I was off. Arriving on time I was led into a workshop in the back garden where the gentleman had the gleaming set plugged in and working. We spoke for a while about its curves and perfect proportions - although not so much that he would change his mind - when he said "You may be interested in this, too". He then revealed a Westminster ZA 818 from under a blanket. Both sets were in fine condition with no cracks or missing pieces and worked fairly well. We agreed £60 for the two and he even threw in a nice TR82 for good measure. This early fruitful venture, however, was the exception and not the rule.

One trip of around fifty miles was in response to the following: "Very old radio, lovely veneer, long/ medium/ short wave, all documentation - only £10". More probing on my part would have revealed that it actually was a 1970's radio gram by I.T.T. complete with brushed aluminium knobs and smoked perspex square lid which "hid" the turntable. I asked the chap where the short waveband was and he reached for his half-inch thick

Radios come to those who travel. left to right -
Bush DAC 90a, DAC10, DAC 90 (Brown),-lower pair DAC 90 (black), Pilot little Maestro.

glasses, knelt down beside the beast and said, "Oh - I thought that's what VHF meant - what about five quid?" Needless to say no sale was made (in thirty years time you may be kicking yourself -new Ed).

Another promise which lured me into a two hour journey was from a farmer advertising : "Ten old radios - £30". Even the most basic questioning, like make, age, condition etc. eluded him so I thought I'd risk it. It was difficult to find the farm as it was in a remote part of Hampshire I'd never heard of - coupled with the fact that my mind was awash with the endless possibilities that awaited: would I soon have my first round Ekco? Would I get the cabinet for a Peoples Set? Would my small car accommodate ten radios? Unfortunately, the only thing that complied with the original advert was the number of "sets". All I can say is that a rusted carcass of a chassis without its cabinet or the most basic of components hardly constitutes a radio. Where valves and transformers once glowed and hummed now sat the odd birds nest and some hay. There they were - all lined up outside the barn like POWs waiting to be rescued by me. But even with the best will in the World - I declined. I asked if there were any cabinets or speakers but was told no. I did spot the back of a Cossor 396 but the man didn't know where the front half had got to. By his own admission, this man called himself a radio collector which, by comparison, made me feel like a museum curator of the highest order.

After a while I had a few more successes : once, in response to a chap selling "A box of valves £10", I

The radio of rock and roll. The Bush TR 82

Radios

347 OFFERED

- 1960's Fye Radiogram, sideboard type, attractive piece of furniture, interested please phone Slough (01753) 594689.
- Attention radio hams! IC-2KLPS power supply, £250. Icom IC-2KL linear amplifier, £600. Marlow (01628) 483488.
- Avo 8, mk5 multimeter with leather case, splendid condition, recent manufacturers calibration, £250 (current distributors price £480 plus vat) Reading (01734) 415061.
- Cossor mains Melody Maker Bakelite, early 50s. Offers. Wokingham (01734) 785247.
- Ecko AD65 round cased valve radio in excellent condition, bargain at £25. High Wycombe (01494) 471591.
- Portable multi-band radio, mains or battery, new & boxed, £20 ono. Thatcham (01635) 876220.
- Radio/grammaphone 1960's, highly polished, lovely tone, only £40. Tel Chesham (01494) 774599.
- Roberts RCM1 clock radio, VHF/LW/MW, mint condition, with instructions and box, £15. Slough (01753) 840534.
- Scanner VHF Dual band, 70.00 to 87.98 and 140.00 to 175.98, £50. Reading (01734) 462105.

Radios

347 WANTED

- Bush DAC 90 valve radio wanted, must be in A1 order, will pay up to £50 cash for good example. High Wycombe (01494) 471591.

The curious advertisement that appeared in a local paper.

turned up to find a box of about 30 valves or so which included a few useful codes familiar to my untechnical mind. I asked if he had any other radio related items and he produced an ivory DAC 90A saying that he'd throw it in with the price! Then there was the time that I was trying to find a place to park in Fleet when I chanced upon a second-hand shop. Wandering around inside I saw a black and ivory Ekco AD37 stuck in a corner, flanked by a set of golf clubs and an umbrella stand - I even had the nerve to knock the price down from £25 to £20. On another occasion. I went to see a Murphy A146 CM, a batch of service sheets and some technical books. The wireless looked stunning and sounded OK so I flicked through some of the data expecting some astronomical asking price when the man said, "Well, I can't let it go for less than a fiver" - I gave him £10.

By far the most puzzling of my endeavours has to be when I came across an advert in June 1995. The advert stated a round cased Ekco AD65 in excellent condition for £25. Luckily, I had grabbed this particular issue in the normal way and was dialling the number nervously by about 9.30 am. There was an answer phone so I left a message giving my name and number. I kept trying until the afternoon when eventually a young sounding chap said that he had the set but was I really interested. I said I was serious and could come round at any time. Sounding cagey he asked if he could ring me back so I said all right but, worried about it slipping away, said that I would probably give him more money if he wanted. "How much?" he exclaimed and I said I'd have to see it first, but was again told that he'd call me back. Later on that evening after much pacing and clearing a space especially on my sideboard I had to call him one final time. This time I spoke to someone a lot older who immediately told me that I was the tenth person to call and there was no such radio for sale, but if I had a round Ekco, would I sell it for £25! It's certainly one way of getting people to phone you.

My collection was increasing slowly but I was beginning to wonder whether there was a relationship between the number of miles travelled and the enquiries pursued and the number of radios purchased (this is a subject that many collectors ponder - ed.). I decided to take the last ten sets purchased in this way and add up all the miles travelled and money spent acquiring them, then divide both of these figures by ten; which ought to give me an average. This came to 14 miles per set at about £20 each - which didn't seem too bad.

Realising peoples interpretations can vary tremendously I thought about devising a simple list of terms often used in radio adverts together with their actual meaning. The list is endless and can be likened to that of a second-hand car salesman who tells you a slight re-spray is needed when, in fact, it is only the rust that's holding it together:

Quite old - 1970's, sometimes works - dial bulb just about lights up, odd station names - early VHF set, sort of bakelite - plastic/formica cabinet, lovely knobs - piano key set, needs a light polish - no veneer left at all, may need a new valve - complete rebuild.

Although these preparatory exercises saved me a lot of wasted effort, I found I was seeing fewer radios and becoming more wary as I was able to eliminate the "dead leads" before so much as turning my ignition key. As a result, my collecting came to a halt. So why not advertise for myself I thought? Surely, if I put out an advert stating my specific needs, only the people with the sort of thing I was after would come to me - right? Wrong. No sooner had I faxed my clear requirements to the head office, my phone started to ring. A few people called with big VHF sets, transistors and the odd Dansette record player, but in the few months that the advert ran I was completely out of luck. One gentleman rang to ask what sort of thing I was into and I told him mainly I was seeking English domestic sets from the 30's and 40's in fair condition eg Bush, Philips, Ekco, etc. He then agreed that this was his favourite era and that he remembered Cossor and GEC very well. After a pleasant chat for about ten minutes I was quite enthusiastic and asked him if he had any to which he replied, "Oh no, you can't get hold of them anymore" and he hung up.

Like a Murphy set, I was "baffled". Maybe I was expecting too much. My patience soon paid off though, as a chance meeting at the local tip showed. After struggling with the last of some garden waste one of the helpers cane over to give me a hand. After thanking him I thought I'd just ask if he ever saw any old radios being thrown away; "What bakelite ones like Bush you mean?" This man knew his onions and to cut a long story short, he had hoarded a years worth of radios in his portakabin and was thinking about selling them. I went round the back of the site office only to see 3 DAC90a's, a Pilot Little Maestro, 2x DAC10's, an ivory VHF 70, a DAC70, a couple of TR82's, a Philips 209u and 170a and a couple of speakers. They were not all in good condition but this was just too good to pass by. We eventually agreed at a figure a little over £100 for the lot and for once, I drove away from the local rubbish dump with more than I brought.

Although I was very pleased with that particular days 'hunting' it still defies all logic. It seems that without any effort or intention on my part the opportunity just fell into my lap. Is it because after putting in the hours and clocking up the miles it is the sort of thing that is going to happen by default? Frustratingly, I accepted this as the reward for all my previous hard work - the culmination of ten years. I suppose that the cycle must start up again so, where should I go next?

Why, the Newsagent of course.

It takes a while but they look good!

'On The Air' Broadcasting Museum to close

BBC to purchase the collection for the Nation

Many readers will know of 'On The Air', the vintage wireless shop and museum owned by BVWS member Steve Harris. The museum, one of the few completely independent museums of broadcasting in the UK, is to close at the end of the summer.

The lease on the building in Bridge Street Row, Chester expires later this year, and the decision was made not to relocate the Museum to the new premises at present under negotiation. This is due in part to the decline in visitor numbers in Chester, but mainly to the agreement reached with the BBC to purchase the entire collection.

Steve is very pleased that the BBC consider the collection, built up over many years, to be of national importance. He said "The BBC has a great history, which is the story of British broadcasting in the 20th century. My intention in setting up the Museum was to tell this story, and since doing this in 1994, many thousands of people have come from all over the world and expressed their appreciation of the project. The BBC drew upon it when they set up the BBC Experience, and I am honoured that they consider it to be of sufficient public interest to make the unprecedented step of purchasing it for the nation. It will be seen by many millions, and will be in safe hands for the foreseeable future."

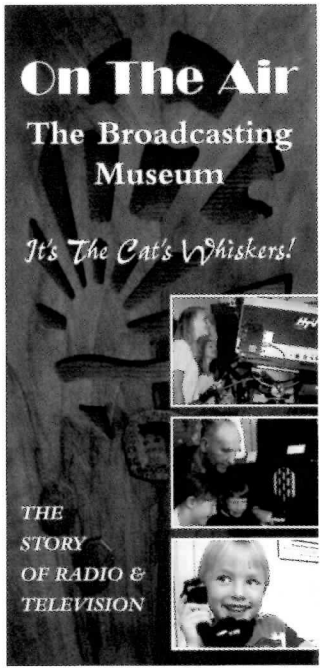
Justin Phillips, Head Of BBC Heritage, said: "It will be a privilege to give the exhibits a new home and new opportunities to be enjoyed by generations to come."

The Museum has always been supported by the other side of the business, "On The Air", which has become established over ten years as one of the leading centres for vintage technology, supplying historic wireless and television equipment to collectors, museums and institutions all over the world. This side of the business is booming, and the closure of the Bridge Street site will allow a move to larger premises outside the City.

Steve commented: "The Museum was sited in the main tourist centre of the City, but there is no reason to continue paying the excessive cost of high street premises for a business that does not need passing trade. Sales have always been generated more through 'Airwaves', our subscription magazine, than through the shop, and the new website www.vintageradio.co.uk will be an increasingly important factor. Parking and access by vehicle are more important than passing trade, and these are a problem in the city centre."

The new location, at present under negotiation, will make On The Air the largest vintage radio and technology centre in the UK, providing better access and on-site parking.

enquiries: (01244) 348468



The life and times of the worlds longest running and most successful pocket radio family

Zenith Owl Eyes

by Jim Duckworth

A light shines in the 'dark ages'

Conventional Transistor Radio history and mythology on this side of 'the pond' tends to run along the following lines... In the beginning was the Regency TR1, the world's first commercial pocket radio, a 4-transistor superhet launched in November 1954 for the Christmas market. Then came a kind of transistor radio 'dark ages" i.e. the two year period from the beginning of 1955 to the end of 1956 in which several 4 to 5 transistor designs and a few with 7, surfaced in various parts of the world and particularly in America. These were of relatively poor performance and/or traditional appearance.

The Vice President of Sales and Marketing, L.C.Truesdell, gave an upbeat resume of the design features and customer benefits, relating them closely to the obvious shortcomings of the TR-1 and its clones.

In 1957 Sony introduced the TR-63 which heralded the new pocket radio age setting new standards of performance using a 6-transistor superhet circuit. This was to be followed in 1958 by the brilliant TR-610, which became the definitive shirt pocket radio for the next few years, and indeed still is for most people.

So what's the problem? Well the first bit about the Regency TR-1 is true, the last bit about the TR-63 and TR 610 is certainly true from the point of view of creating a new shirt pocket market, having miniaturised components further to make this possible.

The problem is with the middle bit and the question of who set performance standards. The 'transistor dark ages', were actually illuminated as early as Nov 1955, just one year after the Regency TR-1 launch, when Zenith introduced the Royal 500 pocket radio to America. It was this radio which actually set definitive standards of design and performance and established Zenith as a true pioneer of transistor technology.

Launched as a seven transistor superhet which quickly went into high volume production, the tuning and volume control knobs were positioned and recessed in such a way as to give it a striking appearance known as 'Owl Eyes', (Fig 1). It was to be the subject of continuous circuit improvement and investment in new component technology over the next 7 years, resulting in a family of 6 members. Over one million sets were sold.

The Regency TR-1 legacy and influence

The Regency TR-1 had put a stake in the ground with its quaint 4 transistor design. This is now chronicled in detail on various web sites and well summarised in 'Radio Radio' (third edition). In essence, the high cost and limited availability of RF transistors in the dawn of the semiconductor age reduced a basic Texas Instruments 6 transistor design down to 4 in a redesign by Richard Koch of IDEA. Even taking that economy and the high $50 launch price into consideration, they (IDEA/Regency) struggled to make any profit in the first year of production.

The first 3 of the 4 transistors were to establish the basic transistor superhet 'front end' circuitry for all time. i.e. a self-oscillating mixer followed by two IF stages with diode detector and AGC. But this left only one transistor for the AF output, which therefore had to be class A operation with its consequent low efficiency. Furthermore, with the low capacity 22.5v hearing aid HT battery - one of the only miniature power sources

around at the time, output power was very low at around 12-15 milliwatts maximum and 6-12 undistorted. This gave rise to the 'tinny sound' accusation, which was only to be expected from the combination of low AF gain and output power, a small loudspeaker and a cabinet with no special acoustic advantages. But all considered, the Regency TR-1 was a great effort and a formative influence on what was to come. Perhaps it is appropriate to paraphrase Dr Johnson's famous dictum on the remarkable running capabilities of a three-legged dog, which he and Boswell observed one day. "Sir, It is not so much a question of how well it runs, the miracle is that it runs at all'

The Zenith 500 Press launch and specifications

The Zenith press release of Nov 22nd 1955 made it quite clear that the new Royal 500 was a 'high end' design setting new standards for pocket radios, the effort being aided by the Company's long experience of designing superhet radio circuits using 'vacuum tubes', and 3 year low power transistor circuit design experience in their Hearing Aid Division. (They were running five different models when the 500 was launched!)

The Vice President of Sales and Marketing, L.C.Truesdell, gave an upbeat resume of the design features and customer benefits, relating them closely to the obvious shortcomings of the TR-1 and its clones. - it was much more sensitive than the '4 transistor miniature radios', bringing in weak and long distance stations. It sounded very good with its much greater undistorted output power of 100 milliwatts compared to the '6-12 milliwatts in the usual 4 transistor instruments'. It was very economical. The chosen 6 volt power plant made up of 4 penlight cells yielded 'one cent per hour ' operation. Forty five years on, the same penlight cells now known as M's are the most widely used and available batteries in the world. It looked very well in a stylish and expensive cabinet moulded in 'unbreakable' nylon. This measured 5.75x3.5x1.5 inches and was initially available in black and maroon trimmed with 'Roman gold'. The 3 position wire carrying handle-cum-table stand was a Zenith innovation to be copied extensively in other vertical format pocket radios, including shirt pockets. Both the Sony TR-610 and Global GR-711 used it. None of this came cheap. Combined with Zenith's initial 'hand wired' metal chassis and use of transistor sockets and high quality in-house components such as specially designed miniature IF and AF transformers, the launch price was 50% higher than the TR-1 at $75. Fig 2 shows the first 500 'Owl eyes' metal chassis layout alongside the first printed circuit board version (500B).

The first Owl Eyes circuit design-how were the new benefits achieved?

First of all, why use 7 transistors? They were still very expensive, even with Raytheon and Sylvania competing with Texas Instruments as suppliers of the NPN grown junction type (illustrated in 'Radio Radio' page 287). Surely 6 would have done?

Fig 3 shows the first circuit diagram with the split of 3 transistors in the AF section and 4 in the RF/IF section. So the use of a separate transistor local oscillator was the main difference between the new 500 design and the 6 transistor superhet circuit which became standard from 1957 onwards. I can think of three reasons why this was done, given the mandate to produce a leadership product with better reliability, superior sensitivity and good local station handling. i.e. (1) to keep the local oscillator working as the battery

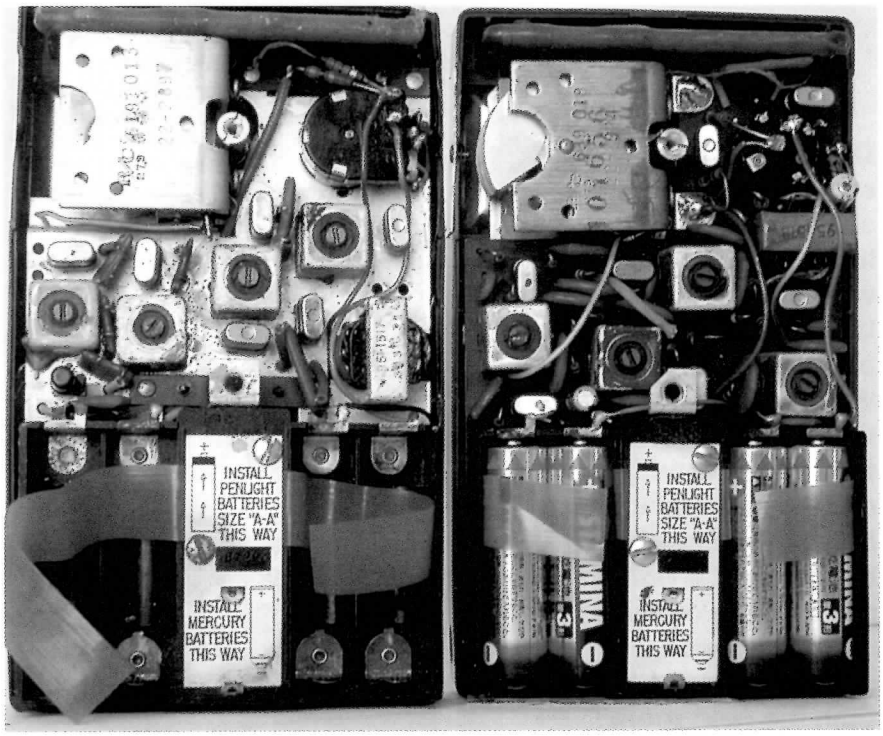


Fig 1 (above)
The Original "Owl Eyes" Zenith 500, launched November 1955.

Fig.2 (right)
The Zenith 500 Metal chassis alongside the first printed circuit version - model 500B

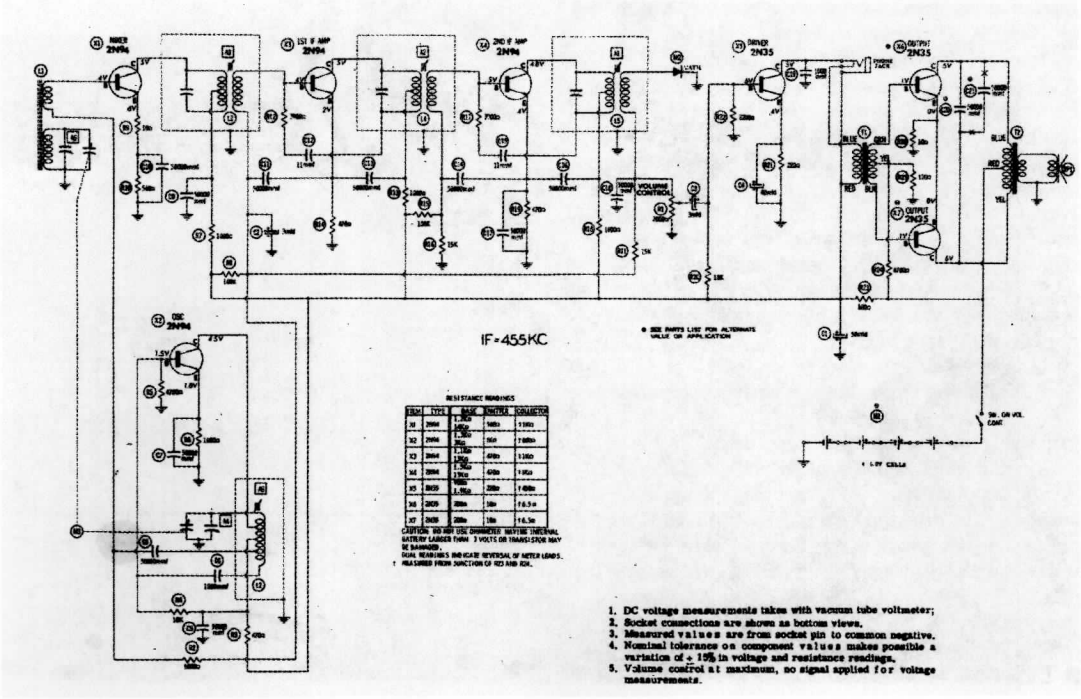


Fig 3 (above). Zenith 500 circuit Diagram. It was subject to at least three revisions in the first year.

voltage fell, (2) to optimise conversion gain with low noise and (3) to have the capability to apply AGC to the mixer as well as the first IF stage.

Item one was fundamental in those early days of limited gain/bandwidth RF transistors. (The PAM 710 development saga brings this out well in 'Radio Radio', 3rd ed. p289). It could be solved by driving the combined oscillator mixer harder in terms of a higher voltage (cf Regency TR-1, 22.5 volts), or with higher current in the case of the Zenith 6v rail. This would have tended to move the transistor away from its non-linear mixing region however and worsened the signal to noise ratio in the process. This whole issue was to disappear within a couple of years when better transistors came along.

A separate oscillator also allowed levels of oscillator injection voltage to be set independently for optimal conversion gain and finally, it enabled AGC to be applied to the mixer without the danger of stopping the local oscillator as in a combined arrangement. This was a key point given that transistors don't lend themselves so easily to a wide range of AGC control and prevention of overload. (As was routinely achieved for example with the B7G valves used in the compact personal receivers that transistor sets were displacing). So the capability of having at least two controlled stages rather than one, was a major plus point. As a matter of interest and two to three years later on, arch rival Emerson went over to the same arrangement, in the second circuit iteration of the celebrated 888 family

The audio amplifier used one transistor as a driver and two for the output, in a class B push-pull circuit giving high power output with efficiency. This arrangement was to become widely adopted. The transistors were selected for gain and matching, the use of sockets greatly facilitating the process. Zenith also incorporated their own design of high efficiency miniature AF transformer. They had in addition developed their own 2.75" loudspeaker and optimised the sound for the cabinet, assisted by their Hearing Aid acoustic research lab.

To produce 100 milliwatts of undistorted sound, a battery capable of supplying relatively high current at low impedance was needed. Hence the use of four (high capacity) Penlight cells. These took up a lot of space for a pocket radio, around 40% of the overall plan area in fact-see fig 1. This in turn forced the development of more miniature components, to keep the same cabinet size as the design expanded over the years. By way of comparison, The Regency TR-1 which was not much smaller overall used only 20% of plan for the 22.5v battery, a figure similar to the shirt pockets two years later with the ubiquitous 9 volt BP006 battery (To become PP3 later in the UK). So there was a fundamental choice to be made between battery capacity/sound quality and the smallest possible size. The Zenith 500 was designed as a good compromise being both pocketable (q.v.), and very good to listen to with long battery life. (Though Zenith promoted it aggressively as being the best of all worlds!)All this now raises the question of pocket radio classifications. sound quality and performance versus size

What is a Pocket Radio?

Fig 4 shows five pocket radios from my collection which can be used to define general categories The first point to make is that they all call themselves pocket Radios. The largest one on the left, the Emerson 888 Explorer, actually has the words 'Pocket radio in Nevabreak plastic', moulded into the back of the cabinet/radio. Their respective IF transformer sizes represent a whole class of component miniaturisation. Finally the Standard Ruby Micronic radio with slow motion dial - a unique category of ultra-compact discrete transistor superhets, should simply be classified as a miniature radio. Clearly the two on the left sound by far the best for the person on the move, irrespective of the pocket they were carried in, as long as they were carried at all. (The best radio is the one you have with you!). The Emerson had a 3.5" speaker and also the same 4x penlight cell batteries as the Zenith, making it pleasant listening for lengthy periods. The Sony TR-610 and the Airline are both excellent examples of well made and stylish shirt pocket products delivering in theory 100 milliwatts output. However, this was definitely not 'undistorted' and not designed for, nor indeed good enough for lengthy listening. I suppose it didn't matter anyway if you were a teenager using it to listen to 'Rock and Roll', as has been suggested. The baby Micronic Ruby produces a kind of 'chirping ' noise, only suitable for listening to very short news bulletins.

Did anyone ever carry a radio in their shirt/top pocket for long? In America, a vast country with a large travelling population wanting to listen to distant as well as local stations, they were certainly carried somehow. Maybe the final definition of a pocket radio

Did anyone ever carry a radio in their shirt/top pocket for long? In America, a vast country with a large travelling population wanting to listen to distant as well as local stations, they were certainly carried somehow. Maybe the final definition of a pocket radio is 'the one you carry with you somehow, for further than the next room'!

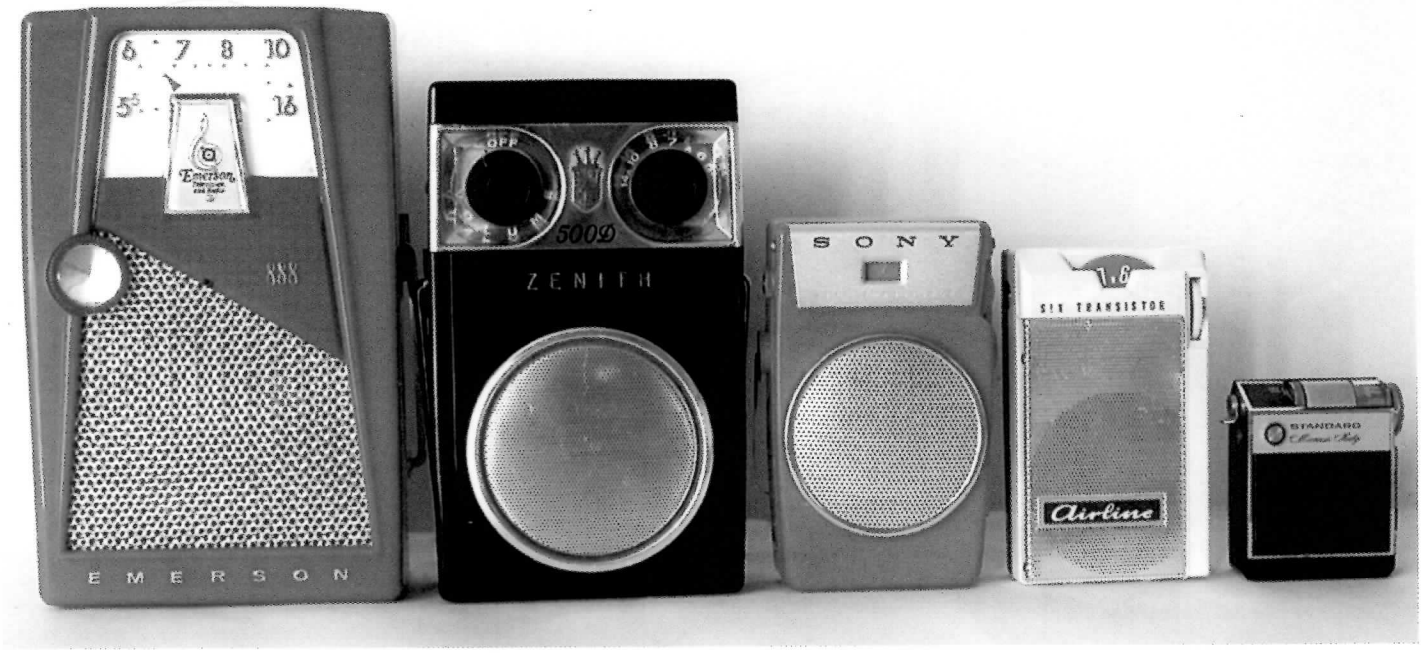


Fig 4 (above) Classifying pocket radios. Left to right: Emerson 888 Explorer - overcoat pocket, Zenith 500D - jacket pocket, Sony TR- 610 - shirt pocket, Sharp Airline- shirt pocket 5mm IFT, Standard Micronic Ruby -miniature

is 'the one you carry with you somehow, for further than the next room'!

Expansion of the Owl Eyes family

500. The First Owl Eyes with metal chassis was in production for around one year. It underwent two circuit revisions before the printed circuit version took over towards the end of 1956. (Which itself had two more revisions). Each revision was based upon using the latest transistors. By Christmas 1956 the 500B was introduced and advertised as the 1957 model. Fig 5 shows the complete 500 family in chronological order, left to right. The original chassis no. was 7ZT40, changing to 7Z40ZT1 for the first PC board version. 500B. The only visible difference is in the tuning and volume knobs. They became thicker, easier to turn and with no bar through the middle. But the real difference was that the tuning knob drove a concentric clear plastic tuning scale via a very nice 6:1 vernier reduction drive fitted to the gang condenser.(Note in Fig 2 it is slightly smaller than the original and has a brass finish): this, taken along with the IF transformers redesign (to take advantage of the better transistors then available) improved RF operation of the set and consolidated its position as the leading pocket radio of the day. The pre-Christmas Ad of Dec 11 th 1956 - typically 50's, colourful, ebullient and aimed at 'the man and woman who had everything', claimed up to 30X better sensitivity and 15X more volume than its Competition. The Advert also introduced the new colour white. Tan and pink were to follow in 1957 and were available in that year only in limited quantities. Both are now very rare, commanding high auction prices.

500RD. this appeared towards the end of 1957 and Zenith had decided to go up a gear, making it a 'long distance' eight transistor design. RCA, their major semi-conductor supplier, had introduced to the new VHF germanium alloy transistors. (These surfaced a bit later in Europe as the Mullard/Philips OC170/1, leading to the AF115/117 family, extensively used in British designs in the early 1960's.) The 500RD used one as a wide band RF amplifier, operating in a low collector current/low noise mode and contributing around 3-4X voltage gain before the mixer. The tuned aerial circuit coupled into the base and there was a fixed tuned circuit in the collector, heavily damped by the combination of a collector resistor and mixer input impedance. It had AGC applied to the base, making it the third transistor in the control loop. It worked well enough, both noticeably increasing the sensitivity and avoiding excessive noise and cross modulation which often occur when this kind of arrangement is attempted. Zenith advertised it as 'Making the best better'.

Visible differences, e.g the words,'long distance', were stamped into the case above the speaker grill, which now had the surrounding bezel reduced in diameter, giving a neater appearance. It was available in all five colours. The new chassis no was 8AT40Z2. 500D was basically the same set as the RD having the same 8 transistor chassis. It was introduced early in 1958. The only internal difference was the introduction of a new 'inverted cone' loudspeaker, designed by Zenith in house and claiming better sound dispersal over the frequency range. (Three years later, Sony were to pick this up and use it in the '5mm class' shirtpocket TR-620, calling it a 'flying saucer' loudspeaker). Externally, the Zenith crest was reduced in size to allow '500 D' to be written on the gold bezel, just above "Zenith'. In addition, the speaker grill was pushed out more within the same bezel as the 500RD. Available colours were now restricted to black, maroon and white.

500E went into production in late 1959 as the 1960 model and was the first major break with the original Owl Eyes cabinet design. To most Zenith enthusiasts, including myself, it looks an unprepossessing radio and suffered from early 'flaking' of the top bright metal scale plate. Internally, the (still metal) gang condenser and IFTs, were reduced in size. In addition, the audio output power was increased to 350 milliwatts undistorted to complement the new loudspeaker.

Fig 6 shows the new chassis layout, Fig 7 the new front end circuit and Fig 8 the radio itself. The new circuit had several points of interest. (1) In the RF amp collector, the former fixed tuned and heavily damped parallel circuit was converted to a series resonant IF trap assembly, A5. This reduced noise in the IF Band Pass giving the set a much quieter background while tuning. What a difference changing the connections on the same components can make! In addition, the new miniature gang condenser retained the 6:1 vernier reduction, giving super smooth and precise tuning via the new edge control knob. (2) To further improve selectivity, The IFT in the mixer collector became a double tuned bandpass arrangement (A3, A4). By top coupling two 5mm single IFT's with the 8pf capacitor.

The Sony TR-610 and the Airline are both excellent examples of well made and stylish shirt pocket products delivering in theory 100 milliwatts output. However, this was definitely not 'undistorted' and not designed for, nor indeed good enough for lengthy listening.

Fig 5 (above): The Zenith 500 Pocket family. Left to right- 500, 500B, 500RD, 500D, 500E and the 500H

Fig 6 (below): Zenith 500H chassis built around the new 5x3" loudspeaker

(This was the 'compactest' way of making a double tuned IFT, Perdio used it in the PR7). (3) The AGC was improved by importing technology from the new Royal 3000 Transoceanic development. Control current went straight from the signal diode to the RF amp base (X1), which in effect was used as an AGC amplifier, distributing control voltage from its emitter to both the mixer and first IF transistors. All in all, It was an eccentric, stylish, tour de force: way over the top for the declining and increasingly low priced pocket radio market, but by far the best performer of any radio of that size at any time. No serious Transistor Radio collection should be without one! Like the 500E, the 500H went through a 500H-1 'economy' version just before production ceased, the main feature being to eliminate the output transformer by using a split battery rail. However, it actually sounded just as good as before and at the 'bargain' price of $39 instead of $59.

Servicing the 500 Series was intended to be speedy with good accessibility. Zenith had designed it so that the chassis, speaker and battery box came out of the cabinet as one module. Instructions how to do this were stuck on a label under the battery cover. This enabled quick voltage measurements to be made and easy access to the transistors in their plug-in sockets. One word of warning here. The first two models used NPN germanium transistors so the earth line was negative as in valve portables. From the 500RD onwards, this changed to the more conventional PNP with positive ground. So after 45 years, what are the major faults? Out of the twelve radios in my collection representing all models except the 500E-1, electrolytic capacitors which have lost their capacity are around 95% of all problems, dry joints the remainder. If a set is completely silent and has power applied (on/off switch can be 'sticky') and the speaker connected (no break at the phone jack!), then the 6mfd electrolytic between the volume control wiper and driver transistor base will almost certainly be open circuit. Replacing the 50mfd emitter decoupler of the same transistor normally works wonders as well. If a set tends to be unstable, replacing the AGC filter electrolytic usually fixes the problem. This applies through all models up to the H500. My three H500's all work perfectly, though one had an audio transistor missing which I replaced with an AC128 from my Germanium 'warehouse'.

Collecting the 500 series

Which to collect? All except the 500E would be my recommendation. Though as a committed user as well as radio restorer, I would skip the original 500 without the vernier tuning. But then I don't feel the need to have the 'first' of anything, whereas most people do, and I suppose the metal chassis is rather quaint, so better have that one as well! Finding them at all can be difficult over here. I advertised in the BVWS and other journals for two years without acquiring a single radio! After 6 months of working 'ebay', the US based Internet auction site, I had accumulated a complete model collection including one in the rare tan colour, but no sign of pink as yet. (For the record, the rarest set would be a pink 500RD, produced in the last month or so of 1957 before the 500D came in 1958 with

restricted colour range). Getting them this way can be a painful process however, 'attending' auctions in the middle of the night and dealing with all the hassle of transatlantic payment and shipping. It's definitely not for the faint hearted and it's not cheap either! A better way if you have the time and money is to take a US holiday coinciding with the major radio fairs and swapmeets. The fact is, almost the entire 500 series output went to the US market. Odd sets came over here via businessmen and holidaymakers. I believe the 500E was actually the first model to be imported at all by the Zenith Agency in the UK. This goes a long way to explain the 'dark ages' knowledge vacuum whereby Zenith is given little or no credit over here for its transistor pocket radio pioneering efforts and leadership. I hope this article has in some measure redressed the balance.

Bibliography

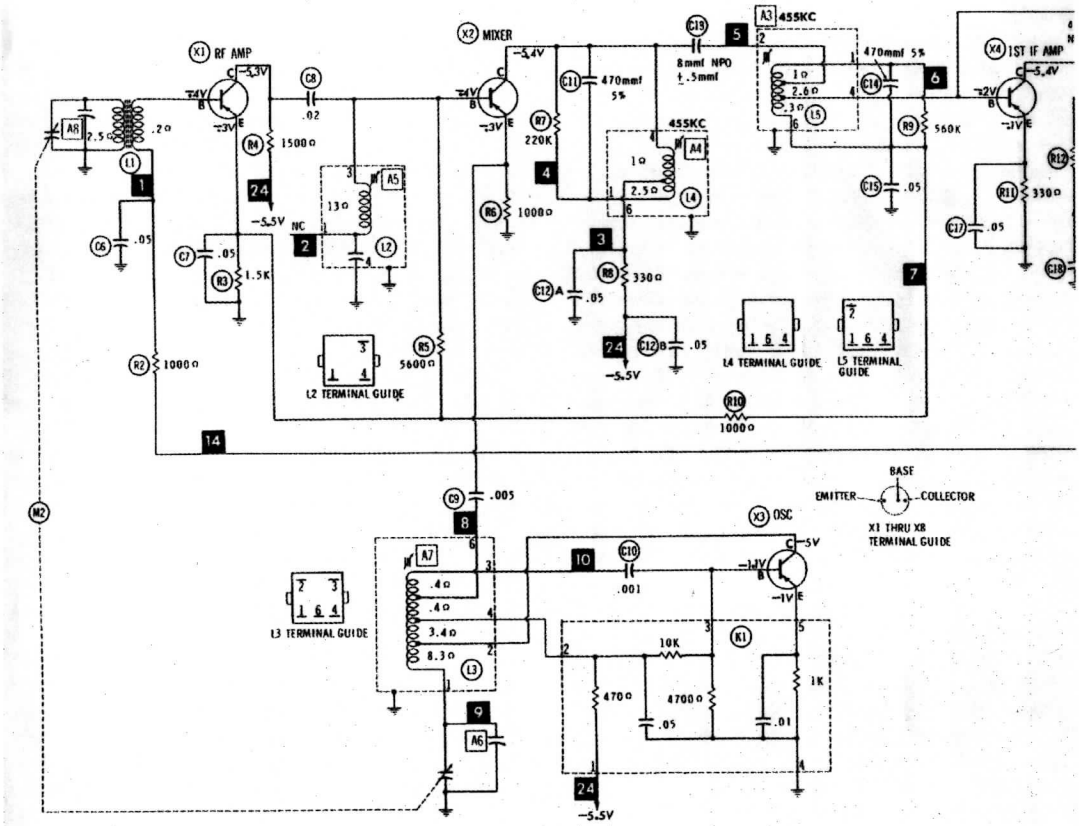
Zenith transistor radios by Norman Smith. Schiffer Books

Transistor radios by Norman Smith. Schiffer Books Zenith royal 500 Transistor radios by Eldon A.Horton. Authors publication

Radio Radio (Third edition) by Jonathan Hill. Sunrise Press

The Sony TR63 story by Enrico Tedeschi. 'Transistor network'. June 1995

A Regency TR-1 website...
http://home1.gte.net/dpies/regencytr1/index.htm



Above (Fig 7)- Zenith 500H - The finest pocket radio in the world.

Left: Fig 8

Which to collect? All except the 500E would be my recommendation. Though as a committed user as well as radio restorer, I would skip the original 500 without the vernier tuning.

About the French TM-valve

the forerunner of the R-valve

by Fons Vanden Bergen

This article is based on an extensive study (48 pages) conducted by Robert Champeix and published in the Bulletin de Liaison of the transmission section of the French army in November/December 1980.

It's a fascinating document that describes in detail both the technology and the people behind it, with their strong qualities as well as their intrigues. The author has consulted an enormous number of sources, among them a great deal of correspondence between the protagonists from that initial period as well as a considerable number of interviews with their descendants. He himself spent a good part of his career in the manufacture of radio tubes and so is excellently placed to evaluate and present the pioneering work.

R-valve

The situation before 1914

We know that it was Thomas A. Edison who in 1883 made an observation (the 'Edison-effect') that would only much later prove to be of great importance for the development of the radio tube.

John A. Fleming was the first, in 1904, to see its utility, which he succeeded in using to detect HF signals in wireless telegraphy. Three years later, and more 'by accident', Lee de Forest observed that the addition of a 'grid' between the filament and the plate (the anode) could improve the sensitivity enormously and so arrived at the 'audion' (1). However, the degree of vacuum of the de Forest's audion was not adequate, so the US Navy stopped its tests. One had to wait until 1912 when H.D. Arnold and primarily Irving Langmuir were able to show that one could obtain much better results with a much higher vacuum. But - unfortunately - a world war, with its enormous need for telecommunications, was needed to stimulate the development and to achieve industrial production. We will now see that France played an extremely important role in this.

Gustave Ferrié

A name that immediately comes to the fore here is that of the then technical director of the Télégraphie Militaire - and hence TM as the name of the tube - Colonel Gustave Ferrié. Ferrié, who later was promoted to general, succeeded in surrounding himself with some very strong personalities. In this 'bande Ferrié' occurred names like Henri Abraham, Gabriel Pelletier, and François Péri (more on this later). Together, they succeeded in perfecting the TM tube and to have some 1 million manufactured in World War I for use primarily in military transmitters and receivers. In 1912, the French Navy (in Toulon) asked the Compagnie des Lampes to build a grid and a plate in a tube. This resulted in the 'French Audion', as shown in Figure 1. In the same year, Edouard Branly (known to us for the 'coherer', which he himself preferred to call the 'radioconducteur', also experimented in the Institut Catholique (2) with one of de Forest's ideas, a tube with 2 plates, each along both sides of the filament: see Figure 2.

These two devices had no further practical use. And so we come back to Gustave Ferrié. He was born in 1868 and, after his secondary-school studies in the lycée of Marseilles, he went on to higher education in the Ecole Polytechnique. He then stayed with the army and specialised further in transmission. Thus, he was involved in 1898 in Marconi's tests in the Pas-de-Calais. His report on them to his minister was so enthusiastic that the minister charged him with the development of French wireless telegraphy (T.S.F. = Télégraphie Sans Fil or Wireless Telegraphy) equipment. He was responsible for such things as the T.S.F. station on the Eiffel Tower, which demonstrated its worth for many years (Moroccan campaign in 1908, the sending of time signals to ships, and so on) as well as a large T.S.F. network between France and its colonies.
In March 1913, he had the good fortune of being able to go to America together with Henri Abraham in the

Left: Some tubes in the TM style with, among others, the British R, the Philips E and ZI, an SBR bi-grilleÖ (collection of F. Vanden Berghen; photograph: my book Classics of Communication p.33)

Left: A few coloured tubes with, among others, Métal CL124, TM Métal Mazda, Valve CO, Microtriode Fotos, Radiofotos, Métal Kenetron, and the de Forest Audion Marconi (collection of F. Vanden Berghen ; photograph: my book Classics of Communication p.33).

context of transatlantic tests with the time signals. There he had contacts with Reginald Fessenden and Lee de Forest, whom he had already met in 1908 in Paris, and he was able to study the possibilities of the audion as a detector, amplifier, and oscillator.

Deus ex machina: Paul Pichon

Shortly after the war with France broke out (2 August 1914), Ferrié was contacted by a certain Paul Pichon. This Frenchman had worked up to then for the German Telefunken and had just come back from the U.S.A. with a few audions (see Figure 3) that he, because of the war conditions, gave to Ferrié instead of to Telefunken. The tests were rather disappointing as the vacuum was too weak and the noise too high.

Henri Abraham, Francois Peri, and 'La-Doua'

Ferrié then sent Abraham to Lyon in October 1914 to try to make better audions. In Lyon, there was the GRAMMONT light-bulb factory and the audion was actually a sophisticated light bulb. All this was done together with François Péri, who had already earned his spurs in the radio-telegraph centre of Lyon-la-Doua.

The first tests

Before we come to the TM tube we know, a number of stages were gone through. First, one began with the copying of the de Forest audion, as shown in Figure 3 (vertical structure, M-form filament). It turned out to be too delicate and too unstable. Then one made a model based on the 'pliotron' of Langmuir. This was of excellent quality but turned out to be too expensive because it was very complex.

The third model is shown in Figure 4, but it was also too complex.

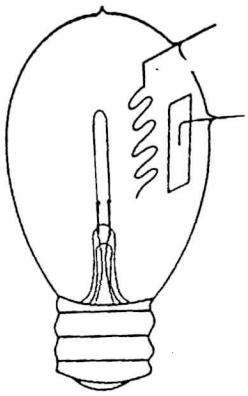
In December 1914, Abraham proposed a fourth structure. It was still vertical but now with concentric electrodes: a cylindrical anode, a central wire as the filament, and between them a spiral grid, as shown in Figure 5. This tube was produced from February 1915 through October 1915.

Abraham was thus more the brain and Péri the producer. Both were strong personalities, and so they clashed more than once. One of Abraham's brilliant ideas was how to determine the degree of vacuum of a tube by measuring the inverse grid current, which occurs because positive ions, generated by ionisation of the residual gases in the tube, collide with the grid.

Péri then succeeded in 1915 in making a tube with movable electrodes! This permitted the behaviour of a tube to be studied experimentally, which was very useful for the theory was then by far from complete.

The patent of Peri & Biguet

These 'vertical' tubes were essentially used by the T'élégraphie Militaire. But, unfortunately, they were often damaged on arrival because of the poor shock resistance during transport. When Ferrié complained about this to Péri, he, together with Jacques Biguet (Abraham had left Lyon in the meantime in May 1915), developed a new model within 48 hours in which the electrodes were arranged horizontally. Péri and Biguet



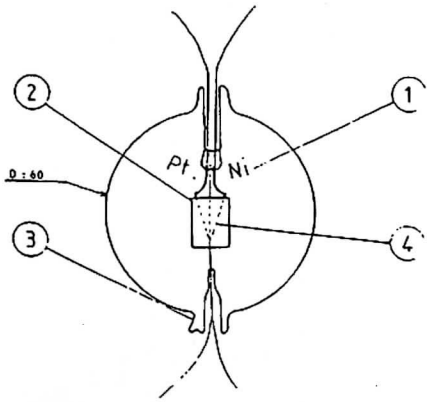


Fig. 1: Audion, made by the Compagnie des Lampes in 1912.

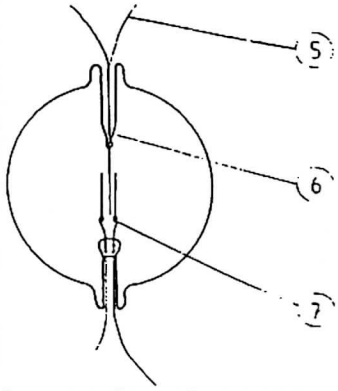


Fig. 2: Audion made by Edouard Branly in 1912.

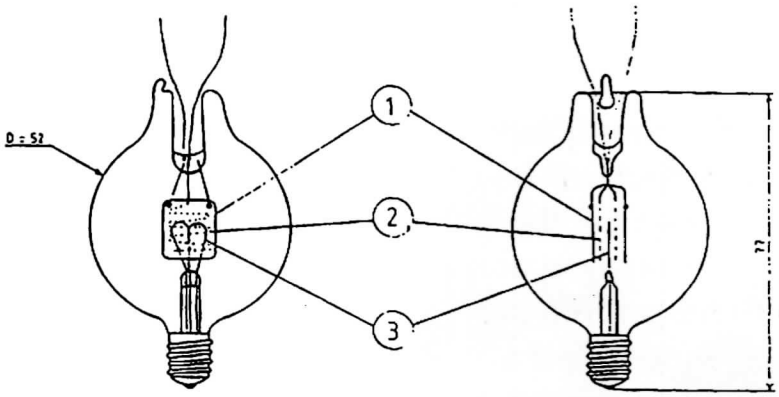


Fig. 3: American Audion by Pichon, given to Ferrié in 1914.

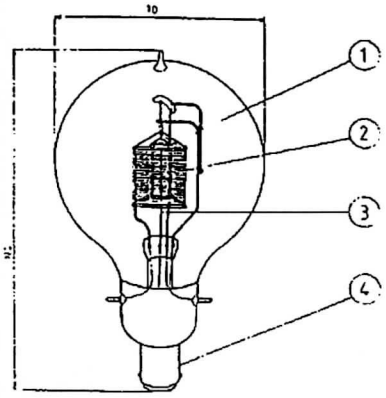


Fig. 4: Prototype of the tube of Abraham and Petit in 1915.

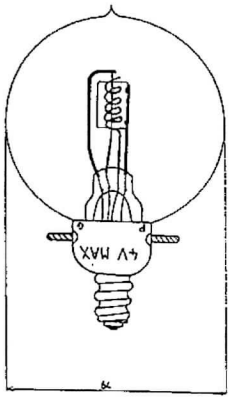


Fig. 5: Model by Abraham (Dec. 1914) manufactured by Grammont from February 1915 to October 1915.

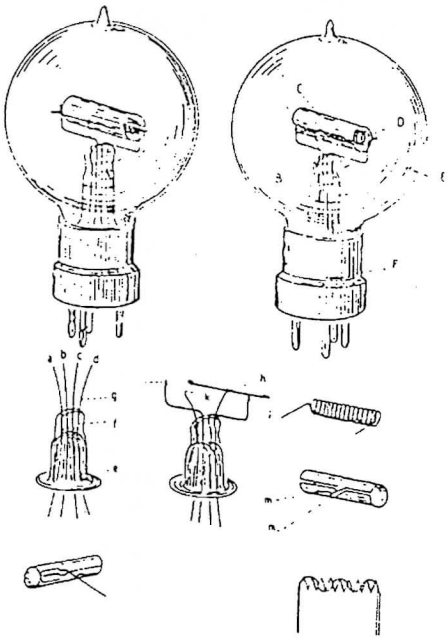


Fig. 6: (right) The TM drawings from the patent application of Péri and Biguet.

applied for the first patent for the TM tube on 23 October 1915 (granted on 21 March 1919). Figure 6 comes from this patent application.

Figure 7 gives the definitive form and the dimensions. For the first time, one also has the base with 4 pins instead of a screw thread. The reason for this was to make it easier to change the tube.

The sturdiness of this construction turned out to be excellent.

As often is the case, here, too, the patent gave rise to a considerable amount of trouble and dispute. Here, it was primarily between the insiders Ferrié, Abraham, Péri, and Biguet. Indeed, after a patent was granted, a lot of money was involved as well as status.

The production

We have seen that the manufacture of the 'Abraham' TM tubes began in the Grammont plant in Lyon in February 1915, followed by the 'Péri-Biguet' model in November of the same year. But in the beginning of 1916, Ferrié started looking for another manufacturer in order to increase production and also to have an alternative, for a war was on. So he came to the Compagnie Générale d'Electricité, which produced light bulbs in its subsidiary in Ivry under the tradename 'METAL'. The production started there in April 1916 under the direction of Auguste Petit.

The indications of the number produced diverge considerably. Robert Champeix calculated on the basis of the many documents he assembled that by the end of the war more than a million had been produced: about 800,000 by Grammont (FOTOS) and about 300,000 by the Compagnie des Lampes (METAL). Tyne (3) speaks of 'more than 100,000' tubes. It should be noted that all the allied armies were supplied with TM tubes from France. It is also certain that in 1918 up to 1000 were produced per day. In 1918, the sale price to the army was 5 French francs (in 1923, it was 25 French francs in retail).

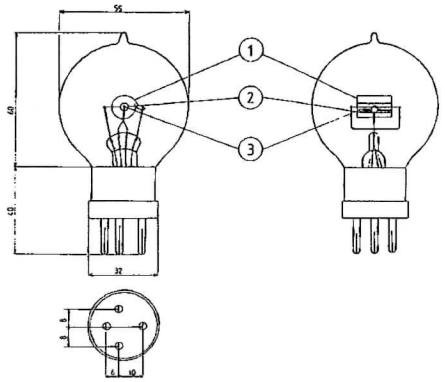


Fig. 7: Definitive form of the TM tube of Péri & Biguet as manufactured by Grammont from November 1915 on.

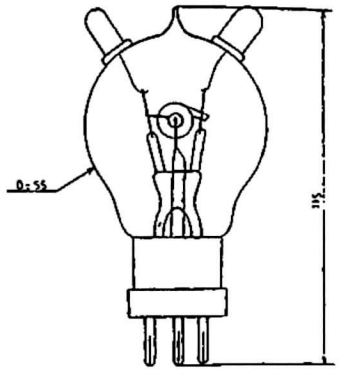


Fig. 8: The double horn tube of Beauvais. Manufactured by S.I.F. from 1922 on.

Description

Filament: Tungsten wire: diameter = 0.06 mm, length= 31 mm
Plate: Cylinder of nickel with a diameter of 10 mm, a length of 15 mm, and a thickness of 0.15 mm.

Grid: 1. FOTOS In molybdenum with a length of 16 mm and a wire thickness of 0.2 mm. The diameter of the spiral = 4.5 mm with 12 turns.

METAL
In nickel with a length of 19 mm and a wire thickness of 0.3 mm. The diameter of the spiral= 4 mm with 11 turns.
Characteristics: A filament voltage of 4 V yields a heater current of 0.7 A. With an anode voltage of 160 V and -2 V at the grid (with respect to the negative pole of the filament), the anode current is from 3 to 6 mA and the grid current less than 1 micro-A.

Use: When used as a detector or amplifier, a VA of 40 V is sufficient and with a Vg of 0 V, the average IA = 2mA. In addition, the conductance = 0.4 mA/V, the internal resistance 25,000 ohm and thus the amplification factor = 10.
R. Champeix reported in his article a curiosity that can be important for serious collectors. Some tubes produced during the war by Grammont were marked with a cross on the glass. This was an indication that the tubes were of poorer quality because of a temporary lack of raw materials.

Some late arrivals

The W tube. In December 1917, limited production was started of what was called the W tube. The great difference was that the filament could work at 3V - 0.15 A so 2 dry batteries in series could be used for the power supply. This was possible by reduction of the diameter of the wire to 20 micrometers (patent of Beauvais). Their lifetime was thereby also considerably less, and their use remained restricted to the 'Amplifier'.

The blue tubes. These were manufactured by Grammont from 1923 to 1928 (FOTOS bleu). Several reasons for colouring the tubes have been suggested: To keep the radio operator from using these bright lights for ordinary illumination (and since they had a limited life time).

An opposite reason: operators are said to have complained that the light was too fatiguing for the eyes. Easy to spot by the enemy. Probably the real reason is this. When a vacuum is drawn in the tubes, some metal always evaporates from the electrodes. This metal deposits on the inner wall of the glass envelope. This grey deposit sometimes caused the buyer to wonder if it wasn't a used tube. This effect was avoided by colouring the tubes.

The 'double horn' tube. Beauvais filed his patent in August 1917 for a special construction that was intended to limit the inter-electrode capacitance so the tubes could be used for higher frequencies. However, Biguet had already tried this previously by means of a special construction, but without success. Beauvais did get a result by having the connection wires of the grid and the anode come out on the upper side of the lamp. Thus, one had the 'lampe - cornes' or 'horned tube': see Figure 8.

The end - and a new beginning

When one looks more closely at the British R tube and the E tube from Philips, one can see immediately that they had the TM as the model. We note, too, that the radio tubes were made in the TM style by Radiotechnique up till about 1935! Today, too, perfect replicas are still made by a few specialised amateurs in the former way. They have a guaranteed lifetime of at least a thousand hours. My A.J. Stevens model F from about 1925 has been playing merrily for several years now with 4 such external tubes. Thus, I can save my authentic tubes

Notes

The names 'diode' and 'triode' were proposed for the first time only in 1921 by W.H. Eccles in his book 'Continuous Wave Telegraphy'.

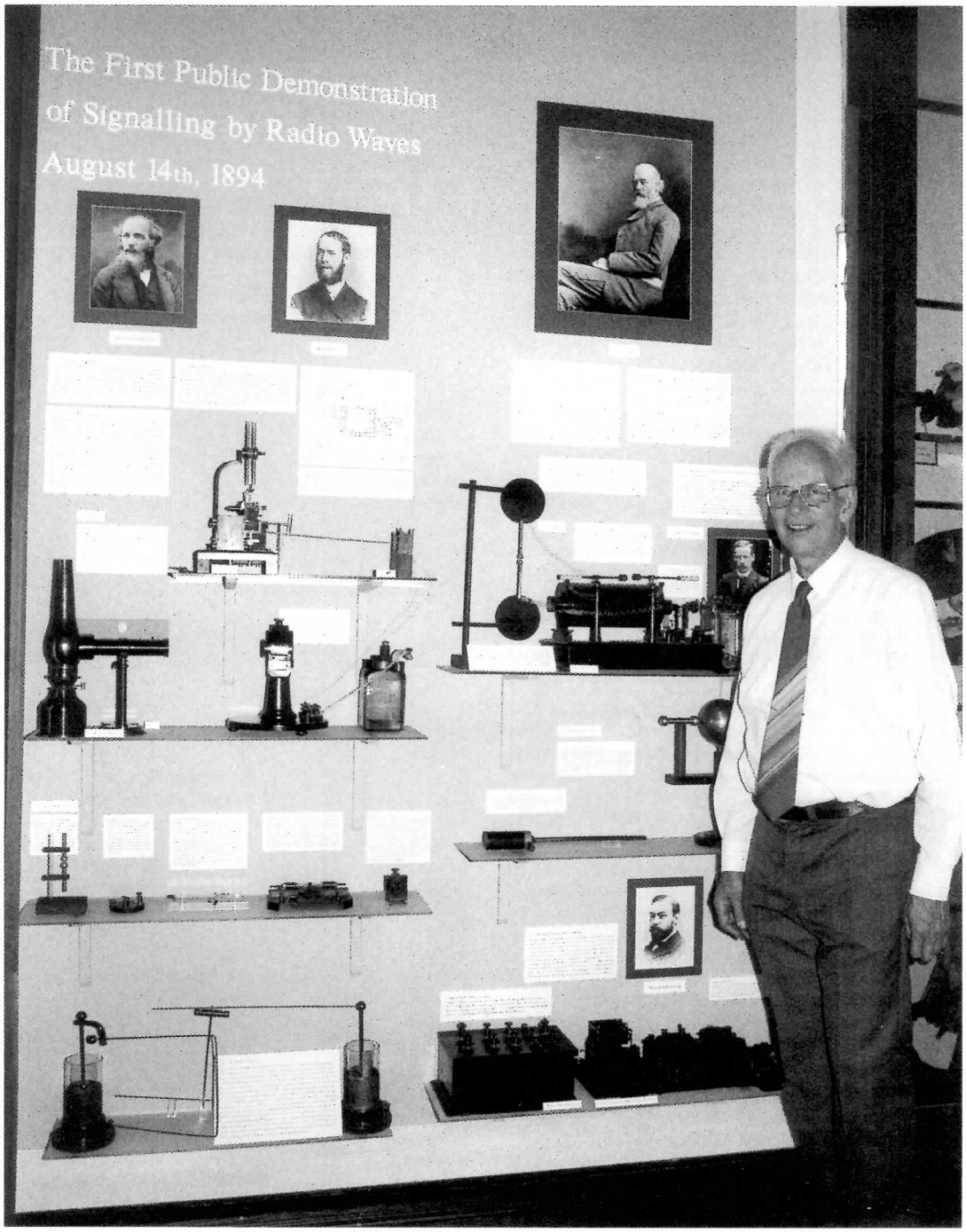
The Institut Catholique in Paris houses a cosy museum that evokes the work of Edouard Branly. It can only be visited by appointment, which didn't turn out to be simple to arrange. I had the good fortune, thanks to the right introduction, to be able to spend a couple ofhours there last January 3rd with Branly's granddaughter as my dedicated guide. Her many stories and anecdotes (she still remembered sitting on Marconi's lap) as well as the exhibited historical items (many specially made just for experiments) made it a unique experience.

All the items are also shown in colour in the book 'MUSEE BRANLY - Appareils et matériaux d'expériences' - 1997 - 210 FFR - ISBN 2-9511246-0-0., Saga of the Vacuum Tube - by G. Tyne. Chapter 10 goes into the TM in detail.

The First Public Demonstration of Radio Telegraphy

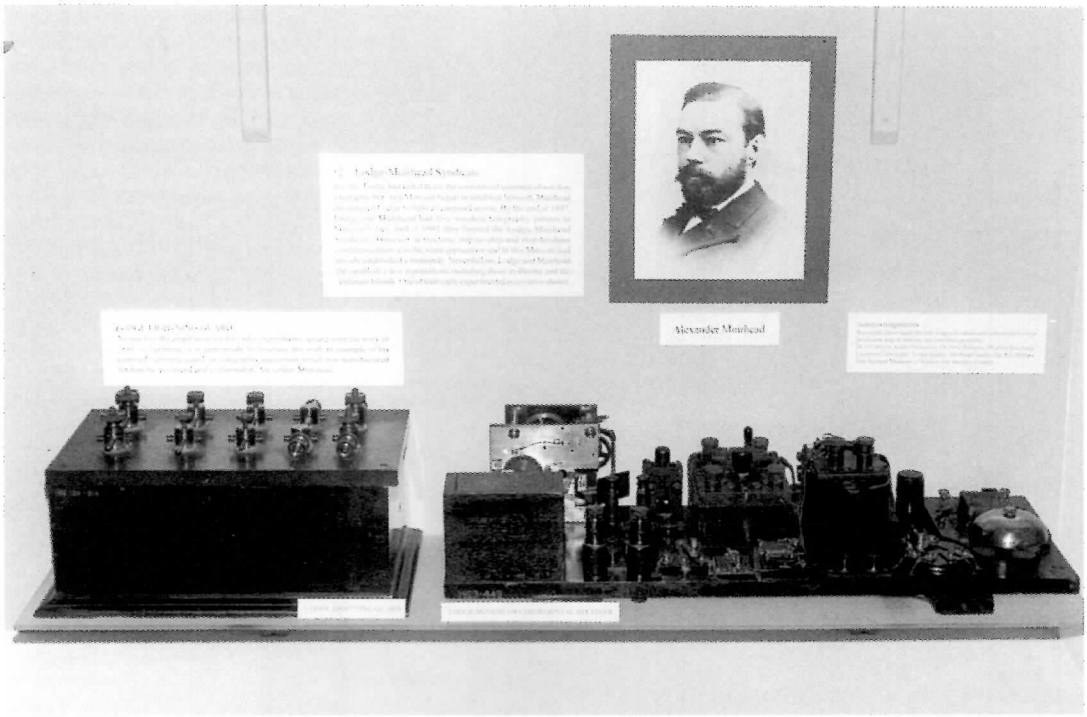
by J Patrick Wilson

A permanent exhibit commemorating 'The First Public Demonstration of Signalling by Radio Waves' was opened on March 19th in the Oxford University Museum of Natural History, Parks Rd, at the site where the event took place on August 14th 1894 .



1. The completed exhibit with author. The original demonstration took place immediately behind this display cabinet.

The opening was attended by an audience of about 140 people including many members of the Lodge and Muirhead families. Patrick Muirhead, a newsreader on BBC R4, described how his great great uncle, Alexander Muirhead, had spent a sleepless night following Oliver Lodge's June lecture to the Royal Institution and resolved to lend some of his firm's telegraphic equipment so that signalling by Hertzian waves could be demonstrated. This talk was followed by a demonstration by the author of some of Lodge's experiments with sparks in connection with lightning, which led to the investigation of waves along wires, improved motor car ignition, electrostatic precipitation, and of course, signalling by Hertzian wave telegraphy. The latter was restricted to a benchtop demonstration in deference to 'EMC'. A BBC R4 team, including Adam Hart-Davies, was present to record some of the



2. Lodge-Muirhead lightning protector (a ladder network of shunt spark gaps and series inductances); Lodge-Muirhead experimental receiver; photograph of Alexander Muirhead.

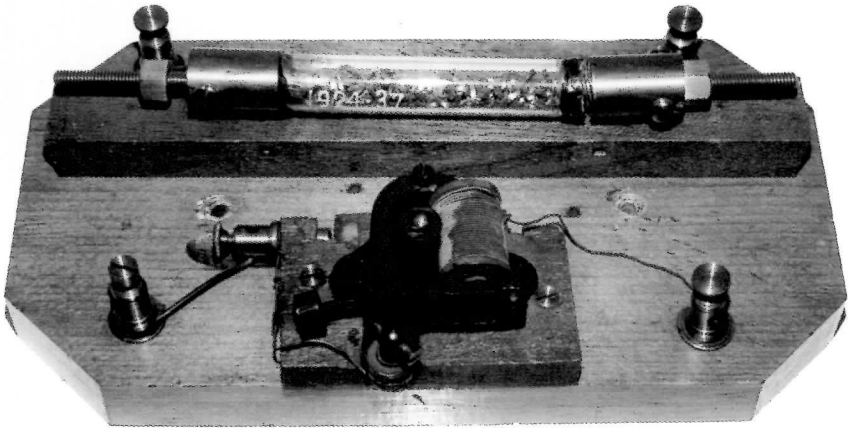
items for a programme broadcast in May. This article was written to describe the background and nature of the original demonstrations, to describe the apparatus on view in the present exhibit, which includes some of the original items, and how these were assembled and where necessary, copied.

Electrical Beginnings

For the beginnings of 'radio' [the modern term is used because 'wireless telegraphy' also included inductive and earth conduction methods] one has to go back to Oersted, Ampére and Faraday who in the 1820s and 1830s discovered the interactions between electricity and magnetism. Wheatstone and Cooke in this country, and Morse and Vail in the USA soon applied this knowledge to telegraphy which came of age in linking the old and new worlds by submarine cable, briefly in 1858, then permanently from 1866.

James Clerk Maxwell (Fig.1, top left) drew together the various disconnected electrical facts into a complete theory in a series of papers from 1864 and in his 1873 Treatise on Electricity and Magnetism, but it was left to his disciples, the 'Maxwellians', to recognise the full significance of electromagnetic radiation, of which light is one manifestation. Oliver Heaviside, a reclusive telegraph engineer, was the one to encapsulate Maxwell's complicated mathematics into the four concise equations we know today. The others included George Francis FitzGerald from Trinity College Dublin and his close friend Oliver Lodge at Liverpool, and John Henry Poynting at Birmingham. Opposing Maxwell's theories at first, were the two giants of 19th century physics, Sir William Thomson (later Lord Kelvin) at Glasgow and, in Berlin, Hermann von Helmholtz together with his assistant, Heinrich Hertz (Fig.1, top centre).

Poynting, FitzGerald and Lodge were all puzzled as to how electromagnetic radiation might be generated and recognised that electrical energy would be transported by the 'ether' around a wire rather than through it. They eventually concluded that a Leyden jar spark discharge should radiate waves, but how could this be proven? Lodge was eventually able to show such waves along wires in 1888 but, unfortunately for him, Hertz came up at the same time with electromagnetic waves in free space. As Hertz had been set by Helmholtz to disprove Maxwell, he had made an extremely thorough, convincing, and elegant series of studies to prove conclusively otherwise. FitzGerald, ever self-effacing, extolled the value of Hertz's experiments and rather played down the contributions of his own friend, Lodge, at the British Association Meeting in 1888.

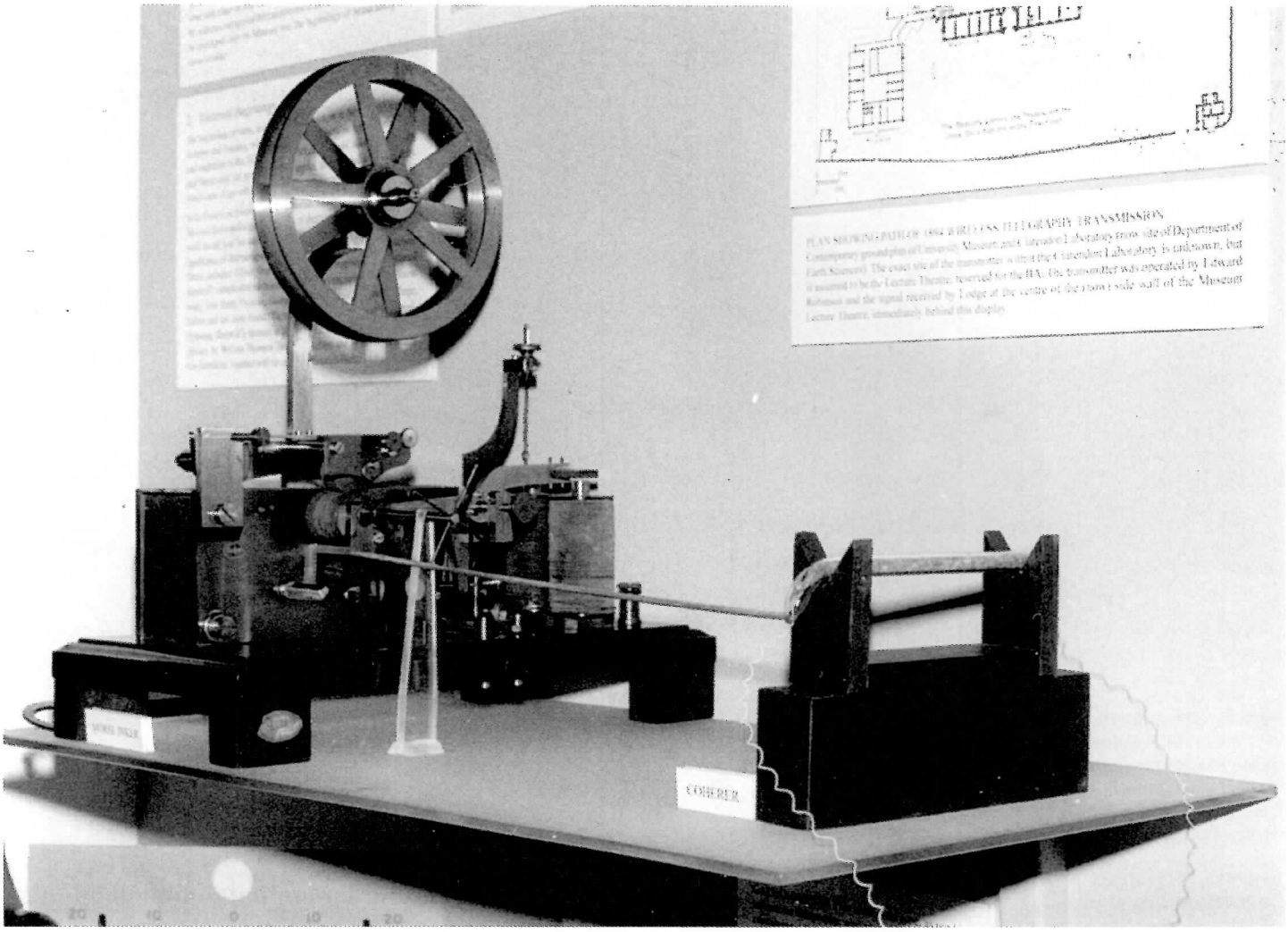


3. Original 1894 Lodge borings coherer with electrical bell mechanism to decoher by vibrating baseboard.

It was, however, left to Alexander Trotter, editor of The Electrician, to suggest in 1891 that these waves could be used to signal between lightships and shore, and to Sir William Crookes in Feb 1892 in the popular Fortnightly Review, to make much more wide-ranging and explicit suggestions for creating wireless telegraphy. Nevertheless, at this stage no-one took up the suggestions.

In Jan 1894, Hertz died as the result of a throat operation and it fell to Lodge to write obituaries and deliver a memorial lecture at the Royal Institution (RI) in June 1894. In this he repeated many of Hertz's experiments but also added many of his own which he had devised in preparation for this lecture. The apparatus included several sizes of Hertz radiator as well as new types such as his spherical radiator, copper-hat screening, and most importantly the development of Branly's metal powder experiments into practical radio detectors using both filings and borings as well as introducing his own single-contact coherers. A compact self-contained receiver made by his assistant Benjamin Davies was also demonstrated. This lecture was widely reported, and contained nearly all the elements of Marconi's first demonstrations and almost certainly, indirectly at least, led to them. It did not, however, include the signalling of information or any automatic form of decoherer!

Among the audience was Alexander Muirhead (Fig.2), a telegraph engineer and manufacturer, who



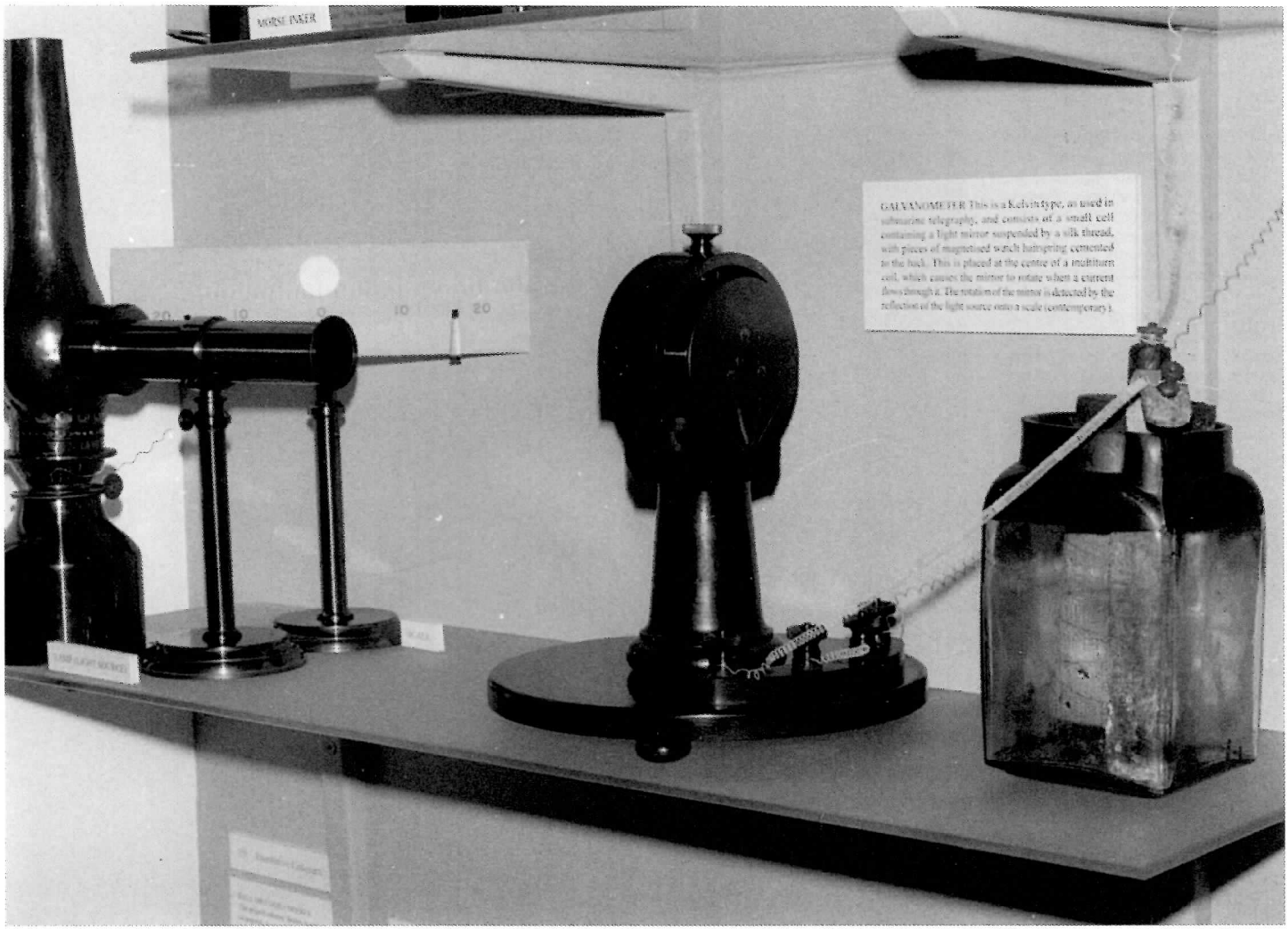
4. The receiver showing (a) the replica filings-tube coherer in cradle with plectrum and Breguet Morse inker with attached rotating cross-wires to repetitively tap the plectrum,

offered to lend him telegraphy equipment for his next demonstration to the Ladies' Conversazione at the Royal Society (RS), a fortnight later, and more importantly, for his lectures at the British Association (BA) in Oxford in August. The former was a private function and was restricted to a demonstration of wireless telegraphy, whereas the latter was a joint meeting of physicists and physiologists intended to show how the eye might act like a coherer in detecting light, which is simply short wavelength radio waves. Dots and dashes of Morse were sent to demonstrate optical signalling and the persistence of vision rather than as an end in itself. Thus the title of this lecture and the publicity afterwards cannot have pleased Muirhead or be claimed to have influenced future developments in wireless telegraphy. These demonstrations did, however, require some form of decoherer.

Equipment used in the First Public Demonstration of Wireless Telegraphy

As there was no full written report of these demonstrations we have to rely on the brief description given by Lodge in conjunction with a number of poor quality photographs of the equipment used, which were published shortly afterwards by The Electrician. Lodge's autobiography Past Years is explicit in stating that 'The sending instrument was a Hertz vibrator actuated by an ordinary induction coil set in action by a Morse key'. 'The receiving apparatus was a filings-tube in a copper hat [possibly the first deliberate example of electro-magnetic screening], in circuit with a battery, actuating either a Morse recorder on a tape, or, for better demonstration to an audience, a Kelvin marine galvanometer'. 'The tube of filings was provided with a tapping-back arrangement'. This was written 37 years after the event. If we look at the items reproduced in The Electrician in 1897 (39, 386), we see many Hertzian and spherical radiators, several forms of coherer including one in a copper hat, and two coherers with tapping-back arrangements. One of the latter includes an electric bell mechanism used to decohere. As Lodge stated in Signalling Through Space Without Wires that this was problematical owing to sparking at the contacts it was probably not used in the actual demonstration. We have, however, been fortunate in obtaining the original for the present exhibit (Fig.3). [Note that the existence of this device does not contradict the claims of AR Constable, BVWS 20, 116-7. Lodge used continuous, repetitive decoherence, whether by clockwork as preferred, or electro-mechanical, whereas Popov, and later Marconi, used signal-actuated decoherence].

The other illustration shows a filings or borings tube in a cradle with a rod which is tapped by a rotating wire cross at the end of an extension from a Morse recorder (Fig.4(a), replica made by author). Contrary to the implication in his autobiography and the writings of some later authors, the Morse inker was probably used simply as a repetitive tapping device to decohere the coherer and not as it could have been, with the addition of a relay, to record the received signal. As, according to Signalling Through Space, the copper hat device [which was used in the RI lecture and RS demonstration] was complete with battery, galvanometer and scale, but no decoherer, it was probably not the device used in the BA telegraphy demonstration. The same source also indicated that Muirhead lent a syphon recorder for the demonstration. It should be noted that a syphon recorder is a sensitive moving-coil instrument used with submarine cable code [positive and negative deflections of equal duration rather than dots and dashes] and does not require a relay. A Morse recorder uses a robust moving-iron mechanism requiring significant power to operate the pen, producing the line of dots and dashes used in overland telegraphy. He may have lent both instruments but the photograph shows a Morse recorder (or inker).



4(b) the Elliott Bros Kelvin marine galvanometer with oil lamp and scale (left) and Leclanché cell (right).

Assembling the exhibit

Where possible, original equipment has been obtained on loan from the Science Museum London, Liverpool University and the Lodge family, and less esoteric items from BVWS swapmeets, etc. Unfortunately it was not possible to locate any of the required telegraphic items manufactured by Muirhead. The Science Museum supplied the beautiful contemporary Kelvin marine galvanometer made by Elliott Bros, which came as a set with copper and brass lamp and scale stand (Fig.4(b)). The Morse recorder is quite similar to the one illustrated in The Electrician article but was manufactured by Breguet (Fig.4(a)). The key is of more recent origin but similar to contemporary items. Robinson, who was the sender from the nearby Clarendon Laboratory, may possibly have used his own key.

A lightning guard, patented by Lodge and manufactured by Muirhead (Fig.2, left), is also included because it was out of research into lightning that his radio work arose, and this may also represent his first collaboration with Alexander Muirhead. This is supplemented by a Lodge-Muirhead Syndicate experimental receiver containing a wheel coherer as well as a beautifully made commercial version (Fig.5, top right). These, of course, date from post 1902, when the wheel coherer was patented. Two other coherers, although coming from the Science Museum, actually belong to the Lodge family. One of these is the borings coherer with bell mechanism decoherer, referred to above. The other appears to contain iron filings in a sealed glass tube with an internal electrode that can be screwed in or out by an external magnet (Fig.5, top centre).

The final Science Museum item is a teaching-laboratory version of his syntonic jars experiment, using rectangular loops instead of the circular ones usually illustrated (Fig.5, bottom). This is an important item because it was out of this that his 1897 syntony patent arose, establishing his priority in the tuning of a receiver to a specific transmitter.

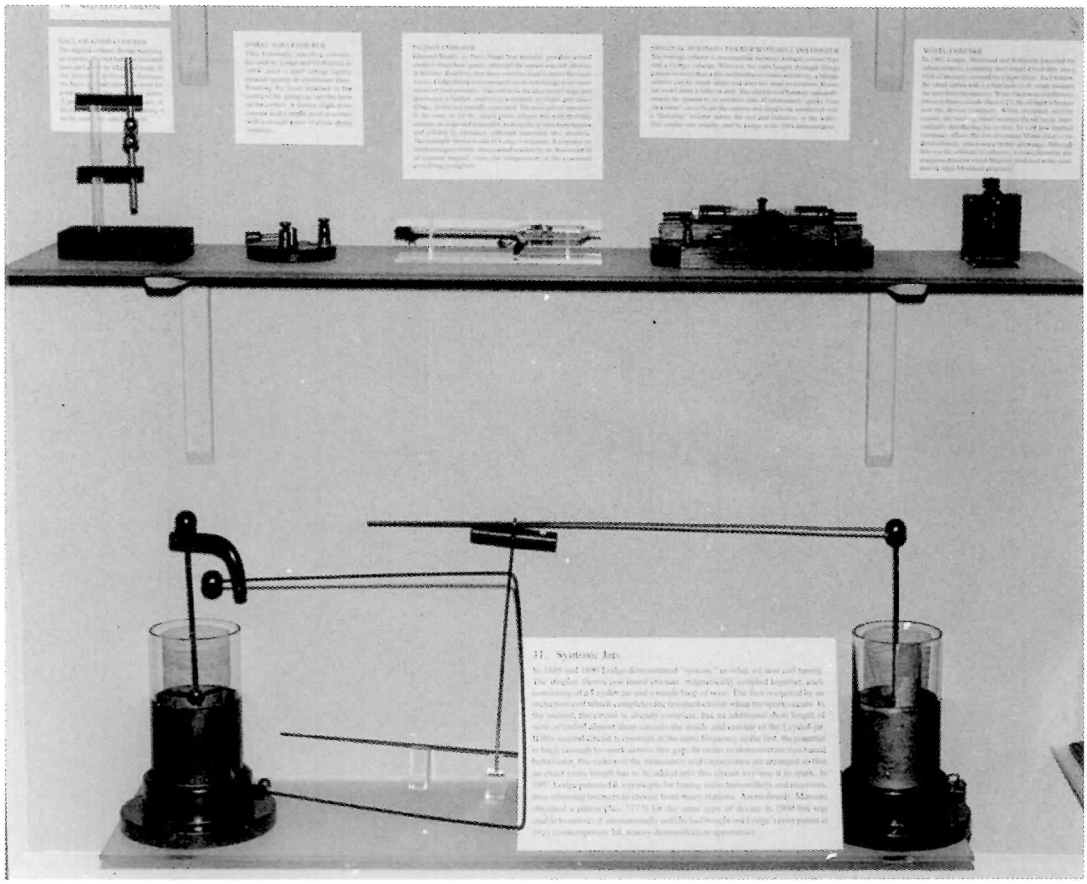
Two other items which may have been used in the original demonstrations come from Lodge's Department of Physics at Liverpool University. The induction coil by Browning of London could have been the actual one used although there are others there of similar antiquity. This was renovated by the author because its ebonite coating was crudely and damagingly attached with sticky tape and its Ruhmkorff reversing switch had been replaced by a much later type (Fig.6). In the latter, wood has been painted and varnished to look like the original ivory or bone. Pressure marks in the wood of the base indicated the correct size. No attempt was made to polish up the brasswork as I believe that any traces of original finish or varnish should be left well alone! The other item is a Clarke's gaslighter (patented in 1885) which he advocated in Signalling Through Space as 'a handy portable exciter of electric waves'. This is a cylindrical version of an electrostatic induction machine such as that of Wimshurst .

We felt that it was important to show the complete circuits for the transmitter and receiver so batteries have been included. The receiver could have used either a dry or wet Leclanché cell and the latter was chosen. Induction coils draw heavy currents and contemporary instructions recommend either Grove's cells or a storage battery (lead-acid accumulator). As the former were expensive, using platinum electrodes, and requiring refilling shortly before use, and as Lodge was a consultant to at least two accumulator companies, we felt the latter to be more appropriate. Again a contemporary example was not available, and as designs have hardly changed, a more recent example is used. Coiled wiring was conventionally used for neatness rather than to introduce inductance, so is used here.

The relative claims of Lodge and Marconi

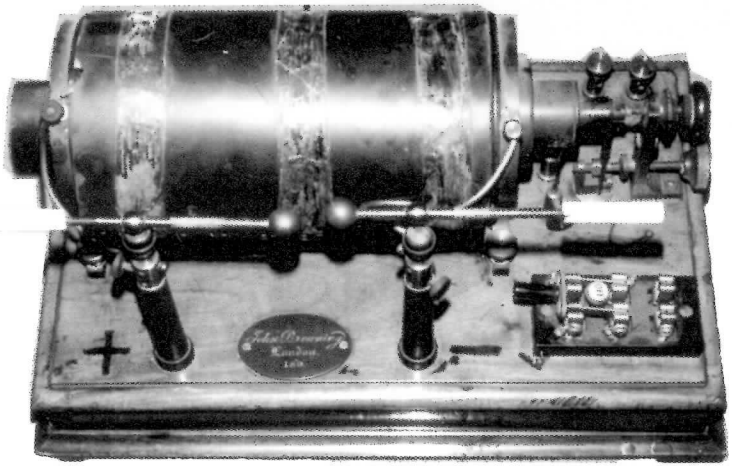
Lodge and his friends and colleagues always felt that

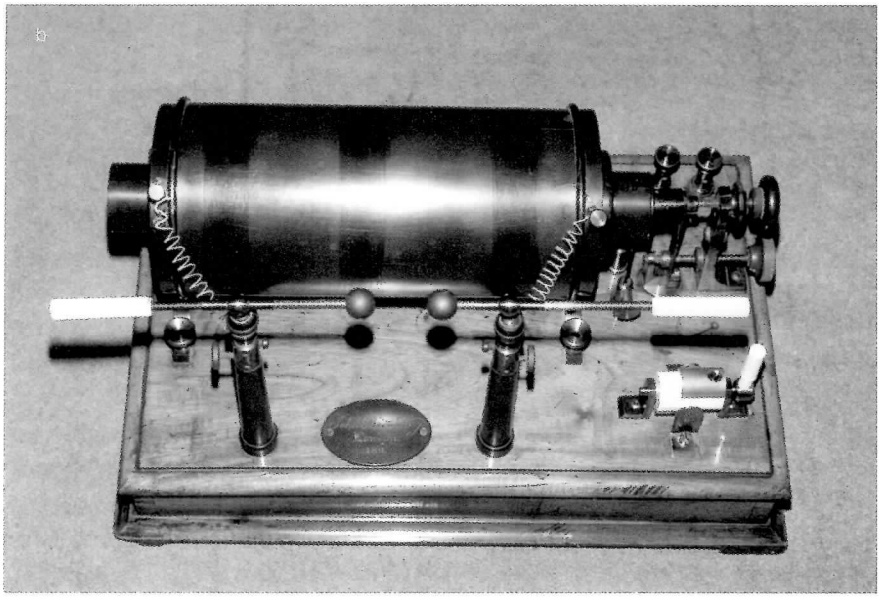
5. (Top, from left) Single-contact steel ball coherer (1889, replica); single-contact steel-aluminium spiral-wire coherer (1894, replica); iron-filings coherer with internal screw mechanism in sealed glass tube operated by external magnet (original, date unknown); borings coherer and bell mechanism (as Fig.3); Lodge-Muirhead Syndicate steel-wheel in mercury coherer (1902 patent, possibly designed by Robinson (Fig.7)). (Bottom) Syntonic jars experiment of 1889/90 forming basis of 1897 syntony or tuning patent. When left Leyden jar is charged, a spark occurs between the balls (NB insulator/spacer upside-down!) which causes the right hand jar to ìoverflowî (i.e. spark) via a nearly-bridging strip of tinfoil over itís lip only if the hanging slide-wire is positioned to bring the two circuits into tune.



6. The transmitter induction coil by John Browning of London (a) before and (b) after restoration.

a





he, but also Hertz, had been deprived of their due recognition by the public, partly by Marconi, but more particularly by the Marconi Company, which presumably felt that this might undermine its position. Although most members of the BVWS will be aware of the history, it will be briefly recapped here. [Fuller accounts are given in Syntony and Spark by Hugh GJ Aitken, Wiley NY, 1976, and Oliver Lodge and the Invention of Radio, eds: Peter Rowlands & J Patrick Wilson, PD Publications, Liverpool, 1994].

Hertz's death elicited many obituaries, and it was one by Righi that Marconi read during the summer of 1894 in the Biellese Alps, from which his idea of wireless telegraphy grew, and he started experiments on his return to Villa Grifone in the autumn. Righi, his neighbour but not his teacher, tried to discourage him in what he felt was a futile mission, but helped him anyway. Although Marconi later claimed that he was unaware of Lodge's RI lecture until he came to London in Feb. 1896, the contents of his black box showed otherwise. Righi was well-informed and would have passed on this and other relevant information even though attribution may have been forgotten.

In 1888 Oliver Lodge had crossed swords with William Preece, Chief Engineer of the Post Office, and ten years his senior, in an acrimonious battle in front of a large audience at the BA on the design and merits of lightning conductors. It was Preece to whom Campbell Swinton introduced the young Marconi by letter 'with....a new system of telegraphy without wires..[which]..appears to be based upon the use of Hertzian waves and Oliver Lodge's coherer...'. He appeared to respond favourably and put the resources of the Post Office at Marconi's service. Marconi's chief innovation at this stage was the use of an earth plate in place of the lower arm of a vertical dipole, lowering the frequency of operation and increasing the range. It was apparently this which led the [then] scientifically naive Marconi to speculate, and Preece and the press to seize upon, as representing an 'entirely new' non-Hertzian 'Marconi wave'. Preece must have known better but saw that it made good 'copy' and was an opportunity to minimise the work of Hertz, Lodge and others. Preece nevertheless wrote privately to Lodge 'I

am fully aware of all your work and all your labour in this field... ...and I will do all in my power to secure for you the credit that is clearly yours and which Marconi admits'. He did just the opposite!

When Marconi obtained his first patent the editor of The Electrician was indignant and published photos of Lodge's 1894 apparatus and stated 'Dr Lodge published enough three years ago to enable the most simple minded 'practician' to compound a system of practical telegraphy without deviating a single hair's-breadth from Lodgean methods. Both at Oxford and at the Royal Institution, Dr Lodge described and exhibited publicly in operation a combination of sending and receiving apparatus constituting a system of telegraphy substantially the same as that claimed in the patent we have referred to'. In as far as this was actually true, prior publication invalidates a patent, but at this stage there was no-one who would have thought it financially worthwhile to challenge it. [Ultimately there was: In 1911 Marconi was forced to buy out Lodge's syntony patent to enforce it's own, later, 7777 tuning patent, and in 1943 the US Supreme Court declared that Lodge's patent was the only one of the three principal Marconi patents to be completely upheld, the Marconi tuning patent, being declared invalid].

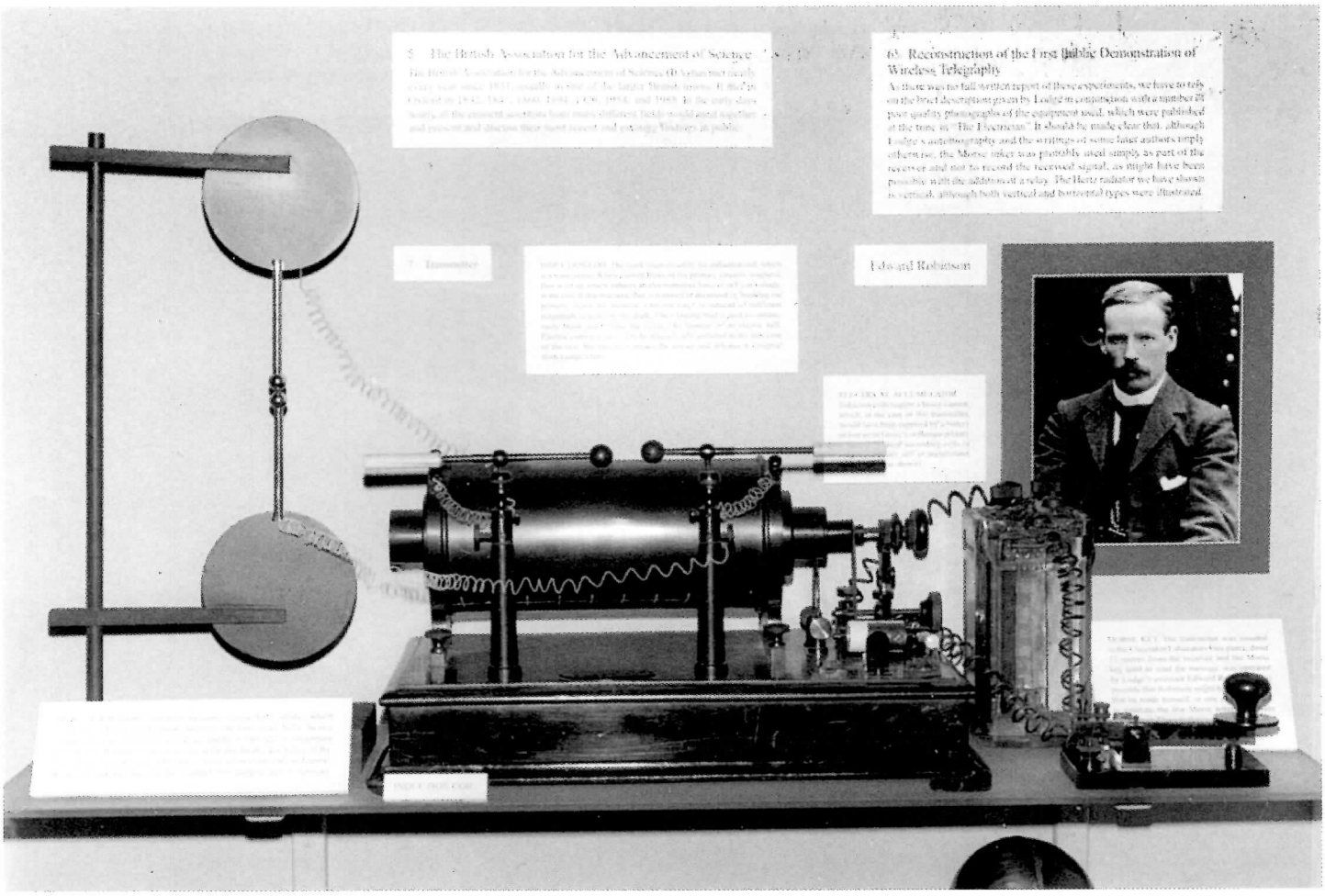
After the facts have been established, it all boils down to what one understands by the term 'inventor'. Many people think that it involves having a novel idea, patenting it, then waiting for manufacturers to beat a path to their door and counting their profits. This cap does not fit any of the characters here. Lodge never made out a case for a technology needing to be invented in spite of having given the first public demonstration. Marconi has claims to being the inventor of many later improvements to radio and to him alone belongs the huge credit of bringing it into being, including setting up a company to do it, but he falls short at the beginning: the idea of radio communication had already been put forward by Trotter, Crookes, Muirhead and others, the technology of radio was also common knowledge, owing chiefly to Hertz and Lodge. Lodge would have been pacified if Marconi had simply admitted this.

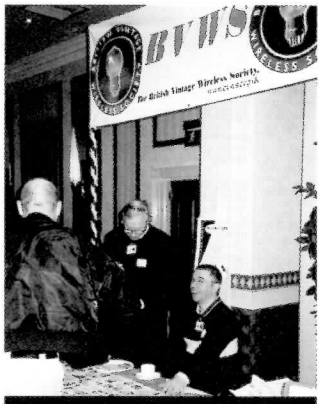
Why didn't Lodge clinch the matter and become the recognised 'inventor of radio'? It was not a scientist's lack of interest in technology because he involved himself with industrial electrostatic precipitation, electrical stimulation of growth in agriculture, motor car ignition, and indeed after Marconi showed the potential, radio. No, he simply failed to recognise, at that stage, that it had any advantages over wired telegraphy!

Acknowledgements

The idea for this exhibit arose during the unveiling of a plaque in 1995 to commemorate this event which had been organised by Dr Mike Leask and the then Principal Curator, Dr Brian Atkins. Drs Peter Rowlands and Peter Andrews agreed to make arrangements for equipment from Liverpool, and the author liaised with the Science Museum, as he had previously done for an exhibition at Liverpool in 1994. Dr Atkins successors, Prof Jim Kennedy and the present Director, Prof Keith Thomson, fully supported the venture, and the final organisation and setting out of the display was very ably handled by Ms Juliet Hay.

We have chosen a vertical Hertz radiator (Fig.7) because it fits the show case better and several sizes of vertical and horizontal ones were illustrated in The Electrician. This was made by the author out of wood, ebonite, and black sprayed aluminium discs [probably copper originally]. The scale for the galvanometer, used tracing paper over grey card and crossed white disc to give a convincing looking 'spot' (Fig.4(b)), and the single-contact ball coherer used steel balls, wood, and a vertical glass rod insulator (Fig.5, top, left). Liverpool University Physics Workshop made the spherical radiator (Fig.1, right, middle shelf, half obscured), using a copper ball-cock, ebonite rod and wood, and the spiral wire coherer (Fig.5, top, second from left).





Events

This year has seen an increase in the number of wireless related events with the introduction of a new fair at Blackpool. This is in addition to the NVCF organised by Sunrise Press, the ever popular Harpenden meetings, Wootton Basset and the Radiophile auction/swapmeets. Mike Barker visited the Blackpool fair and was so impressed that he felt everyone should know about it.

Finding the De Vere hotel was easy and parking was plentiful. I arrived in good time for 07:00 and stallholders were busy unloading their stock into a well arranged function room where the meeting was to take place. There were about 80 stalls laid out and well-known regulars at these events were arranging, and busily scanning other stalls for items of interest.

As the morning continued we set up the BVWS stall with its banner high and visible to all, John McGlynn and Brian Chesters rushing around to ensure that everyone knew where to find their stall. I was surprised at the many different items that were appearing. Some very nice items of English and American origins were on John's large display stall and that's not to mention the numerous table and floor cabinet gramophones on display.

I was encouraged by the wide range of prices. Sets ranging from just a few pounds that were really worth more to the more specialist items like an English Ericsson 3 valve well into four figures, but I am reliably informed it is a rare bird and different to the usual versions that are seen from time to time. I know of several people that left content that they had found something special, myself included.

I was very tempted to buy yet another large Murphy A40C at a very reasonable £80 but decided that 3 really are enough and this one had recently had a corner of the glass scale damaged, so I let it pass. The Hotel laid on refreshments of tea, coffee and sandwiches.

There was everything from Mechanical music, Automatons, Circular Ekco's, to tools and even some Military items.

The local television and newspaper reporters covered the day, with interviews of various stallholders. Later on whilst resting from a very active day, I watched the coverage on the local news. They even managed to get a really good shot of the BVWS stall.

The next meeting on 10th September is planned to be a bumper event and if it's as good as the first, you should not miss it. Be warned, if you have a dislike of George Formby, make sure your stall is well away from the gramophones; I could hear it in my sleep.

Both John and Brian arranged an excellent meeting and my thanks go to both for all the very hard work involved in the organising of such an event. I would well recommend you attend the next.

From top to bottom: the BVWS Stand, John Goldberg and friend, John McGlynn, Bill Posniak
Below: New faces!

News from Harpenden

Photos courtesy of Mike Izycky

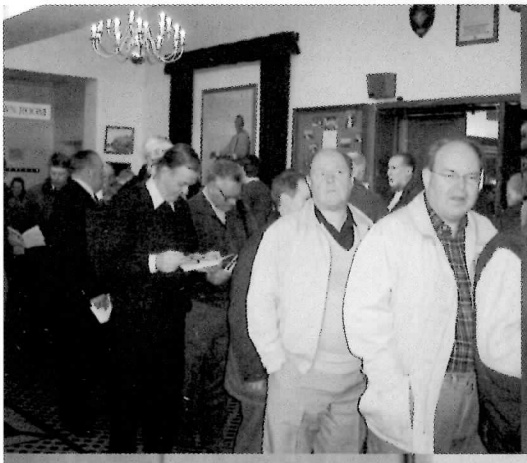
Little changes but Harpenden has a new organiser in Terry Martini who has already got the meeting well in hand through his deceptively relaxed approach to the event. As is now the norm, the Spring date is the main auction and AGM.

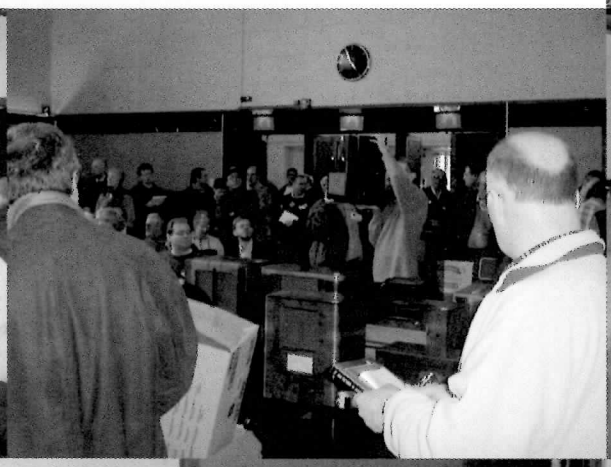
I managed to get to Harpenden yet again despite living in the distant, cold, frosty lands of the north and I have to admit that it was well worth the horribly early start.

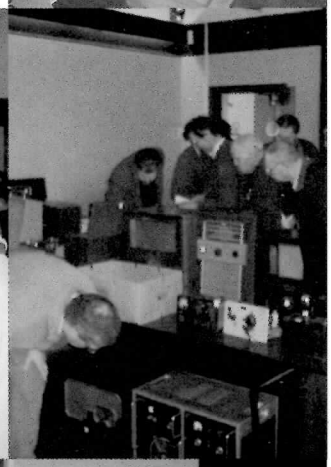
The usual cheery faces were present and many bargains were to be had in the auction. A couple of Ekco radios in black and chrome did very well despite some damage. and as ever the few 1920's items did very well with some happy and presumably serious collectors going away with some rare gems for their trophy cabinets.(I have to admit that it beats wild-game hunting).

Gerry Wells had come up with another tremendous reproduction to follow his Gecophone 2001's. This time the "BBC Coffin" Microphone has been given the "Wells Original" treatment. As you can see from the picture it is pretty good for a completely remanufactured object.

Robert Chesters



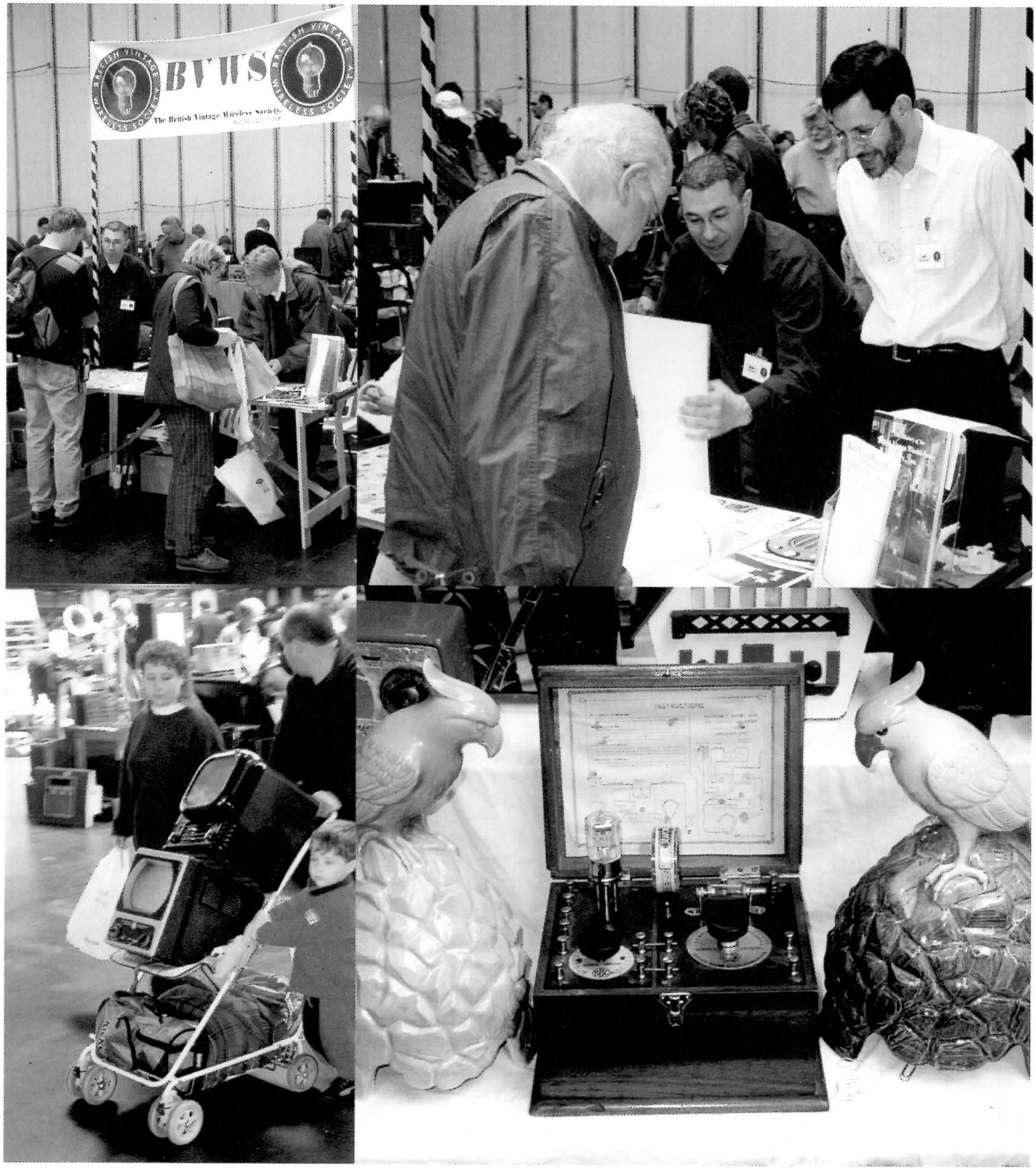


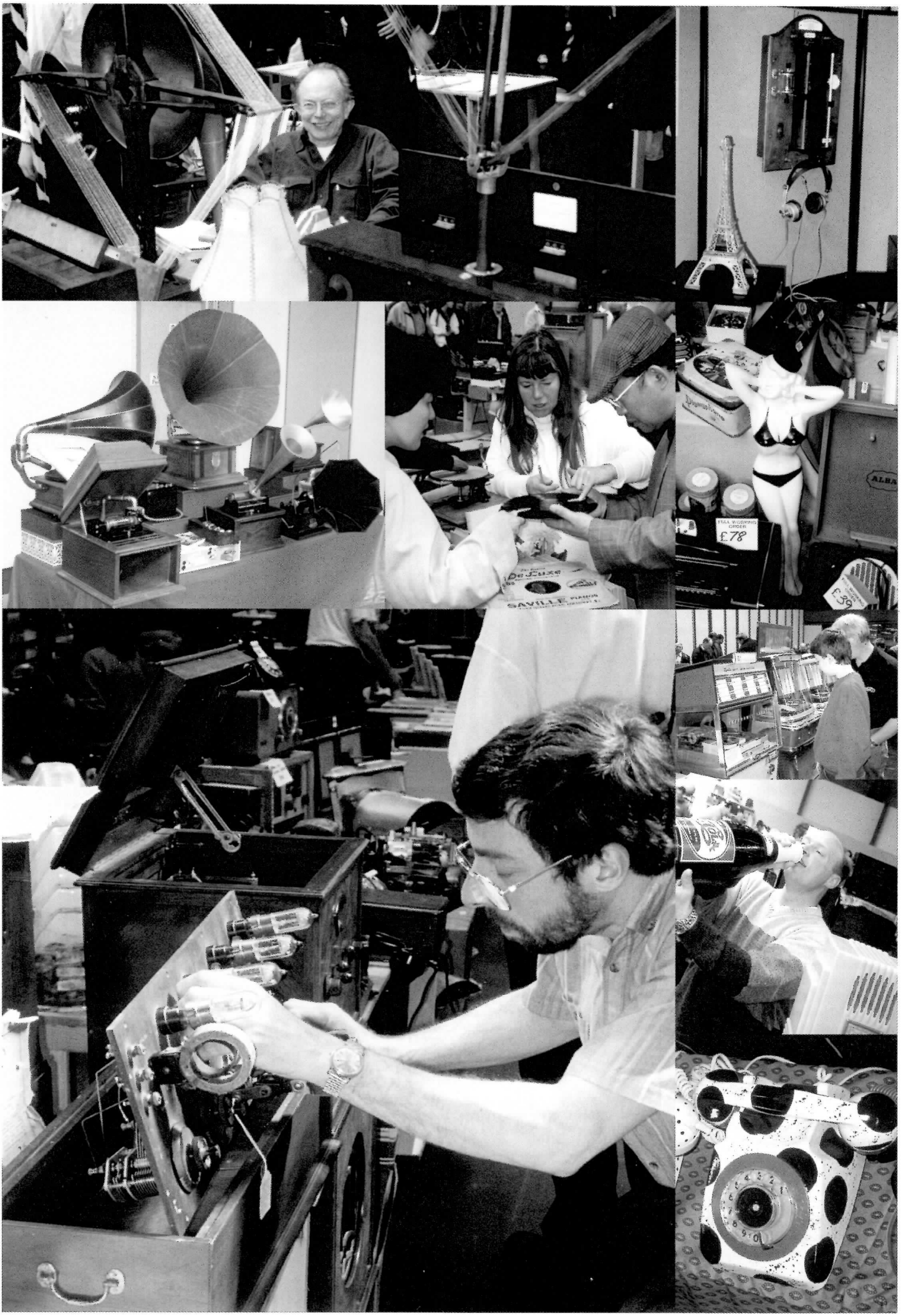


NVCF2000

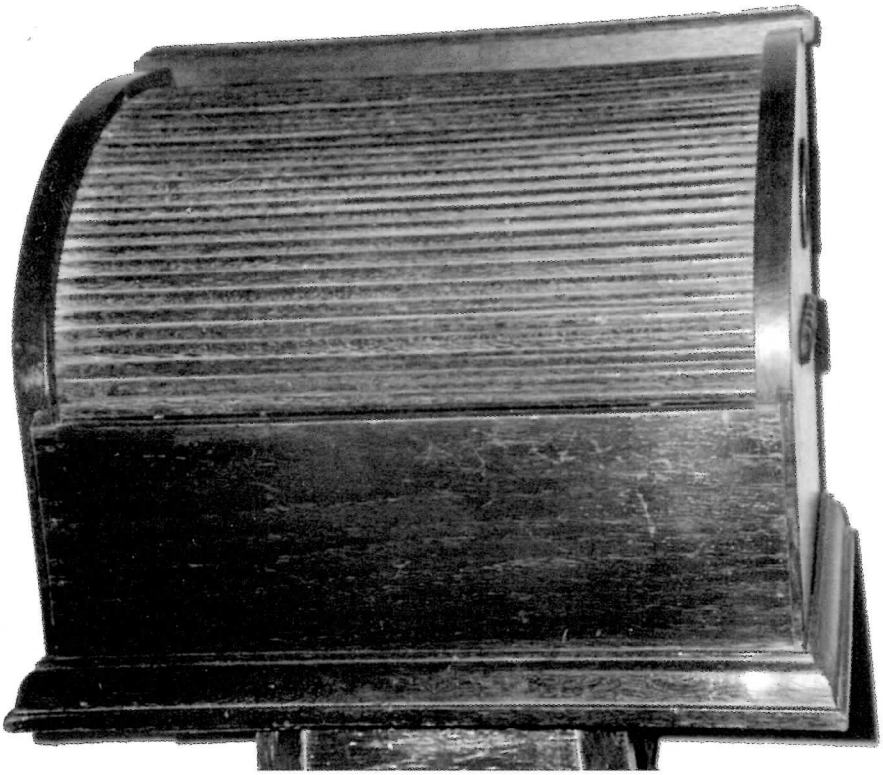
The National Vintage Communications Fair took place this year on the slightly earlier date of April 30th. There were goodies aplenty to be had by the collector who is seeking that special item that has eluded them for all those years. Here are some of the weird and wonderful items that appeared this year.

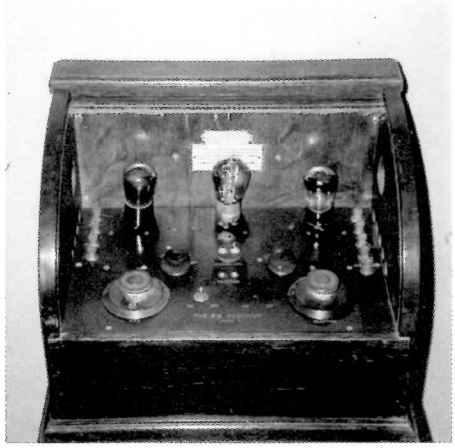
photos courtesy J. Hill




£78
£39

Letters





The unusual radio bought by Bob Wyatt

Dear Editor
Congratulations on the latest bulletin, which I enjoyed reading as I do always - excellent quality.

I wonder if any member can help with the identification of the radio shown. I assume that "PD" relates to Automobile Accessories (Bristol), this one has a roll-top cover, marked "PD Reciever Mark 8". The valves are marked PM3, PM3 and PM4.

I also purchased an odd thing - a TV for the blind! It is TV sound only and was made by Clarke and Smith. There was a label on it, which has been removed. Any idea of it's date?

Yours
Bob Wyatt

Dear Editor
With reference to Graham Dawson's letter in the last Bulletin on Battery Eliminators. I would quite agree with him that if you want a converter to work free from a mains supply then his design is the only option. However, I did not 'decry' (O.E.D disparage, belittle) Andrew Zimmer's design for needing a home wound transformer. I merely said that it was a 'disadvantage' which is true if you don't have a coil winder. My design just added a couple of low voltage windings to an existing device. As the turns are few this can be done, by hand, in no time at all. Also, it's using a toroid that's a significant advantage as there is virtually no stray magnetic field, to interfere with the radio being powered.

Gary Tempest

Dear members
I am writing to you all to make an appeal for information concerning a subject of great interest to many.

Recently, I have been commissioned by the Plastics Historical Society to write a monograph about E.K. Cole and am currently researching the history of the company from it s founding in the mid twenties to the present.

If you worked for "Ekco" at any time particularly in the radio or plastics division then I would be delighted to hear from you. My special interest is in the production figures for the bakelite cabinets as obviously, the PHS have a special interest in the plastics side of the story - however, don't hesitate to contact me whatever the tale as all the facts are of ultimate importance. After all, how can one talk about Ekco without mentioning battery eliminators or TVs? It would be an incomplete tale.

This will be a significant work as so far there has not been a work written solely about E.K. Cole.

32 Eaton Road
Handbridge
Chester
CH4 7EN
email: bakelite.ekcos@virgin.net
tel: (01244) 675826

So, if you think you can help or know somebody who could, please contact me at the above address. All assistance will be acknowledged in print.

Yours sincerely
Robert Chesters

Dear Editor
I have always thought of the the bulletin as a kind of "porn-mag" for radio so why not have a centre-spread every quarter ?
eg: this issues beauty is the PHILCO 444 - she likes skiing and cycling

Please let me know what you think and I'd be delighted to start the photo sessions straight away.

Regards
Paul Stewart

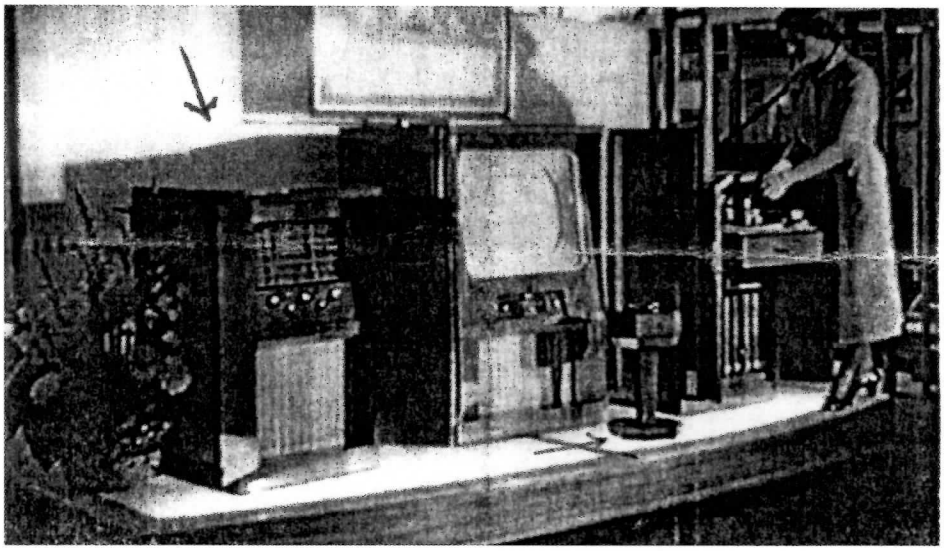
hmm; sounds like a good idea - has anyone got any special requests? - ed.

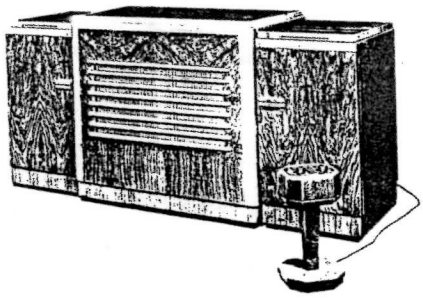
Dear Editor
I am writing regarding two rare and unusual HMV radio sets; one a console and the other a radiogram.

Firstly, the console. The only information I have is a composite picture of three items. I think that it comes from Radiolympia around 1948 - 50. I am trying to trace the console on the left. A model number would be useful and if anyone can help I would be extremely grateful. Incidentally, the TV in the centre is an HMV 1820 which was fitted with the largest tube available for this period in the UK. The tubes were imported from the American firm RCA. I am unsure whether the pedestal remote control was for the TV or radio, but this TV was available with remote control.

The second HMV set is a real luxury item, the model 1700 of 1947. Little is known of this set and to my knowledge it has not turned up anywhere nor has any collector seen an example. My correspondence with EMI has produced only a photo and that is all that is available in the archive. The set has every refinement I can think of, including 43 valves, which is probably the highest valve count of a domestic UK made set in the entire valve era.

The set had AM/FM, a total of twelve wave bands, variable selectivity, motorised tuning and waveband switching, an output of 50 watts fed into 4 loudspeakers provided by 4 KT66s in parallel push-pull, timeswitch of stations and the time of day and then all rounded off with a fully comprehensive pedestal remote control unit (note the similarity to the one pictured in the first item) for both radio and gramophone. This is, for me, the holy grail of HMV sets and I would dearly like to see one or obtain a manual for it. The manual would be a nice start as with these elusive pieces so little is known and its story has yet to be fully told. I am indebted to Mike





Has anyone seen these HMV sets in the flesh? Pictures courtesy of Andrew Denton.

Izycky for drawing my attention to the first item and also to John Howes for originally pointing out the 1700 to me.

Can anyone else add anything?

Yours Sincerely
Andrew Denton

The Broken Tuning Scale continued

asked whether you want borders. It is best to say 'no thanks' as the copy has to be warts and all. Now pray and press the copy button.

In a well maintained machine, a copy of excellent colour fidelity and stunning geometry should magically appear. In my experience, a white sheet of paper needs to be laid on top of the item to be copied so that clear areas on the scale come out free of colour, i.e., white equals clear. So far so good, but if your scale is longer than A3 a copy has to be made from the other end and the two pieces brought together later. This is where the stunning geometry comes its own. Though of course another £4.50 is required! At this stage you will end up with one or more copies of the original. The individual pieces must be carefully put back into their envelopes just in case you need them again.

Back home you'll discover the colours are not opaque and if gold, silver or bronze was in the original a very fair copy has been made. If two sheets were necessary then the point of the overlap can be suggested by the design. Some thin black card with 'letterbox' slots can now be made. This will go behind the acetate sheet and allows the pointer to be visible through the slots. The acetate sheet or sheets and the black card now have to be cut to the size of the original tuning scale ready to be sandwiched between glass. On my restoration, holes needed to be cut for the tuning and volume control spindles. The local glazier said that he could not guarantee being successful in drilling the 2mm glass required for either side of the sandwich so plastic sheet was chosen.

Assuming all holes are now drilled, it is now time to assemble the scale. This stage is particularly tricky as the surfaces are slippery and it is essential to avoid getting fingerprints on the various surfaces.

Take what will be the back outer layer (Fig 1), either plastic or glass, and using old cloth type insulation tape, masking or magic tape, fix half the width of the tape all the way around. This will eventually bind the sandwich together. Next, tape the black card (Fig 2), with it's letterbox slots and place on the back layer. If you want to secure it, use double sided tape on its back. The acetate copy (Fig 3) comes next and if you are having to use two make sure the overlap is accurate. The top layer of glass or plastic (Fig 4) is now gently placed on top without disturbing the acetate. Finally, the adhesive tape, which has probably been a complete nuisance up till now, is carefully rolled over to secure all the layers together. Hopefully the sandwich will now sit in the original tuning scale opening without the tape showing though it may be necessary to trim this with a craft knife.

An observation on acetate copies. As they are raster' scanned the surface is not entirely flat. There are very fine ridges even in the colour which makes them slippery and limits the amount of overlay for clear layers to two otherwise the tuning pointer cannot be seen behind the scale.

Also, the acetate sheet does not take to being stuck to the glass and bubbles will tend to appear. Additional stiffeners may be necessary if the design is very large to stop bowing or sagging depending on what fixing space is available in any one cabinet. Notice that the refractive index of glass is to plastic so any scale lamps may need moving slightly.

The process outlined gives a result which is fairly convincing in appearance and has the advantage of being dismantled easily if necessary and at less that £10.00 is an economic way of solving a heartbreaking problem. It is probably not the only method but needs no exotic chemicals: only a little shoe leather, a steady hand and some patience.

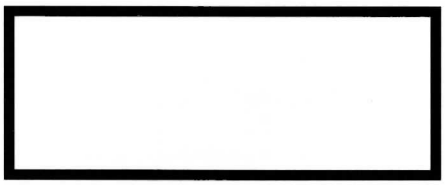


Fig 1 Backing glass with adhesive tape

Fig 2 Black card

Fig 3 Acetate scale

Fig 4 Acetate Scale

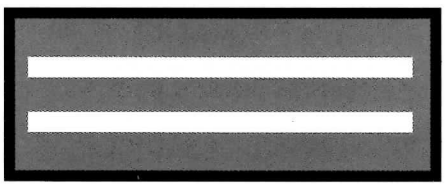


Fig 5 (left) The completed scale

Minutes

Minutes of BVWS committee meeting held on Thursday 27th January 2000 at 5 Templewood, Ealing

Present: Carl Glover, Jeffrey Borinsky (chair) Terry Martini, Rob Chesters, Ian Higginbottom. Mike Barker participated by telephone for a substantial part of the meeting.

1. Apologies for absence: Mike Barker, Guy Peskett, Steve Sidaway

2. Minutes of meeting held on 25th November 1999. Matters arising: 7(i) 1-8000 should read 1-800

3. Bulletin progress. CG reported that the Spring bulletin was about 1/3rd complete. This is usual for this time of year. Printing is expected in first week of March.

4. Bulletin for year 2000; content, printing and mailing. Discussion was limited due to absence of MB and GP. It was agreed to increase the print run to between 1800 and 2000. The extra cost would be minimal and would cater for the growing membership while avoid shortages. The combined address sheet/renewal form used with the Christmas bulletin needs attention to ensure that it accurately matches the window envelope and some kind of reminder to members not to discard it accidentally. Action: CG for print run, MB for address sheet.

5. Members comments and requests. Discussion was limited due to absence of MB.

6. Treasurers report. JB reported that finances were now healthy. Thanks are due to the vast majority of members who have renewed promptly.

7. ERT March show. We do not yet have details of the date and venue of the show. We intend to mount an exhibit if feasible. Action: MB

8. AGM and auction. No committee nominations have been received. A suitable trophy needs to be acquired for the Pat Leggatt award to be presented at the AGM in March. Action: RC

9. Membership. MB reported that we have 1335 members. Membership is increasing at a healthy rate.

10. No further items are needed for the agenda of the next committee meeting.

11. AOB

i) There have been an unacceptable number of faulty CDROMs. Please return faulty copies for investigation and replacement. This can be done in person at meetings or by post to MB. A note will be inserted in the Newsletter to be mailed soon.

ii) An obituary is needed following the sad loss of member Jim Forster. Action: MB

iii) A colleague of CG has offered to upgrade the BVWS web site without charge. Agreed. Action: CG/MB

The meeting closed at 9pm. The next meeting will be on 30th March 2000 at Templewood.

Minutes of BVWS committee meeting held on Thursday 30th March 2000 at 5 Templewood, Ealing.

Present: Mike Barker (chair), Jeffrey Borinsky, Terry Martini, Steve Sidaway, Rob Chesters (by telephone), Ian Higginbottom, Guy Peskett.

1. Apologies for absence: Carl Glover

2. Minutes of meeting held on 27 January 2000 were tabled and approved.

Matters arising

(i) MB reported that the Pat Leggatt award had been presented to Mike Izicky at the AGM

(ii) MB reported that feedback on members renewal forms indicated a need for more Bulletin articles on vintage Audio and early Electronic Television.

3. Membership

MB reported that the membership stood at 1369 before removal of non-renewals.

4. The offer by Steve Pendlebury (SP) at the AGM to take on the task of Membership Secretary had been the subject of discussions with MB and was gratefully accepted by the committee. MB proposed and JB seconded that SP be co-opted onto the committee; this was approved. It was also agreed to purchase a copy of Access, the database on which members details are mounted, for SP. (The necessary hardware is available.)

This would be sent to Steve, and he would run in Parallel with MB for a period of 1 month starting 1st June 2000 and then hand over will be complete.

5. Treasurer's report

JB reported that thanks to many prompt renewals by members the low point in the Society's balances which always occurs at year end had remained healthily positive. Projections for the end of 2000 will be presented at the next meeting.

6. JB tabled a flyer inviting members to attend or be speakers at the proposed BVWS Technical Presentations and some comments he had received on it. His proposal to hold the first presentations at the 26 November Harpenden meeting was discussed. It was agreed that there should be three half-hour talks between midday and the start of the mini auction at 1.30 pm.

7. Bulletin progress

RC was contacted using the conference telephone system made available by MB. RC reported that the Spring Bulletin was at the printers and that he had plenty of articles and other material for the Summer issue.

8. GP reported on the Society's contribution to the historical display at the ERT show. The sets shown were:- Ericsson crystal set and phones (GP), Marconi V2 and a horn speaker (Willem Hackmann), Pye model G (GP), Murphy A122M (MB), Pam 710 Transistor (Jonathan Hill). A few items of ephemera and a copy of the Bulletin were also shown. MB reported on a new swapmeet at The De Vere Hotel, Blackpool. The meeting, arranged by John McGlynn and Brian Chesters, was a great success, with about 80 stallholders and many members not usually seen at meetings in the South. A second meeting is scheduled for 10th September 2000.

9. 1901 Centenary

MB asked the committee to think about possible Society activities to commemorate the first transatlantic wireless communication. GP was asked to find out what is being planned by other organisations.

10. AOB

(i) Pre-registration for Harpenden, TM said that he proposed for a trial period to reinstate sending out tickets for entry (at the general opening time) to reduce delays at the admission desk.

(ii) MB will ask CG to talk to the manufacturers of the CDs about the faulty ones. A note to members on what to do about faulty discs will appear in the newsletter.

(iii) It was proposed that Society stationary be produced in the form of headed paper and Compliments slips, this was agreed. MB to arrange.

(iv) MB proposed buying a copy of Adobe Acrobat Writer (which writes PDF files) at a cost of £150. This was agreed and MB to arrange.

The next meeting was set for Thursday 1st June at Templewood. The meeting closed at 10.40 pm.

Stolen

From Bletchley Park Substantial reward for its recovery

On Sunday 2nd April 2000 the Abwehr Enigma Machine - 4 wheels - and serial number G312 was stolen. There is a substantial reward for it's recovery. Anyone with any information should contact - 01908 640404/ 645001

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?

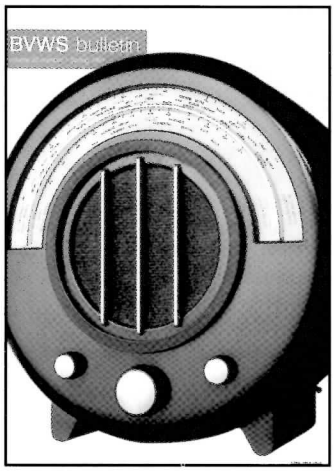
Vol 12 Numbers 1, 2, 3, 4 Inc. the Emor Globe, The Fultograph, Ekco Coloured Cabinets.

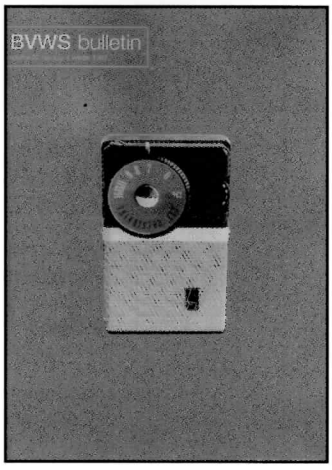
Vol 13 Numbers 1, 2, 3 Inc. Direct action tuning, The Philips 2514, Noctovision.

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, Coherers 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, 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

I have taken over 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 enthusistically carried on by Pat Leggatt. I encourage members to help build the list, whenever they get the opportunity. The BVWS Handbook contains the current listings - one in numerical order and one ordered by name. Please let me have any additions, or suggestions for corrections, by mail or over the phone.

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

Harpenden meetings
Sunday the **11th June** hosts a swapmeet featuring a workshop with Gerry Wells. Autumn is heralded with a swapmeet on **3rd September** also featuring Gerry's workshop, and the year finishes with a swapmeet on the **26th of November**.

Gerald Wells' garden party
Gerry Wells will be having a garden party on Saturday **10th June** at the Vintage Wireless Museum, 23 Rosendale Road, West Dulwich, London SE21 8DS. Telephone 0181 670 3667.

Portishead meeting 2001
Alex Woolliams will be holding a swapmeet on Sunday the **14th January 2001**. For further details please contact Alex on 0117 9776576 or you could email him at: woolly@eggconnect.net. Details by post can be acquired by writing to him at: 11 Knowle Road, Bristol, BS4 2EZ.

Wootton Bassett meetings 2000
Mike Barker will be organising a swapmeet on Sunday **9th July** and Sunday **December 3rd.**

NVCF 2000
Jonathan Hill will be organising the next NVCF on Sunday **17th September** Please see advert on page 2 for further details.

Blackpool meeting
John McGlynn and Brian Chesters will be organising their second meeting on **10th September** at the DeVere Hotel, Blackpool. For further details please contact Vintage Technology 2000 on: 01253 300100 (9.00-5.00), email: brian@blackpool.net or write to 173 Newton Drive, Blackpool, Lancashire FY3 8ND

Harpenden meetings 2001
There will be an auction, a restoration contest and the AGM on Sunday **4th of March.** Sunday the **10th June** hosts a swapmeet. Autumn is heralded with a swapmeet on **2nd September**, and the year finishes with a swapmeet on the **25th of November**.

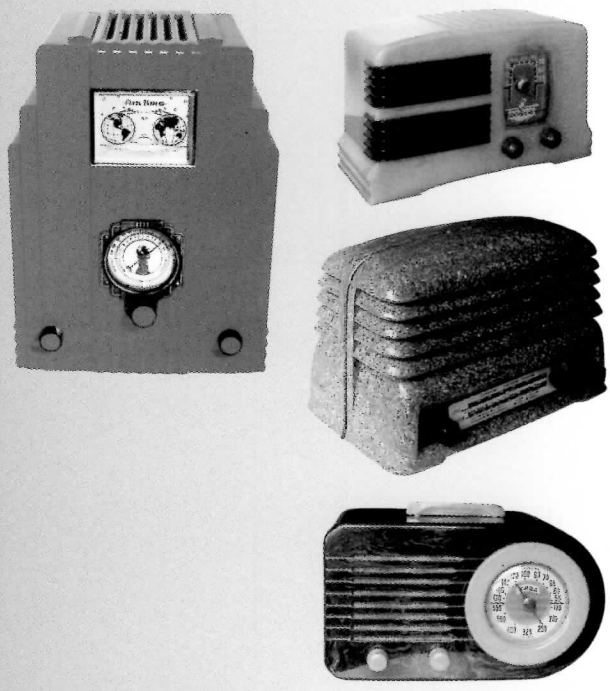
Gerald Wells' garden party 2001
For those with busy calendars Gerry Wells will be having a garden party on Saturday **9th June 2001**

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: Robert Chesters, 32 Eaton Road, Handbridge, Chester Cheshire CH4 7EN. Tel: 01244 675826
email: bakelite.ekcos@virgin.net

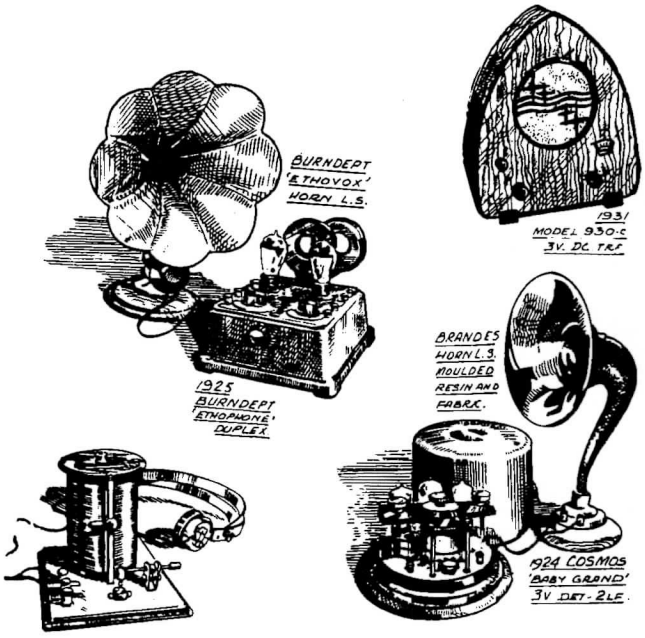
Wanted by collector



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: 0181 469 2904
choris.b@virgin.net

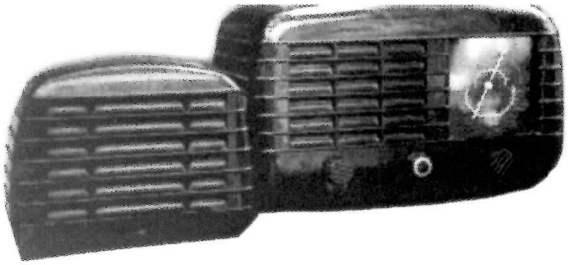
BVWS POSTERS

3 designs depicting wireless sets from the 1920's, 1930's and1940'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



Blackpool Illuminations

Come and see the show!

450,000 lamps!!

Vintage Technology

Sunday 10th September 2000

De Vere Hotel in Blackpool.
Booking stalls now, contact
Brian Chesters and John McGlynn

For full details of the fair and the illuminations!
Tel: 01253 300100 • Fax: 01253 300020
E-mail: brian@blackpool.net


OFF
VOLUME
5000D
ZENITH
NG DISTANCE