

# The Bulletin

Vol. 35 no. 1 Spring 2010 [www.bvws.org.uk](http://www.bvws.org.uk)



9th May 2010

# National Vintage Communications Fair at The Warwickshire Exhibition Centre



Now in our 16th year!

10.30 to 4.00 £5 admission (under-14s Free),  
early entry 9.00 at £20

Up to 250 Stallholders

## Free car parking!



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Separations and Printing by Hastings Print

**Honorary Members:**

Ralph Barrett | Gordon Bussey | Dr A.R. Constable  
Jonathan Hill | David Read | Gerald Wells



Front: Japanese lacquered Lissen set with matching finish Philips septagonal loudspeaker circa 1930.  
Rear: Sony TR-1829 and TR-1824, 1967.  
Photographed by Carl Glover

Graphic design by Carl Glover and Christine Bone  
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## From the Chair

Turning the corner into 2010 sees the BVWS 'to-do' list get ever longer with many plans for the year ahead. I have even started on some of the plans for the Celebration of 75 years of the British high definition Television service. As we all witness its decline into digital TV with poor signals and even worse program content we can be comforted by the many collectors who keep the line whistle going. The bi-yearly Membership Handbook will be compiled and printed ready for delivery with the Summer Bulletin. So too will come the new BVWS car sticker. Rather than producing an 'events diary' on a single piece of paper that could easily be mislaid, we will be having proper wall Calendars made with a vintage theme and all the coming years events pre-printed on. This will be sent out with the Winter Bulletin. I can report that the NVCF stall bookings once again show signs of it being a full event, so if you have not yet sent off your stall booking form I suggest you do not leave it to the last moment, as we would not want any members to miss out. The theme for this year's exhibition is "The Radiogram" and we will be having lots of working examples from throughout the 20th Century from basic/budget types to the most exotic monsters. Once again we have extended the BVWS parts Dept. and can now supply deoxIT D5

contact cleaner lubricant. This is the very best product you can get for reviving pots and wafer switches as well as de-oxidising valve holders etc. I have been using it for over 10 years and no other type I have tried comes close. BVWS members will enjoy a reduced price against that currently advertised on-line by other sellers. Look out for it on the BVWS table. It's not cheap but one can will last you years! Further additions to the BVWS parts Dept. are planned to follow.

Later in this Bulletin are some pictures of a visit to Wooferton transmitting station near Ludlow. This was a most enjoyable and informative afternoon arranged by station staff and our own Phil Marrison. The Station manager has offered us another opportunity to visit with a maximum of 20 people some time in May 2010. Anyone who is interested should contact me to reserve a place. This is strictly first come first served and may be your only chance. At Harpenden in March we will be welcoming Ian Baird (JLB's grandson) from the Museum of film and photography at Bradford, who will be giving a most informative presentation on early television. I am certainly looking forward to this event.

Mike...

## STOLEN!

The following items were stolen from the house of a long standing Kent based Society member. Please check if you have purchased anything that fits the following descriptions since March 2009. We are interested in the safe return of the items to their original owner and any information that would lead to a conviction of the perpetrator of the offence.

\*\*\* Item not uniquely identifiable, possibly offered for sale with something that is.

Taylor model 40 Valve Tester, 1938. Serial No. 2228  
De Wald white Bakelite midget radio, USA, 1938. \*\*\*  
AVO 8 MK2 in leather case Serial No. 152757C163  
AVO 8 in leather case Serial No. 93722C759  
AVO 7 Mk2 Serial No. 9149A259  
Amplion Horn Speaker, Brown crackle finish AU4X Serial No. 17212C  
Amplion Horn Speaker, Brown crackle finish AU4 (750 Ohms) Serial No. 49685  
Black Beam drive unit, 2000 Ohms. \*\*\*  
Sterling drive unit type R1284B Serial No. 8008  
Amplion drive unit for Baby horn. \*\*\*  
Box of assorted coins and WW 1 medals. \*\*\*  
White Bakelite 1903's Telephone, chrome dial. \*\*\*  
Meccano motors, various plus transformer. \*\*\*

Please contact the Chairman in the strictest confidence if you are able to help.

# General Television Model 534, Piano Radio, USA 1940

by Gary Tempest

Well at last I've finished, well almost, this one was started seven or more years ago. Another crazy one to attempt and my best excuse is that my wife liked it.

There is a Bakelite version; get a good one of those and you could have it polished and running in a few days but where's the pastime in that?

One advantage of a long restoration is that all the pieces that were made, veneered and finished had years to stabilise before coming together. I'm hopeful now that I won't see any changes resulting from the normal house environment.



## Electronics

Not a lot to say as it's just the common place AC/DC AA5 chassis. However, it was largely rebuilt as it was very tatty and surprisingly didn't have an isolated chassis. That is one side of the mains supply was connected directly to chassis, in British fashion, along with all the other components of the negative supply line. Most of this type of American set, certainly

those from the 50's, didn't do this and had a separate negative HT line (B- in US jargon) only connected to chassis by a capacitor of say 0.1  $\mu$ F. It's good practice to shunt this with a resistor of say 220K $\Omega$  such that it can't be left charged. It isn't necessary to move every connection that went to chassis in the conversion. Those at RF and IF can generally be left to return via the 0.1  $\mu$ F capacitor. Doing it this way

then only a few extra pieces of tag strip are needed. I did write an article on converting a DAC 90A back in Summer 2002 for anyone that would like more information.

The circuit uses a 12A8 heptode frequency changer into the first IF transformer. Following this is a 12K7 pentode IF amplifier with an un-screened IF transformer under the chassis to save space. Then there is a 12Q7 double diode triode for



Above: Someone else's set showing the split lid



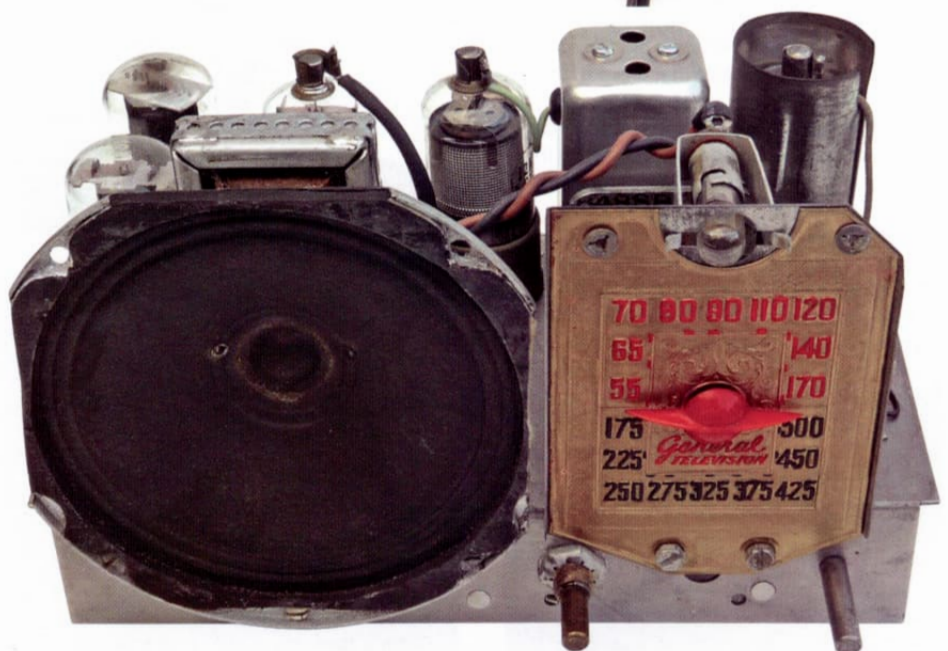
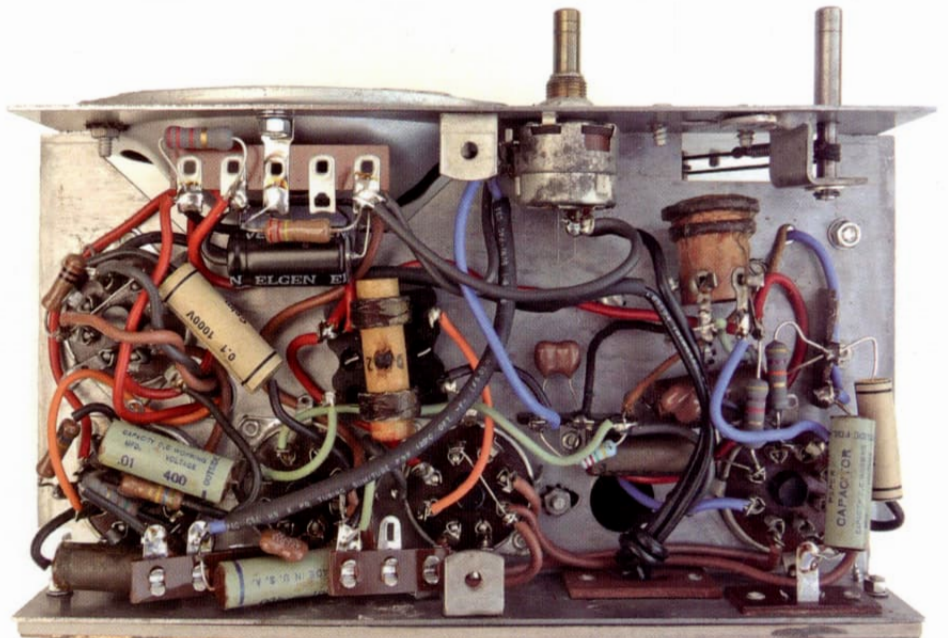
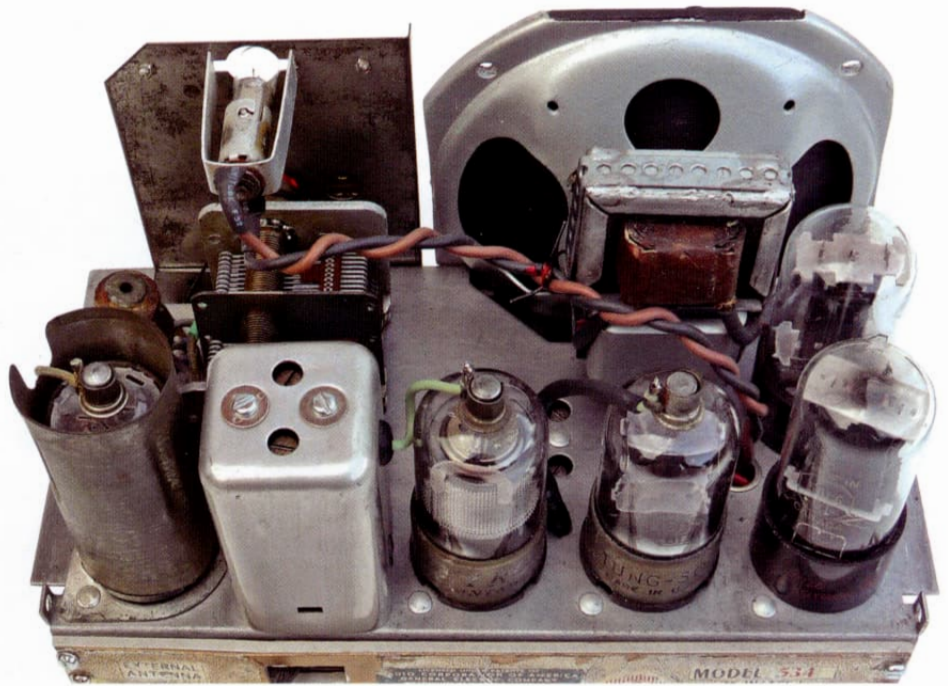
detection, AVC and audio pre-amplification. The line up is completed by a 50L6 output valve and 35Z5 rectifier. The heater voltages are designed to add up to the line voltage so no additional dropper is required.

I was going to make a new label for the rear of the chassis but my wife wanted the original; history she reckoned.

#### Cabinet work

There was a lot of this and when I started out with this hobby I didn't intend it to be this way. The lid that came with it was not original and was a single, quite crudely made, piece of plywood. As can be seen in the picture of someone else's radio (grabbed from the Internet) the lid should be split such that a small front part, carrying the music stand, hinges forwards to allow better access to the knobs. Believe me I hunted the world for a hinge that matched that used for the main part but without success. Yes! I expect one will turn up now that it's finished. All the hinges I looked at, or bought, even if not over large were obviously, by the pitch of the pivot, intended for much bigger items. So I decided to go without it. I made the front lid narrower, so access is still fine and so far have left off the music stand. Underneath this lid I used a piece of lacquered brass as a dummy hinge and to get the height the same as that of the main lid.

The body of the radio was re-veneered





using mahogany with hickory inserts and then used as a template for the lids. These were cut out, from plywood, with a scroll saw and veneered on both faces again in mahogany. Then came careful hand finishing to get as accurate a fit to the body as possible prior to routing the edges with a Roman Ogee cutter.

The rear leg was missing and the two front ones were badly damaged so it was best to make new ones from solid mahogany. I changed the design a little here and went for the easier option of having the front legs butting directly to the sides rather than being splayed slightly outwards. I reasoned that it was stronger and it allowed me to attach them just using wood screws, from the inside, once all pieces were refinished. This was done with Mohawk lacquer and 'rubbed out' to a high gloss befitting a grand piano.

#### Putting it all together

One problem was getting a new dial surround as the original, made from an early plastic, had warped beyond further use. Reproductions are available from the USA and I bought one of these but it didn't fit well and had some warping of its own. So I got some plastic L strip from a model shop that had to be reduced in size for the front face before mitring separate pieces to edge the cut out in the panel. But I'm getting ahead of myself, as firstly I had to square this up. Once this was done and the pieces carefully hand finished to be a tight fit they were sprayed with satin ivory acrylic paint before gluing in place with super-glue. The dial 'glass' is actually a piece of 2mm acrylic sheet glued in beneath the L strip.

Another difficult thing was getting the lid to perfectly align with the body when closed. The top is only about a 1/4 inch thick so I had only one chance with the hinge screws into that. The existing holes in the body were used for the other half of the hinge but the lid came out just slightly mis-aligned. The way around it was to drill out the body holes and glue in dowels so I could start over. I

only put two screws in at first so I could use two more if the alignment wasn't perfect, then edge the first two over if needed. Actually, I got it right first try the second time as I knew exactly how it needed moving.



For my first attempt, by the way, I put the hinge on the body and with it folded applied twin stick tape to the hinge back; then put the top firmly on. Very gingerly the lid was opened and the holes were marked; it almost came out spot on but not quite.

Getting there now; only a lid stay and

new pedals to make, then fit a new piece of grill cloth and the chassis could be fixed in place. This was done originally with two wood screws into each side, through brackets formed by bending up tabs, at right angles, from the chassis. However, the screws couldn't be very long and the wood had crumbled so the fixing was inadequate. With a little ingenuity I made up brass plates, each attached to the cabinet with two fresh screws, with tapped fixings so machine screws could be used to secure the chassis.

With all these radios the keyboard is a problem being the same early plastic that warps badly. Fortunately, I was easily able to break out the black keys and then use a hot air gun and pressure to flatten the white section. After lots of cleaning and trimming with fine files and the like it was reassembled with epoxy. Originally it had been glued into position with pegs going into the cabinet. These of course had broken off and I didn't want to use glue to fix it anyway. I wanted a way such that fairly easy removal was possible in the future and settled for small pieces of Blu Tack.

#### Conclusions

It works reasonably with a few feet of wire as an aerial connected to a chassis tag marked "External Antenna". Originally it had a "Wavescope line cord", marketing hype for a third wire (un-attached) in the lead to be augmented by an external antenna. I had to fit a new mains lead and one with a third wire was not possible.

For now I haven't made a back because ventilation is awful anyway and it certainly shouldn't be played for long even without one. The chassis is isolated and whilst I have it, it will be used with a 240/120V isolated transformer as well.

I may sometime look into making a music stand. Final words: it does look gorgeous and I'm actually quite proud of the result.

# Dicky Howett writes...

Actor Paul Whitsun-Jones surveys the scene, next to a five-lensed EMI 203 image orthicon monochrome camera positioned (and well attended) outside Thames Television's Teddington studios in Broom Road. These pictures, (taken by local resident Bernard King around about 1968), show Pete Brady interviewing a helicopter pilot. I

suspect this was for the children's magazine programme 'Magpie'. There was also a vast 'cherry picker' parked opposite with a couple of seemingly unrestrained camera guys lounging about up above. Obviously these were the good old days, pre-health and safety!



# The Heathkit Mohican

## an innovative transistor receiver

by Ken Brooks G3XSJ

Heathkit was a well known brand in the 1960's and 1970's, offering a range of audio, test, and short wave equipment in kit form that the average constructor could make at home. When a tidy Heathkit Mohican short wave transistor receiver was offered to me at modest cost, the temptation was irresistible despite the obvious shortcoming of it not working.



The Heath company was an established supplier of electronic kits in the USA and extended its operations to the UK, opening a factory in Gloucester in 1959. Besides offering Heath products from the USA they re-engineered many of their products to use UK manufactured components, adding a "U" suffix to indicate a UK version. At that time buying British products was the norm and the use of British parts would have played well with their customers. It probably offered Heathkit commercial advantages too, like shorter supply chains, and a more favourable reception in the technical press.

**Setting a standard – first class manuals**  
Heathkit are usually associated with home build kits but they also offered ready assembled equipment at a modest premium over the kit price. Their manuals

were very detailed and represented the Gold Standard of clarity and completeness when compared with the sketchy leaflets provided by lesser kit suppliers. The manuals went into great detail about identification of components, soldering, and the assembly process, each step having space for the constructor to tick when that step had been completed. The instructions were sufficiently clear for a relative newcomer to build a kit with confidence, knowing that in the event of severe difficulty it could always be returned to the factory for expert attention.

All the Heathkit equipment I have seen bears evidence in the manual of being bought in kit form, suggesting that most purchasers were undaunted by the prospect of assembling and testing quite complex products.

### The Mohican receiver

The Mohican all transistor communications receiver provides general coverage, that is medium wave plus continuous short wave coverage from 1.65 – 30 MHz, with bandspread for each of the amateur bands. The circuit includes an RF amplifier and a beat frequency oscillator (BFO) for the reception of morse and single sideband signals.

All these features would be expected in a communications receiver but where the Mohican really scored over valve based products was in size, weight and power consumption. Measuring 12" x 10" x 7" and weighing just 17 lbs, this was a real advance and with a current drain of only 35 mA at 12 volts, the receiver would run for many hours on its self contained batteries. With all this packaged into an attractive

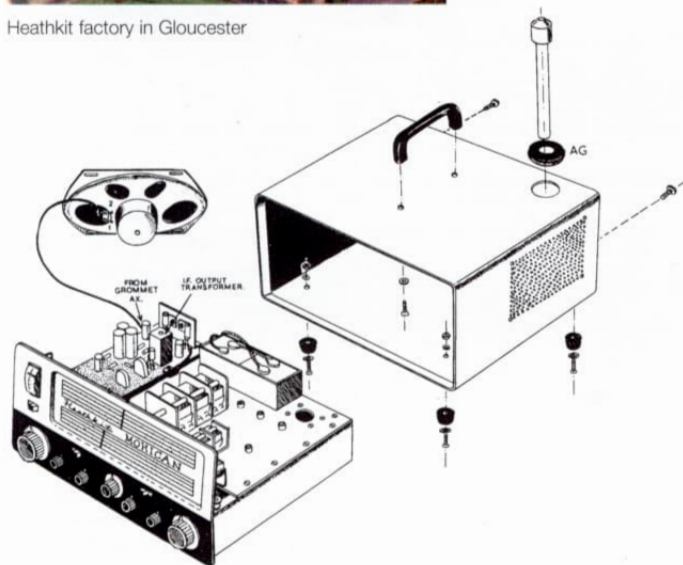
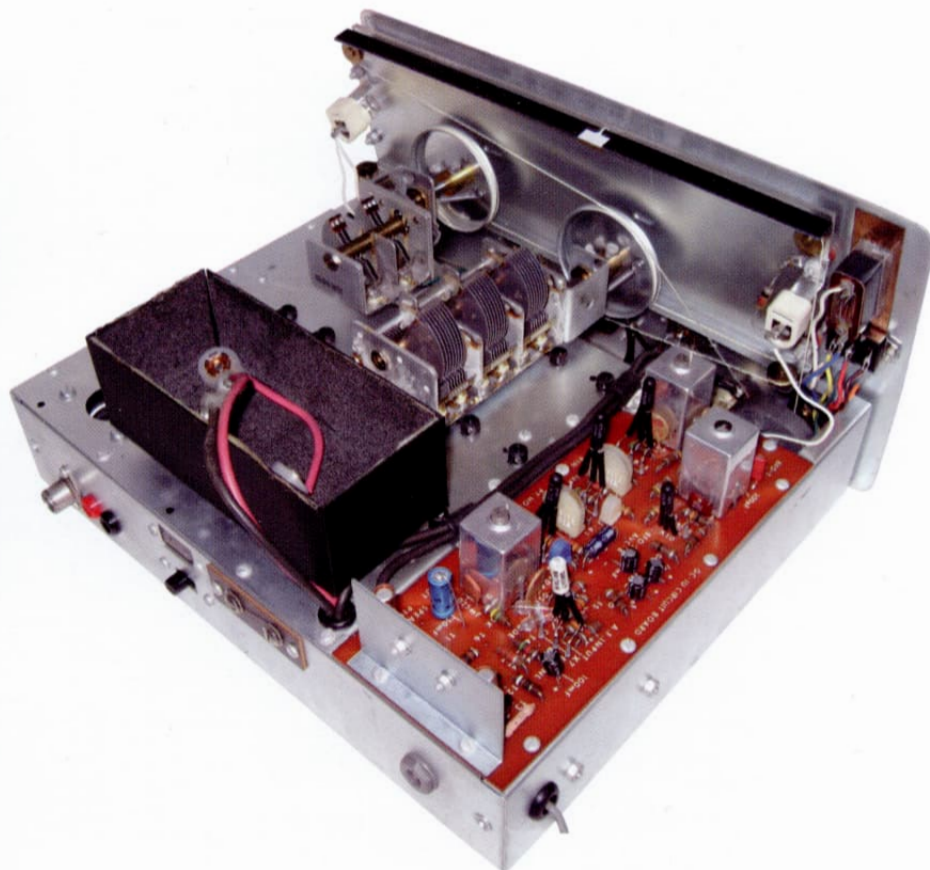




Cover of Heathkit manual



Heathkit factory in Gloucester

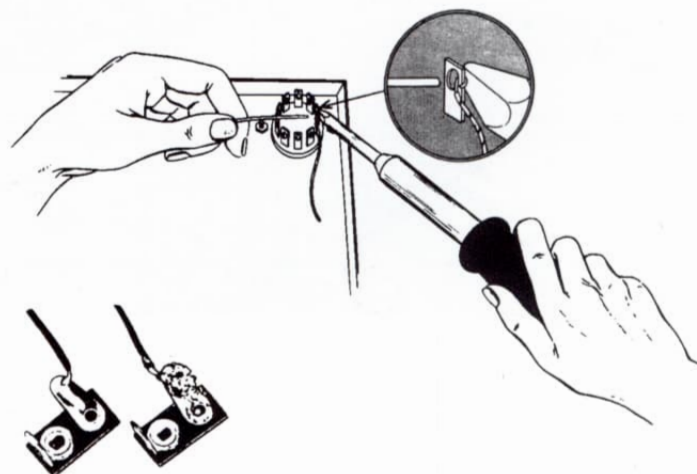


Exploded view from Heathkit manual

green cabinet containing a loudspeaker and telescopic aerial, the Mohican would have tempted many enthusiasts.

Internally, the circuit was innovative, and not just for using transistors. Instead of wound intermediate frequency (IF) transformers, some sections of the IF amplifier used new ceramic devices called transfilters. These were manufactured to be resonant at the IF frequency and made construction a little easier with fewer stages to align. The American kit builder had to build the RF chassis which is a fairly complicated and compact assembly with much wiring around the band change switch. The BFO circuit used the variable capacity effect of a diode to tune the oscillator which was a further new circuit technique.

The receiver was reviewed in the



Soldering, Heathkit style

December 1960 edition of the American magazine QST when the overall design was assessed in considerable detail. Early transistor short wave receivers were often viewed with scepticism since their performance did not match what might be called the "golden era" of valve sets. Nevertheless, the reviewers seemed to put aside any prejudices they might bear and offered a generally favourable and objective review.

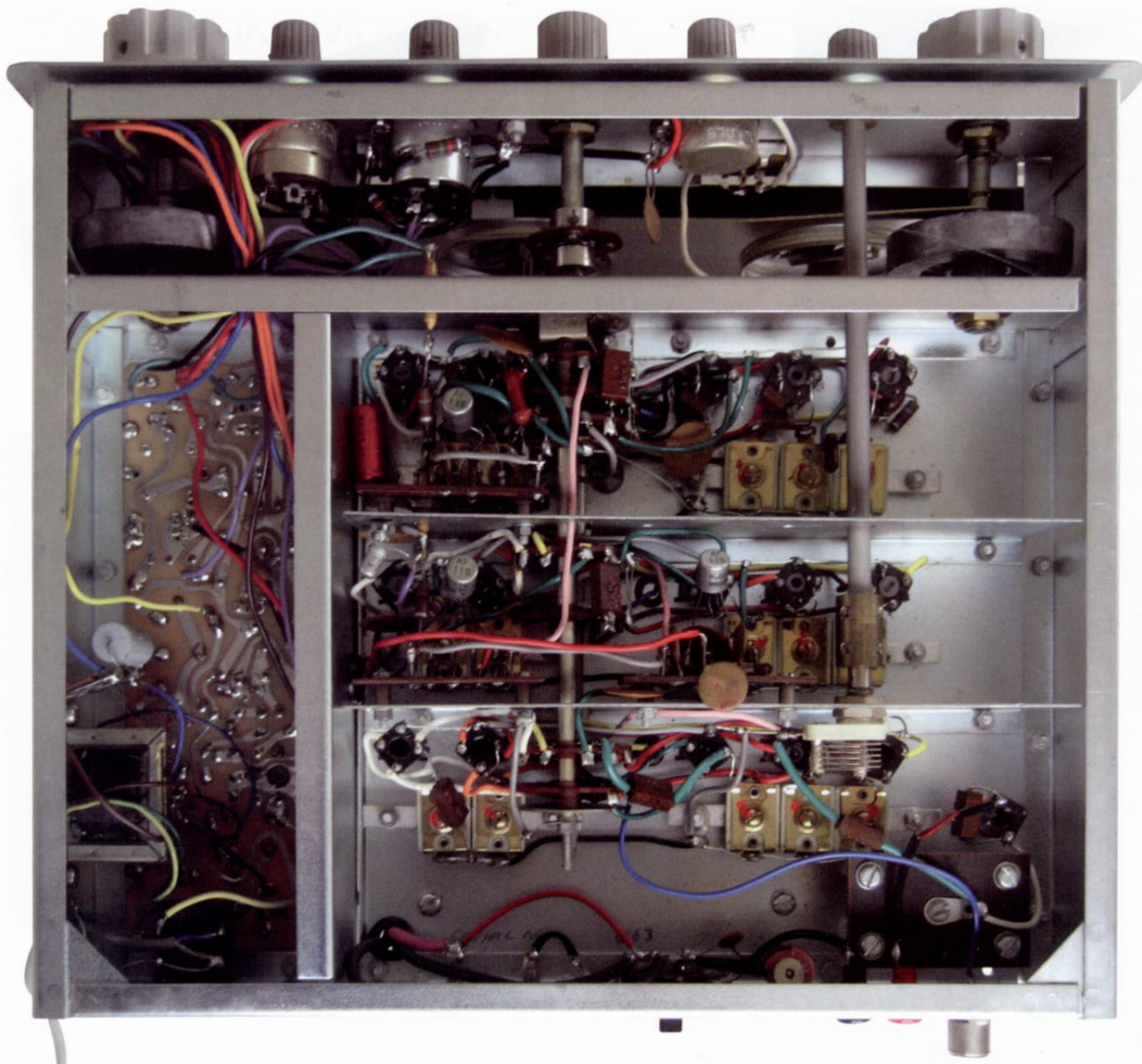
The Mohican reached the UK market using many locally sourced components. It was shown at the Radio Hobbies Exhibition in November 1960 and was offered in 1961 as a kit costing £38.75, a considerable sum in real terms when incomes might have been around £15 a week.

The name Mohican must have sounded odd to UK buyers and for present day

observers accustomed to sophisticated marketing and branding a more neutral name would seem more fitting. But this was not a mass market product and I doubt it was given a second thought. The UK product had the RF chassis preassembled, perhaps because its complexity was testing the skills of kit builders. Assembly was now relatively straightforward requiring chassis wiring and soldering of the IF and AF circuit board. All the assembly stages were covered in the usual Heathkit detail in a quality 60 page manual.

#### An impulse purchase

My Mohican was spotted for sale and appeared to be in very good condition. The vendor stated that some work replacing electrolytic capacitors had been undertaken but that the set was insensitive.



A demonstration was offered but the receiver remained stubbornly silent.

With a non-functioning kit it is not always possible to know if the project ever worked. If warnings were needed, the cabinet looked immaculate with little evidence of use. In circumstances like this there remains the risk of being stuck with something having strange subtle faults, the sort of problem caused by incorrect or incomplete wiring, or perhaps two similar looking but electrically different components having been inadvertently exchanged during assembly.

Despite the loud ringing of all the warning bells saying "walk away", the receiver did look in exceptionally good condition and shouted "buy me". These receivers are not common and I recalled someone who had great success with theirs, now bringing nostalgia into the decision making process. Then, the price was reduced to reflect the failed demonstration. Temptation inevitably took precedence over common sense, so an offer was made, readily accepted, and the set loaded into the car.

#### Getting it going

On returning home I was able to take a good look at the receiver and manual. From marks in the margin of the manual it appeared this was a home built set, so with some trepidation the cover was taken off to see how well it had been put together. There were no obvious surprises and I noticed that it was remarkably clean, all indicators of minimal use. After following my usual routine of lubricating switches and moving parts I took a look at the electrical side by applying power.

On test it was completely silent and suspicion was raised by the absence of any hiss from the speaker. Older transistor sets usually emit some hiss but its absence had me look at an original 50 microfarad Plessey yellow and red cased electrolytic capacitor in series with the loudspeaker. I had bought a bag of similar types at a vintage radio sale some months before but when testing them found every one defective, so the suspect capacitor was removed for examination. As expected,

it was defective, this one to the extent of simulating an open circuit. With this part replaced, the receiver hissed merrily away and progress, of sorts, was being made.

This was obviously not the only problem because no signals were coming through the set. Time for instruments, and with the well annotated manual to hand I probed around the transistors to see if the voltages stated in the manual were present. The voltages around the germanium RF amplifier transistor, an AF118, were way out of specification and I noticed that this was one of the four terminal devices, the type with a screen connection. Sometime in the past I remembered reading about these failing because of conductive dendrites building up inside the cans. I looked up the article which suggested a cure might be effected in some cases by cutting the screen lead. Not wishing to cut the lead, it was carefully unsoldered and left disconnected. With power reconnected the receiver immediately sprang into life. Inspired by this success I replaced the few remaining old electrolytic



Image originally from Short Wave Magazine. The caption reads: *Interior of the new Daystrom factory near Gloucester. It was officially opened on December 7. Occupying about 10,000 square feet, some 22 kits of all types are now offered in the Heathkit range, using British components throughout. All kits are assembled and packed on the spot, and the aim is same-day despatch from stock. Sample kits are always tested against assembly instructions, and everything possible is done to ensure that kits can be built up with the certainty of satisfactory results.*

capacitors for good measure whilst the chassis was still out of the cabinet.

Tuning around the bands the receiver appeared to work very well, with good sensitivity and selectivity. I did notice that the tuning scale calibration left something to be desired and this was soon corrected by applying accurate input signals from a signal generator monitored with a frequency counter. Trimmer adjustments enabled the circuits to be brought into line with calibration marks on the scale, and I also used the opportunity to trim the IF alignment.

#### **A silly mistake**

With the set back on an aerial an odd feature was that the tuning could change slightly with the position of the RF gain control. On broadcast reception this was of no consequence but it could upset the reception of morse or single sideband signals where much more precise tuning is needed. The effect suggested that the stabilised oscillator supply, provided by a zener diode, was varying with load. Measurement did confirm a supply voltage change of about 30 mV over the range of the RF gain control and I put this down to limitations of a basic stabilising circuit. I did attempt to improve on this by bypassing the zener circuit with a tiny solid state regulator which was small enough to be hidden in the wiring.

In my over-confidence I failed to check with the circuit diagram as to which wires on

the chassis were the feed and output, and paid for my short cut with a blown regulator. As I had only bought a single regulator the idea was abandoned and the original wiring reinstated. The characteristic I attempted to correct hardly mattered, and in retrospect I should have known better than to start improving a fifty year old design.

#### **Upon reflection**

Heathkit produced a highly innovative design in the Mohican and they probably took considerable commercial and technical risks in launching such an advanced receiver. However, it must be remembered that the space race was under way at the time and the buying public may well have been very receptive and keen to acquire their own little bit of advanced technology. The Mohican is a pleasant little set to use and has solid, sensibly sized controls that withstand the rigours of use.

I would suggest that the era of mass home radio construction, and perhaps within that we should include repairing things like cars and motorcycles, spanned from the 1920's to the 1980's when many products became too complex or uneconomic to diagnose and repair at home. In our plug-and-play society, the ability to build and troubleshoot almost anything is a diminishing skill and some kind of survey recently suggested that present constructional aspirations do not extend beyond assembling flat pack furniture, although present economic

circumstances might see that trend reverse.

As a teenager I made just one memorable visit to the Heathkit factory in Gloucester where I was suitably impressed by all the mouth watering products on offer. Because I live in the same county, I regularly passed the site and after the marquee had waned, I watched with dismay as the site fell into disrepair.

What became of it had a certain inevitability. Being outside the city centre it was unlikely to be elevated to wine bar status with perhaps a fuzzy photograph or two on the wall recalling past glories. A far worse fate was to follow. Major road realignment and development took place and the site has become that symbol of our transient times, a fast food outlet.

Rest in peace, dear old Heathkit.

# A visit to Wooferton

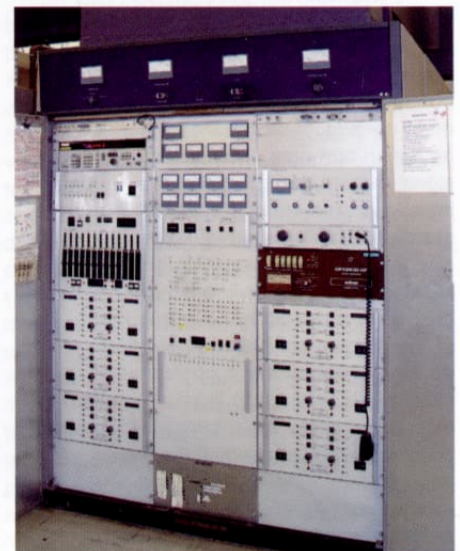
photography by Andy Finch, Graham Gosling, Phil Marrison and Mike Barker



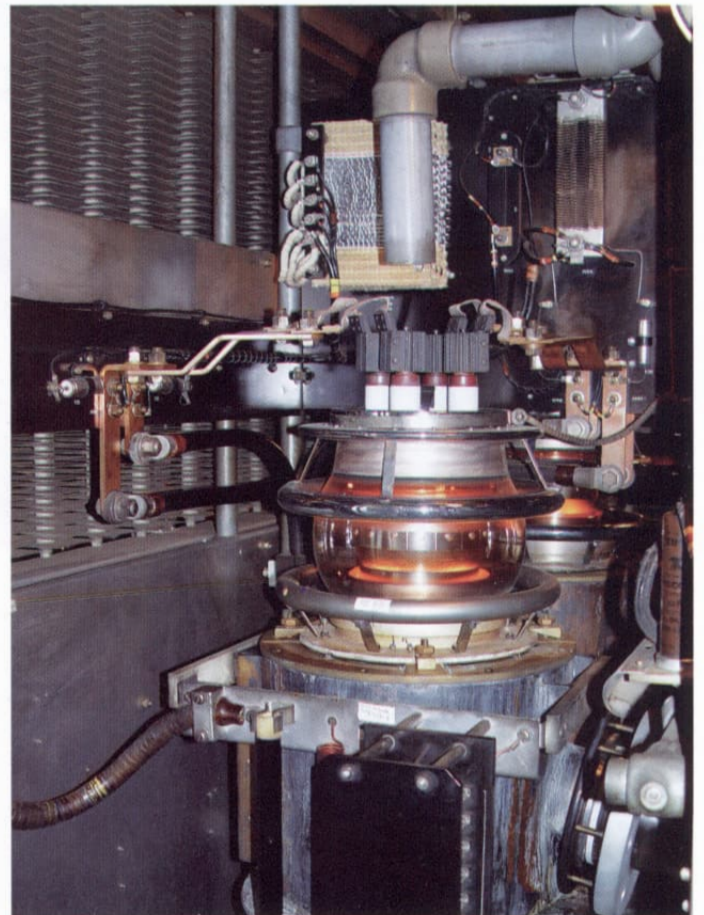
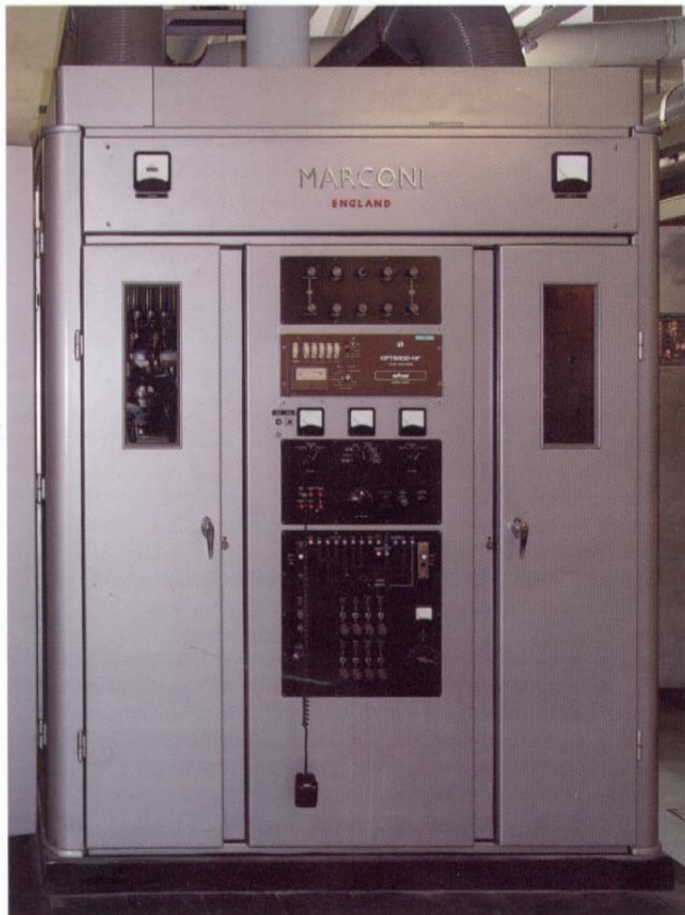
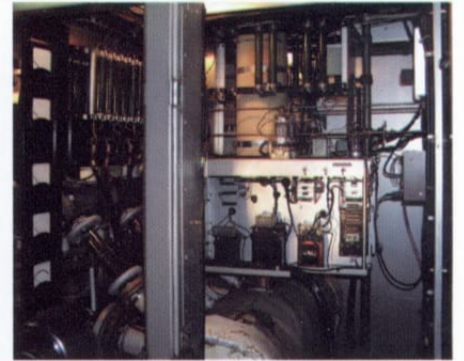
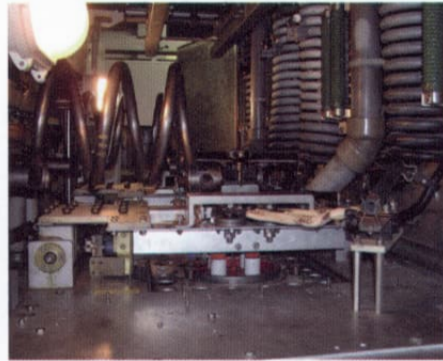
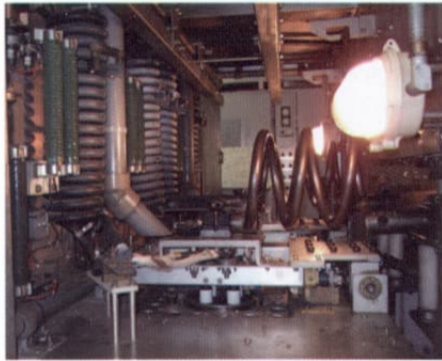
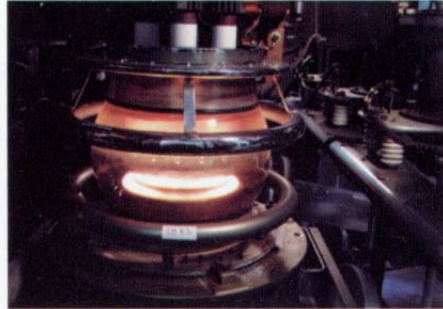
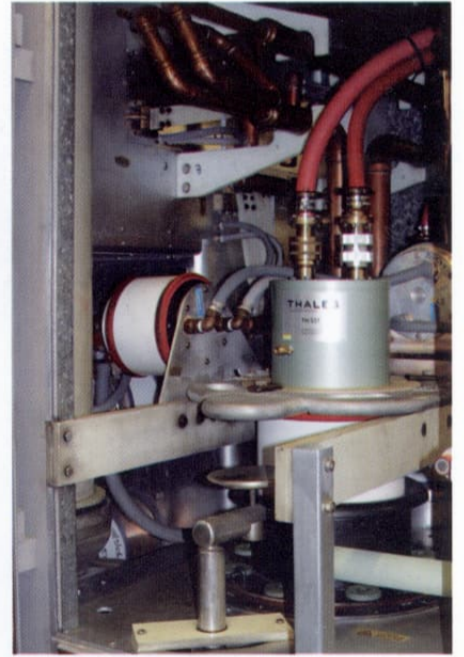
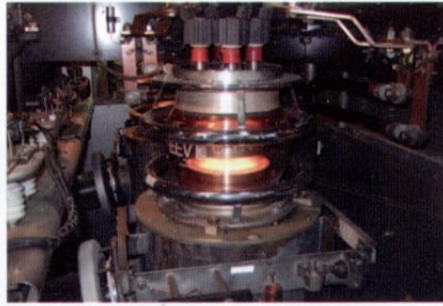
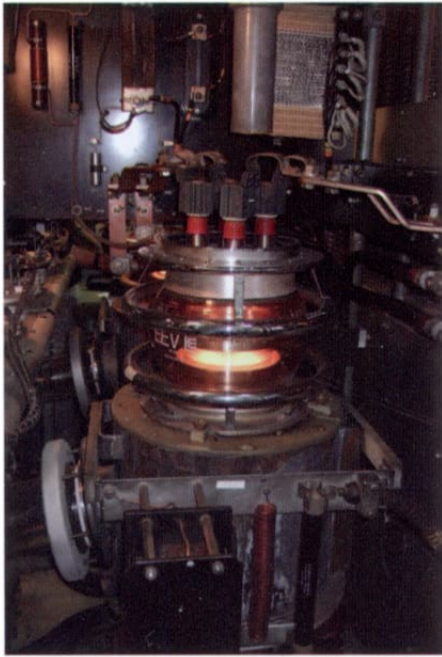
Dishes receiving incoming programmes!



Main transmitter hall with 1960's Marconi transmitters



1980's transmitter



Views of inside and outside sender unit with valve filaments switched on

# Mr Griffin goes to Germany

photographed and written by Lawrence Griffin, 12th November 1951

At the Wootton Bassett swapmeet last December John Howes handed me a folder of vintage, unpublished documents, he thought that might be of interest to readers of the Bulletin. On the train back to London later in the day I discovered that the author of the documents happened to be Lawrence Griffin, the designer responsible for KB radio's distinctive looking sets from the postwar period, some of his more notable designs being the KB FB10 'toaster' and the KB BM20 'beehive'. It turned out that he was also capable of going the extra mile when it came to researching other manufacturers, what follows are Mr Griffin's notes from 1951 regarding a visit to Germany. Carl Glover



Final polishing and boxing floor at Schaub and Lorenz

## German radio design

Almost every recent German radio cabinet is a rich dark brown veneered expensively in front, usually not so expensively veneered on the sides and top, very highly polished (as piano finish) especially on the front surfaces. For decoration gold lines, either of paint or metallic strip or maple veneer inserts follow the forms of the cabinet or outlines of apertures. 'Flat' curves and straight lines are the main features.

There are table sets in a complete range of sizes, the large ones being much larger and more splendid than any English counterpart. There is the same tolerance of plastic up to the small household size but the larger ones must be made of wood.

There are a few table radiograms of the usual continental style but very few floor models, most of which come into the very expensive class with separate compartments for motor, set, cocktails, records and wire or tape recorders. This furniture is very elaborate with counter-balanced lids, press-button operated lids, piano lids which fall forward while automatically sliding away the top, piano lids which fold into two sections and sets which spring out.

The inauguration of television brings expensive cabinets for both table and floor models as the quantities are small and the sets twice as expensive as our equivalents.

Special attention can be made of the AEG portable tape recorder and the Tefifon tape system where the tapes are in a container and filed in library manner ready to clip into the machine.

Portables are teutonic versions of American shapes and are mostly small and compact.

All silks are light with slight pattern, gold threads or tufts of material in lines or textures. The impracticability of cream coloured rough silks does not appear to matter.

Most sets other than small cheap sets have an FM band – with long, medium and short waves on AM. On large sets the medium waveband is split into two bands while there will be two short wave coverage bands. Bandspread bands are rare.

## Swiss radio design

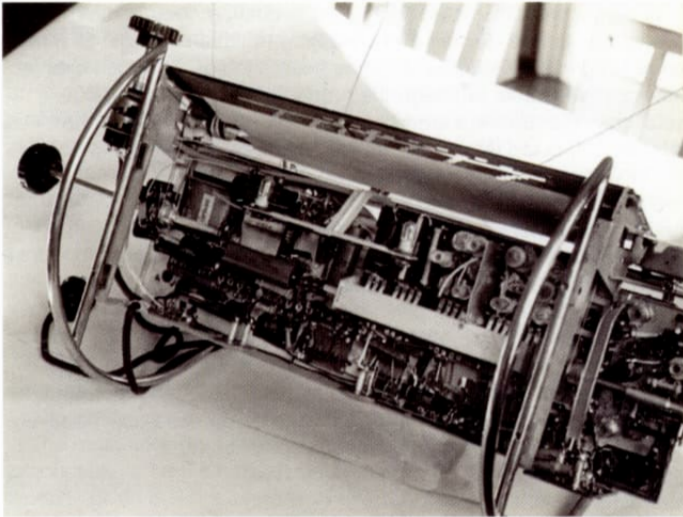
The Swiss radio cabinet is a natural walnut colour with a velvet finish.

Gold or metal trimmings are few but inlet veneered shapes are used, speaker apertures are elaborately shaped, scales are held across speaker openings by fancy wooden brackets.

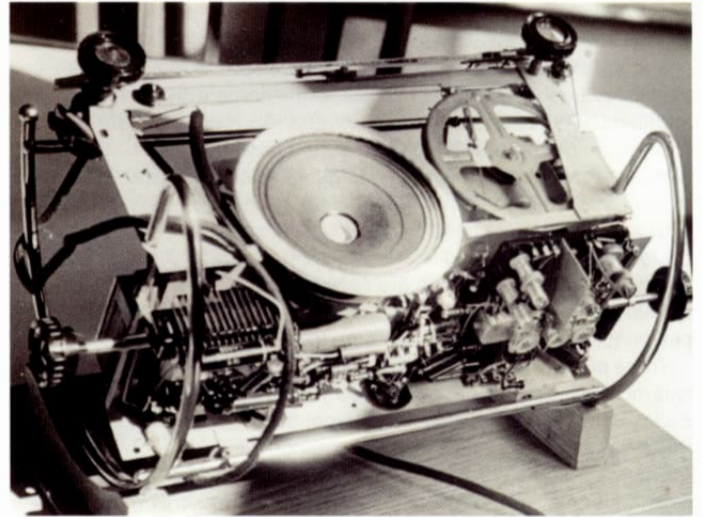
American and German portables are plentiful. The opposites of colour and finish of the German and Swiss tastes makes interchange of sets impossible without the set being housed in a special export cabinet.

## Schaub and Lorenz Radio

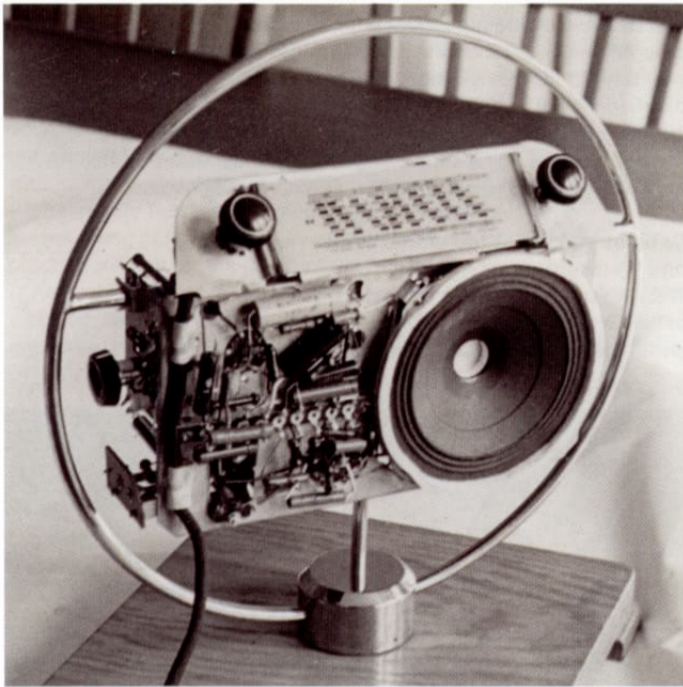
The chassis of these receivers are identical and are manufactured at Pforzheim. They are housed in different cabinets, Schaub employing more curves in their design while Lorenz designs are squarer and heavier looking. All cabinets must have a really high gloss finish, as this is a market requirement.



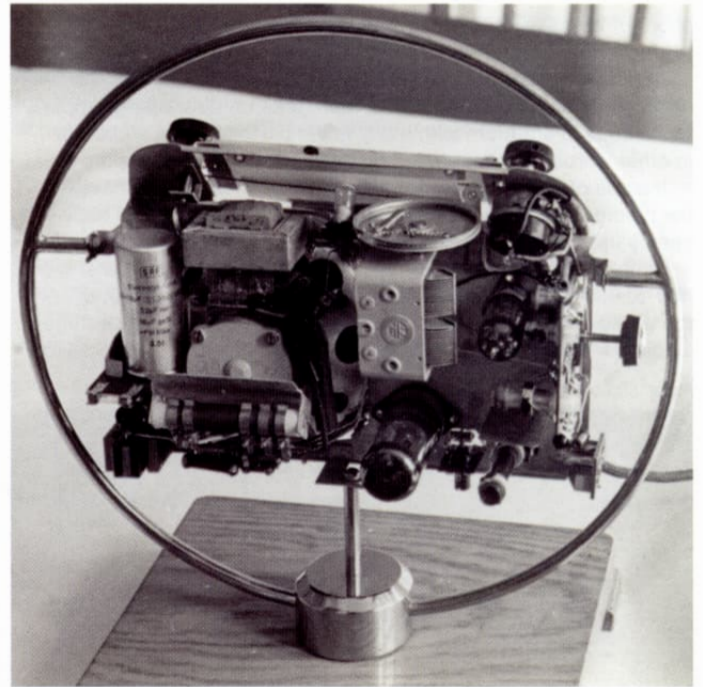
Schaub and Lorenz medium-size chassis



Schaub and Lorenz small, medium-size chassis



Schaub and Lorenz chassis of cheaper set in moulded cabinet



Rear view of Schaub and Lorenz chassis of cheaper set in moulded cabinet



Some of Lawrence Griffin's most well-known designs for KB Radio: the KB BM20, The KB FB10 and the KB Rhapsody.

### The design organisation

The director issues an order on the factory to make a certain set. This order defines the style of cabinet, approximate size, and an outline of the electrical and mechanical specification.

From this the Chief Mechanical Engineer, who controls the drawing office, produces the chassis and model cabinet with mechanical features. This is presented to the electrical engineers. While the battle of component placing is raging another model cabinet of near final detail develops in agreement with the cabinet makers.

The moment the order is issued, the Purchasing Department

begins buying all components except those in doubt: the toolmakers embark on the shaping of the bulk of the tools and Factory Planning start the preparation of jigs. On the sales side publicity material is prepared. The service Department is also in contact.

All these members of the organisation do their jobs progressively, in parallel with the developing design, often to sketches; the whole process, from the issuing of the order to commencing production, spanning only two and a half to three months. A set in a moulded cabinet may take a month longer.

This amazing cycle including as it does the design of switches

and a quite complicated build-up of highly tooled parts, with which the chassis abounds, needs a little analysis.

The style of chassis for all table sets, except the cheap bakelite housed or portable models, is the same with additions of push-buttons, more wavebands, more indicators etc. according to the value of the set, and has been the same for many years. Components get smaller, but there is no radical change from one model to another.

Standard parts are used to advantage in speed of design and therefore to disadvantage in development.

A large number of models are redeveloped every year, for instance, there are six table model sizes and this needs quick development time to handle the whole.

There are firms waiting on the doorstep for tools and mouldings which are a necessary adjunct to the cycle. This also contributes to the great success of the Purchasing Department who get the material in time.

The price of the completed receiver, by our standards, is very high, being higher than our (KB Radio) list price including purchase tax. However, in Germany there is a tax on component prices though no purchase tax on the final cost, although this is threatened shortly. Wages are not higher than ours nor is the loading factor.

I feel quite definitely that this practice of high speed development of new models is contributing largely to the high costs; that the design sections should spend far more time on developing simple techniques of structure with many fewer parts to make a chassis. In other words the cheapening of individual parts by redesign, or the use of intricate tooling on many pieces, can never make the difference that much thought and one set of expensive tools can by using one piece to do the job. Production time is cut.

Coupled with this is the practice of costing the tools against the first 10,000 of a particular job instead of spreading tool cost of the whole range over the total output of products as a percentage loading. Moulded sets employing much more tooling in proportion

Assembly floor at Schaub and Lorenz

than bigger wooden cased sets suffer in costing, though their production time is quicker and cheaper. Moulded sets cost as much on redesign as the original whereas the rehash of a wooden cabinet may cost very little. Although the production may run to 40,000 sets when the tools are amortised over 10,000 the profit on the later 30,000 is too late to reduce the all-important launching cost.

The reduction of the range also would give profitable breathing time to the design section. Another cost which is obviously greater than ours is the complete floor for final test, polishing and boxing, which could only pay in efficiency with very high production. The very high standard of finish demanded does, of course necessitate many hand polishing operatives.

Summing up, it would seem to me that there is over-mechanisation in design and manufacture, ie too much work is going into making a radio set for prices to be reduced appreciatively.

On the other hand, Schaub must be complimented on their clean light and airy factory which is characteristic of the rebuilt parts of Germany.

#### **Drawing Office procedure**

The Drawing Office procedure differs from ours in that the draughtsmen do not do the parts lists. There is one man who buys in the components for the prototypes, collates the mechanical parts and the design drawings and makes out the parts lists, so that anything to do with numbers and methods of issuing for the factory use is concentrated in the hands of one man under the Chief Mechanical Engineer.

#### **Cabinet making at the works of Rossler and Weissenberger - Stuttgart**

This one factory manufactures the bulk of table model cabinets for the industry but does not yet attempt a run of less than 5,000 or anything larger than a table television. The





growth of television with the console coming into popularity would cause them to seriously reconsider this policy.

The factory has been completely rebuilt and prides itself on its methods of strict control of dimensions by working to a complete system of jigs throughout (a rule is not allowed in the building and tampering with a jig carries a fine).

Plyboard as we know it is not used. Panels of the required size for the cabinets are made as blockboard. The rough timber is made into strips approximately  $1\frac{1}{2}$ " x  $\frac{1}{4}$ " by multiple saws to the length required and then glued edge to edge to form a panel. In some cases this is done by hand in jigs and clamp racks. They have a machine into which you 'post' the slats, having set the stops, from which is delivered the panels to size, or, with no stops, a continuous length.

The panels are veneered each side with birch, the decorative veneers being added in the normal way.

The panels are machined by all the usual methods.

The most important point of difference in method to English production is the method of producing a radius bend. The flat wood is given a series of parallel saw cuts only and contrary to the view of our cabinet the bend does not appear as a series of flats. There is no sign of the method showing on the surface due to careful experiment with the depth and pitch of the cuts. The bands are held in position by  $\frac{1}{2}$ " curved gusset blocks, the longitudinal blocks used here being rare. The end grain of the block is used as a glueing surface with no recorded complaints of shelling off. The advantage of this technique is that one panel is often wrapped round the whole of the cabinet with four bends at a comparable cost, and with much greater decorative enhancement, to the square box.

The factory has five long floors, the preparatory stages being common while several floors have parallel production lines for the different models.

Assembly jigs are in the form of bins into which the shell parts are dropped, the centre space filled with a frame and strategic wedges banged home. Glueing is by hand, one man handles four jigs. High

Assembly floor at Schaub and Lorenz, note innovative temporary frames enabling easier access to components on chassis

frequency glueing is only just being introduced experimentally for a few small details such as cross-banded mouldings.

Finishing operations are much the same as here except for the final stage where the very high permanent piano finish is obtained. Four women operators stand in a square with a 2 ft diameter mop each, of progressive grades of softness. The cabinet is passed round the four.

Most cabinets have gold decoration which is carried out in many ways. The cheaper ones have lines following curves or form sprayed on top of the final coloured cabinet. There are lines of maple veneer plastic strip or brass covered wood mouldings glued in grooves chased in the finished polished cabinet.

The cabinet is also polished by hand in the Radio Factory before boxing.

It appears that in future much of the cabinet material will be masonite with one veneer of wood each side. This is considered satisfactory. It is 60% of the thickness of the original blockboard (roughly  $\frac{1}{4}$ " ) and lighter as well as being stabler. Schaub are starting to use it on the medium size sets and are anticipating using it on the large table wood model later.

The factory itself is of concrete and glass walls while the separate administrative block is of steel ribs and glass, comprising entrance hall with spiral stair, fine wrought balustrade, bas relief murals leading to the Director's office and boardrooms in the ultra-modern manner. There is a fully equipped surgery running its own health scheme, a large drawing office equipped as in an exhibition.

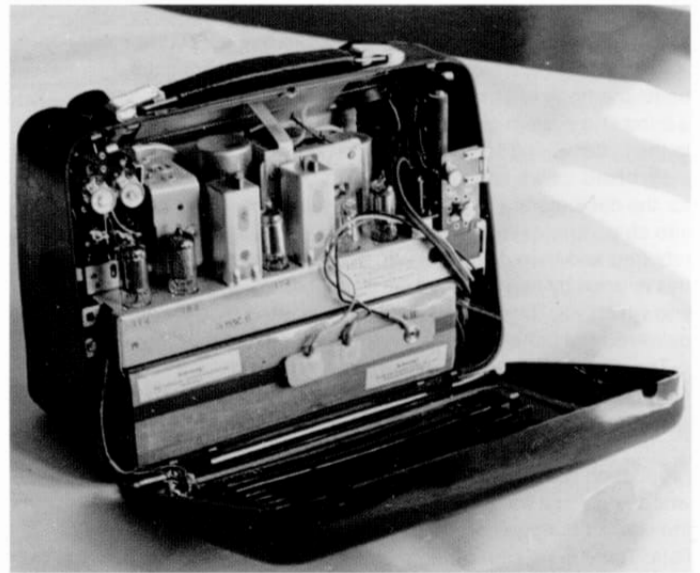
#### **Exhibition of Industrial goods at Berlin**

This display of products on a BIF scale was especially staged in Berlin for propaganda reasons, as an attraction to offset Eastern Sector peace rallies etc, (the Eastern Sector transmitter is on the opposite of the road to the front entrance of the exhibition buildings) and to keep up the morale of the Berliners (to continue the good work of the air-lift) by showing them what is happening in the

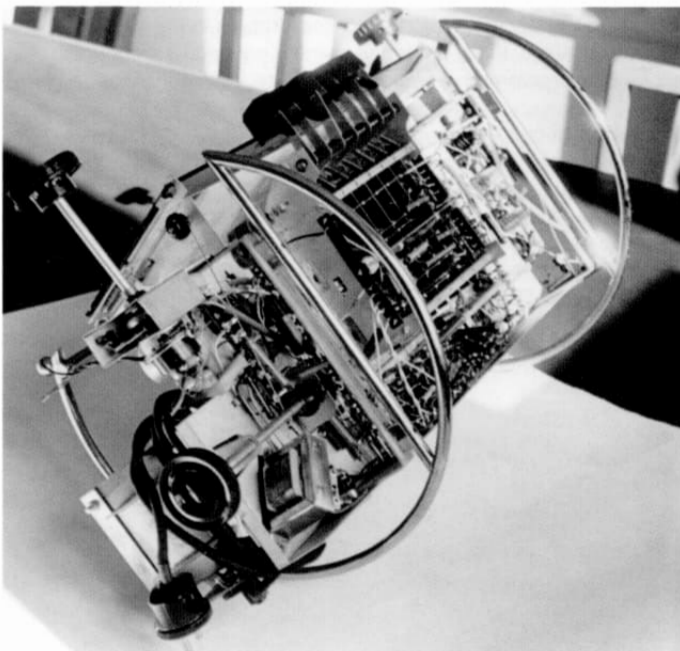




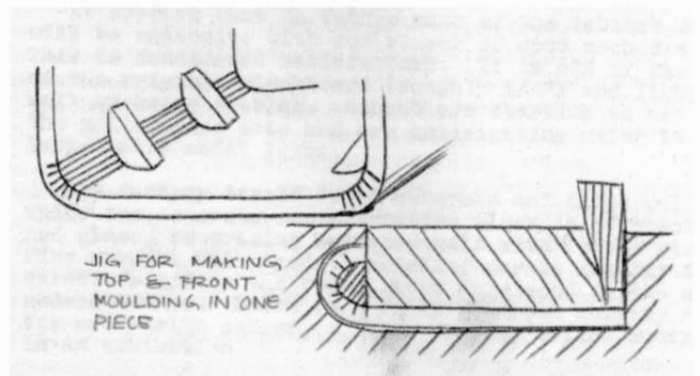
Wire recorder manufactured in the Schaub works



Schaub portable in moulded case



Schaub deluxe chassis



Lawrence Griffin's drawing illustrating Schaub's method of making curves in wooden radio cabinets

rest of Germany. A special feature is the Marshall Aid Pavillion.

A very important feature for the radio industry was the inauguration of a Television service by opening the first transmitter at the exhibition.

Programmes were televised from the stage at the exhibition and could be seen in the television street. There was little or no production technique and the picture was normally full of faults, including the dropping of the microphone off the hook onto the floor, but then the stagecraft was better, as in a Punch and Judy show, the 625 line picture was received with great clarity.

The 'street' complete with streetlamps, stars etc was laid out with far more imagination than our utility booths.

All the radio manufacturers showed their sets in sectors of one complete circle.

Furniture design has some distinct features. Upholstery as we know it has little place. Chairs, settles and the very popular corner settle are wooden frames, often as shapely and sparsed as 'windsor' on which are placed fitting cushions for the back and the seat and cylinder cushions for the arms.

Unit book cases and shelf units are distinguished for their clean and square severity and are mostly in rich, dark tones, though the majority of furniture is light which does not seem to agree with the demand for very dark radio cabinets. This is interesting as the dark, rich radio sets stand out handsomely against the light furniture, as against the English housewives fetish of matching everything.

There is a modern Swedish influence in

some individual pieces as over here.

Bedroom suites are characterised by their massiveness.

Office furniture and equipment, is as usual everywhere nowadays, is of a high order of design, stimulated especially by the rebuilding and is invariably a very light colour.

The noted German instrument work in machine tools, kitchen ware, refrigerators, barometers and cars avoids the American bellicosity but to us I feel there is often a heaviness bordering on clumsiness. Decoration is precise, the straight line and sharp edges predominating.

The display of clocks and watches in the Berlin exhibition must be one of the finest in the world, though I expect there is a strong Swiss influence. The faces are distinct from the bulk of continental designs, being very readable with shapes and decoration of severe distinction and very metallic.

#### Visits to other factories – The Lorenz Factory in Berlin

Being used as a fort in the siege of Berlin almost completely wrecked the factory – part is now rebuilt and employs about 1,000 hands against the pre-war 25,000. Products manufactured there are the equivalent of those at Southgate Radio Division – transmitters, walkie-talkies, marine transceivers etc made by hand methods.

As competition is fierce and Lorenz costs are high, partly due to transport difficulties, I was closely questioned as to how British costs are lower. It was agreed that one cause was the too substantial construction of pre-war days still prevalent. This is



Repairs an final polishing at the Schaub and Lorenz works

borne out by a recent contract which was successfully carried out in folded metal instead of angle iron and panels for the cupboarded apparatus as Southgate and American practice at much lower costs with, of course, enhanced sales appeal and finish.

The Lorenz stand at the exhibition was showing a high frequency welder from which complicated production seaming of PVC handbags is carried out.

Two costume jewellery factories were visited at Pforzheim, one dealing with the high class trade and art nouveau, mobiles etc and the other with mass produced middle priced products. This firm produces the gold escutcheons and the trade marks. There are personal connections with Schaub which would make possible the production of this kind of work for KB. The firm produces watch cases, has fine chain making machines and produces all the types of bracelets made from pressed links.

A visit was also made to a gold, silver and copper smelting plant, which recovers the pure metal from floor sweepings, filings from the jewellery factories, received in the form of mixed pigs.

#### A few general impressions

Owing to the almost complete wartime obliteration of the centres of all the important towns, all the shops, office buildings and factories are new. The architecture is simple with large areas of window space, flat white walls inside and out and a flat roof with wide eaves projection, a generalisation of the Bauhaus.

All fittings, in which the modern chandelier gives the chief decoration, are gold with the exception of the lever type door handles and these seem standardised throughout. The predominance of untarnished gold finish does not appear gaudy as the spaces around are plain and straight.

Most furnishing and showcases are of light wood with quiet carpeting and curtains giving a cheerful and pleasant effect.

The goods in the shops all appear of good straightforward design and there is a remarkable absence of rubbish. This latter feature gives the impression often heard that that there is a wonderful recovery in Germany with all the good things of life

abounding. There has been a remarkable recovery but the new is only a minute percentage of the loss proved by the desolation adjoining, and prices are high which acts as a form of rationing.

Swiss modern architecture (undisturbed by the war) is on similar lines but more ornate as is all their design – cosmopolitan. Their textiles are very rich.

I must record here the tremendous hospitality extended to their guests by the Directors and the executives of Schaub and Lorenz and their keenness on the exchange of ideas and explanations in great detail of methods and reasons.

Information on the following points would be welcomed by Mr Schmidt – Chief Mechanical engineer:

Tropical conditioning of circuits, transformers, coils and frame aerial finishing etc.

Samples of expanded metal and Tygan weave.

Sample of moulded scale.

Sample of 14" moulded television mask and information or samples of painted rubber mask.

Circuit characteristic of FR.11 output stage.

These items will be forwarded shortly.

During his visit to Footscray last year Mr Hertenstein liked my designs for KB and he suggested that I could give Schaub products some new lines.

# Sony Cubes and Tubes

by Ian L. Sanders, radios photographed by Carl Glover

The predecessor of the six-transistor TR-1829 was the Sony cube radio – the TR-1819 introduced in 1966 – the model that launched a new genre of classic, cube-shaped radios from numerous manufacturers. The trendy styling and wood grain case made it an ideal gift for the office or the home. Judging by the number that continue to appear for sale today, they must have been quite a success for Sony. Coloured versions of the set, apparently introduced in the same year, (the author is aware of red, green and white, but there may well have been others) were given the model number TR-1823. These are much less common today and were presumably produced in smaller quantities. The TR-1819 and TR-1823 featured a large round tuning dial on the top of the cube and, in retrospect, it must have been only a small design step to streamline the cube into a cylinder to contour the diameter of the oversized tuning dial.



In 1967 Sony introduced the TR-1824 – a transitional design between the TR-1819 and the TR-1829 in that it was tubular, but with incongruous volume and tuning knobs protruding from the sides. White, red and orange cased examples of this set are known, but the author has not seen a wood grain version of this particular model. A distinctive feature was the base-mounted speaker, raised from the supporting surface by radial blades, and providing a richer sound than was the norm for small transistor radios of this size and time.

It seems that the set was redesigned later in that same year into the sleeker looking TR-1829. The simplicity and clean

lines of the set with its cylindrical wood grain case set it apart from earlier models and placed it firmly into the category of "executive desk accessory". The large, circular tuning control blended into the tubular case, with a perspex window in the imitation metallic band allowing visibility of the tuning scale. An unobtrusive, thumbwheel-style volume control was located beneath the tuning scale. The bottom mounted speaker of the TR-1824 was carried over into the new design. In addition to the imitation wood grain case, three coloured models have been identified – orange, yellow and white (but, was there a red ?). These are much less common

today and are rarely seen offered for sale. The TR-1829 was available well into the 1970s and present day eBay activity suggests that it was popular in the US, Canada and Australia as well as the UK.

The last chapter in the 1960s Sony cubes and tubes story was the TFM-1837W – an FM-only version of the TR-1819 introduced in 1969. Physically identical to the earlier cube design, the only difference was a telescopic aerial mounted on the top panel. It seems to have been offered in just white and green (called avocado) – both with a gold-embossed design on opposite sides of the case, giving the set a more opulent look than the earlier AM





# TR-1829



### Specifications

**Circuit:** 6 Transistor Superheterodyne  
**Frequency Coverage:** 530-1,605 Kc (566-187 m)  
**Antenna System:** Built-in Ferrite Bar Antenna  
**Intermediate Frequency:** 455 Kc  
**Maximum Sensitivity:** 200 $\mu$ V/m  
**1st 10 mW output:**  
**Sensitivity:** 20 dB at 10 Kc off resonance, at 1,400 Kc  
**Power Output:** 172 mW (undistorted)  
 270 mW (maximum)  
**Current Drain:** 8 mA at zero signal, 95 mA at 270 mW output  
**Speaker:** 2 1/2" 15.7 cm, PM dynamic, 8 $\Omega$   
**Power Source:** Three "AA or Z" Size Penlight Batteries  
 (4.5V in total)  
**Dimensions:** 4 1/2" (114.3 mm) x 3" (76.2 mm) x 1 1/2" (38.1 mm)  
**Weight:** 2 1/2 oz. (340 g)



Below: TR1819 circuit.

**From the people who put William B. in a cube: Johann S. in a cube.**

Sony now makes an FM version of its original little AM cube radio, in white or avocado plastic, that you can set aside in 3 3/4 cubic inches of desk, table, or (with its built-in slot) wall. It's \$19.95\*. Lock, stock, and Bach.

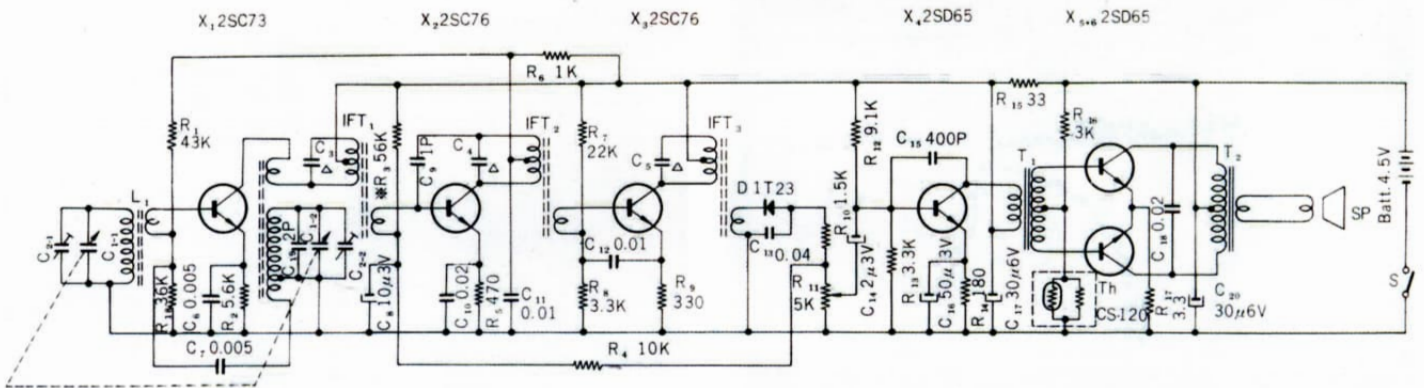
### The Sony TFM-1837W FM Radio.



\*Mfr.'s suggested retail price. © 1969 Sony Corp. of America. Visit our Showroom, 585 Fifth Avenue, New York, N. Y. 10022.

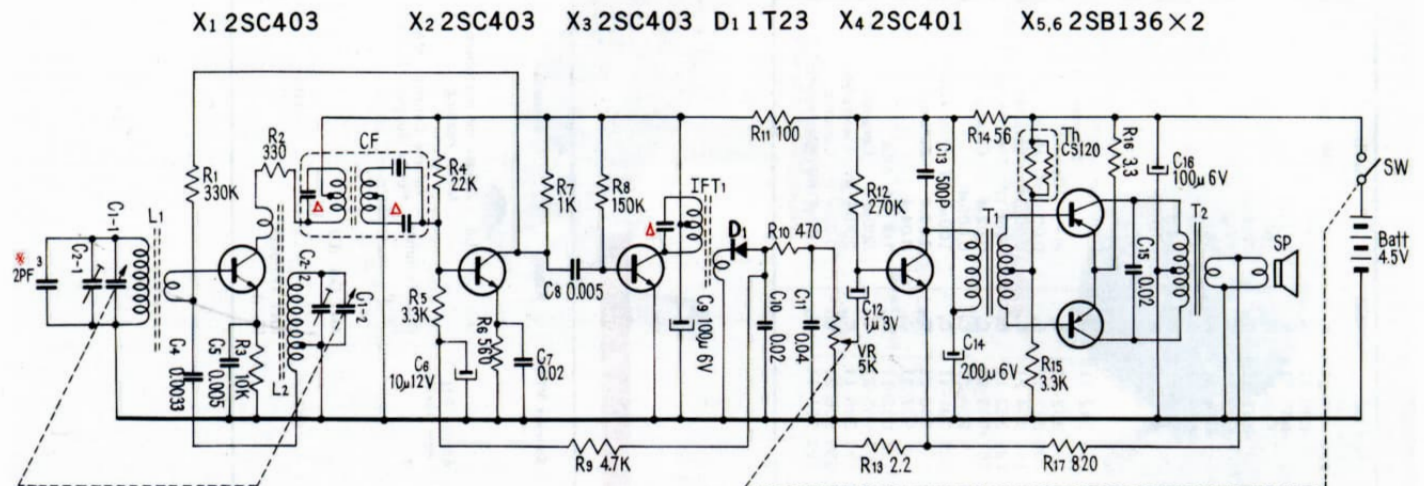
Above: New Yorker Magazine, October 1969.

### Schematic Diagram



\* R<sub>3</sub>: To be adjusted  
 Capacitors marked with "Δ" are built in relative IF Transformers.

### Circuit Schematic



\* To be adjusted  
 Δ Built in IFT, CF

Above: TR1829 circuit.

# Wooton Bassett swapmeet and auction

photography by Carl Glover



Members starting to enter the event at opening time



Long wheelbase Transit van loaded to the roof with auction items



The Wooton Bassett team and some of the BVWS Committee



Front of the stage showing two early colour televisions from the 1960's





Ekco TS701 pre-war television - it sold for £5,200!



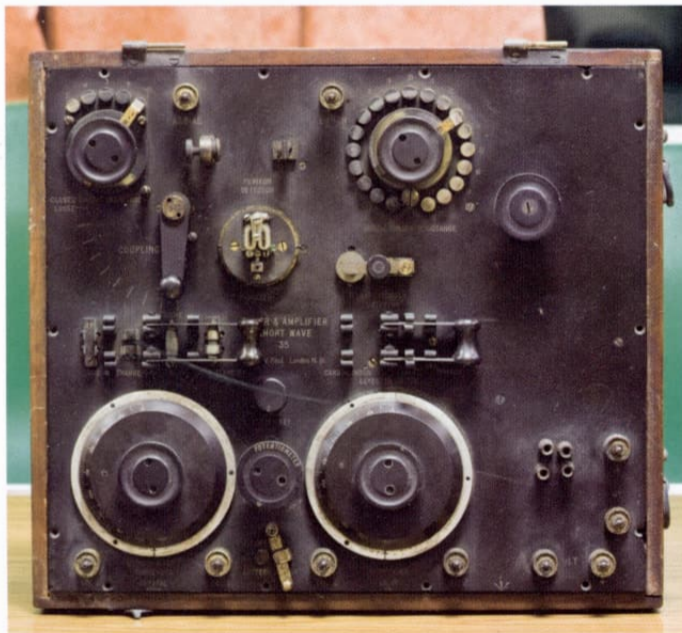
The rear of the Ekco TS701



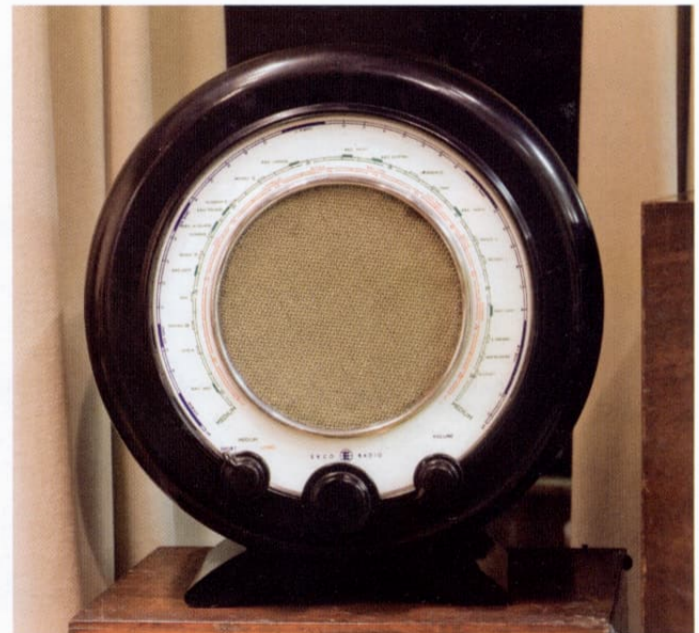
This AD65 was joined by a black and chrome version entered on the day of auction



A colourful table of radios



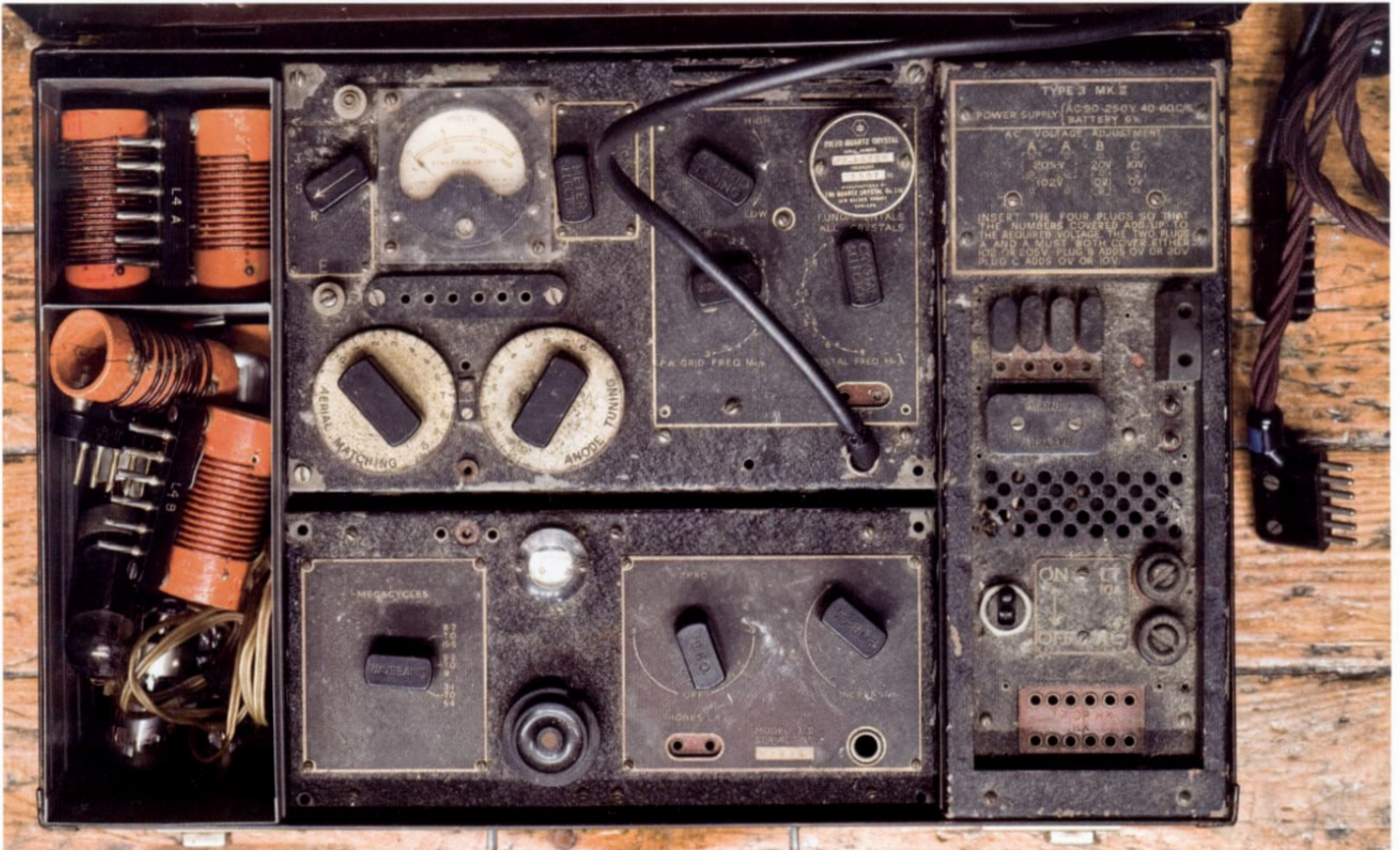
SW tuner Type 35 with one-valve note-magnifier believed to date from 1917



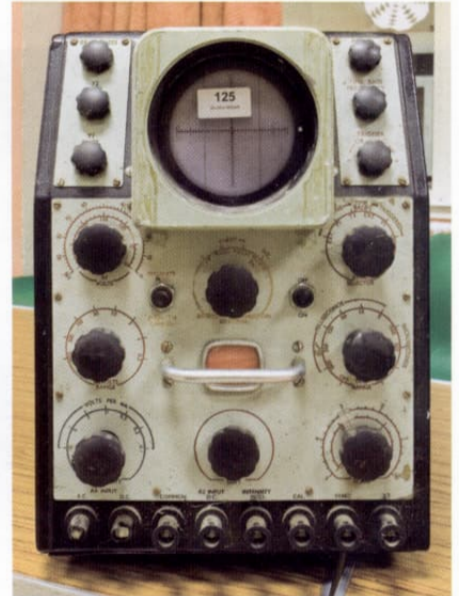
One of the most perfect black and chrome A22s ever seen



Steve Harris holding a rather tasty looking Pye



A spy set, all complete in suitcase



Avo's galore!





Belgian SBR in lovely condition



# Valve Tester VT1 by Mike Rowe

The VT1 will test a selection of 6.3v heater valves, apart from rectifiers. Bases fitted are B7G, B9A, B8a Rimlock, and International Octal, although others may be added in parallel with the existing bases. The AVO principle of selecting pins is used, using the same numbering used on the CT160. Sockets are fitted for anode and grid top caps. If required a copy can be downloaded from <http://bama.edebris.com/manuals/avo/vcm-data-new-edition/>.



The mains transformer used is an Elstone replacement type, rated at 250 – 0 –250 @ 80mA with 2 x 6.3v heater windings. One is used for the valve under test and the other to supply one of the DVM modules. The other 2 modules are supplied by a separate 0 – 6 0 – 6 3VA transformer as it is essential that each DVM module has its own supply.

2 small PCB sub boards house the filament relay and the leakage amplifier.

## Principle of Operation

HT for the VT1 is by full wave solid state rectifiers. Anode and G2 supplies are fed from separate current limited FET regulators. Stabilised supply for these is fed from a constant current source (TR1). Independent 11 way switches with fixed voltage control each of the FET followers. The voltages are selected to give ranges suitable for most

radio and amplifier valves, if required, they can be altered by replacing resistors in the potential divider chain. These resistors are mounted on the switch contacts. A 75kΩ resistor represents a 25v change in output.

Anode current is measured by reading the voltage developed across R13, 100mV equals 100mA and can be read to 0.1mA resolution using a 200mV DVM.

The negative supply for the grid is derived from a separate 15 0 15v transformer mounted on the PCB, the windings connected in series giving a negative supply of about 40v.

The grid voltage itself is derived from the series regulator TR8, the base voltage controlled by a multi-turn pot. This gives a smooth control with 0.1v resolution, with a low output impedance. Protection against flashover is by D7.

Also applied to the grid is an audio

sine wave. During testing, an amplified version of this is developed across the sensing resistor R12 in the anode circuit. This is directly measured on a 200mV AC DVM to read the mutual conductance of the valve, the same principle as used in the AVO VCM163. 1mV across R12 is the equivalent of 1mA/V Gm. The DVM reads to 0.1mV so for example an ECC83 will read approx 1.6 mA/V (1.6 mV on the DVM)

The uncontrolled negative voltage also supplies the audio oscillator (regulated by ZD18), the 2 relays, the indicating LEDs and the leakage indicator sub board.

## Function Switch

Posn 1 Heater Check.

In this position, the valve heater is not energised. A green LED is connected in series with the valve heater back to 0v, this will light if the heater is intact.

## Posn 2/3 Leakage.

In these positions insulation is checked between the anode and G2 to the grid and suppressor with the valve hot. The BC237 on the sub board amplifies the leakage current and supplies the "leakage" LED. The LED will light with a leakage of approx 1M and full brightness with a short circuit. As the heater supply is floating, and the cathode at 0v, another LED is connected to the -ve supply, this will indicate any cathode/heater leakage. Full brightness indicates a short circuit, 47kΩ leakage will just light the LED.

## Posn 4 Test

In positions 1,2 & 3 no HT is applied to the valve under test. In posn4, the HT relay is energised and also the Va and VG2 voltages are fed to the valve. For double section valves, anode1 or anode2 may be selected.

## Testing a valve

Set the function switch to "Heater Check"

Set up the pin selector switches per the AVO numbering system.

For example to test a 6V6GT set to

PIN	1	2	3	4	5	6	7	8	9
POSN	0	2	6	5	4	0	3	1	0

Set Va and VG2 to 250, set Vg to -12.5

## The HTR LED should light

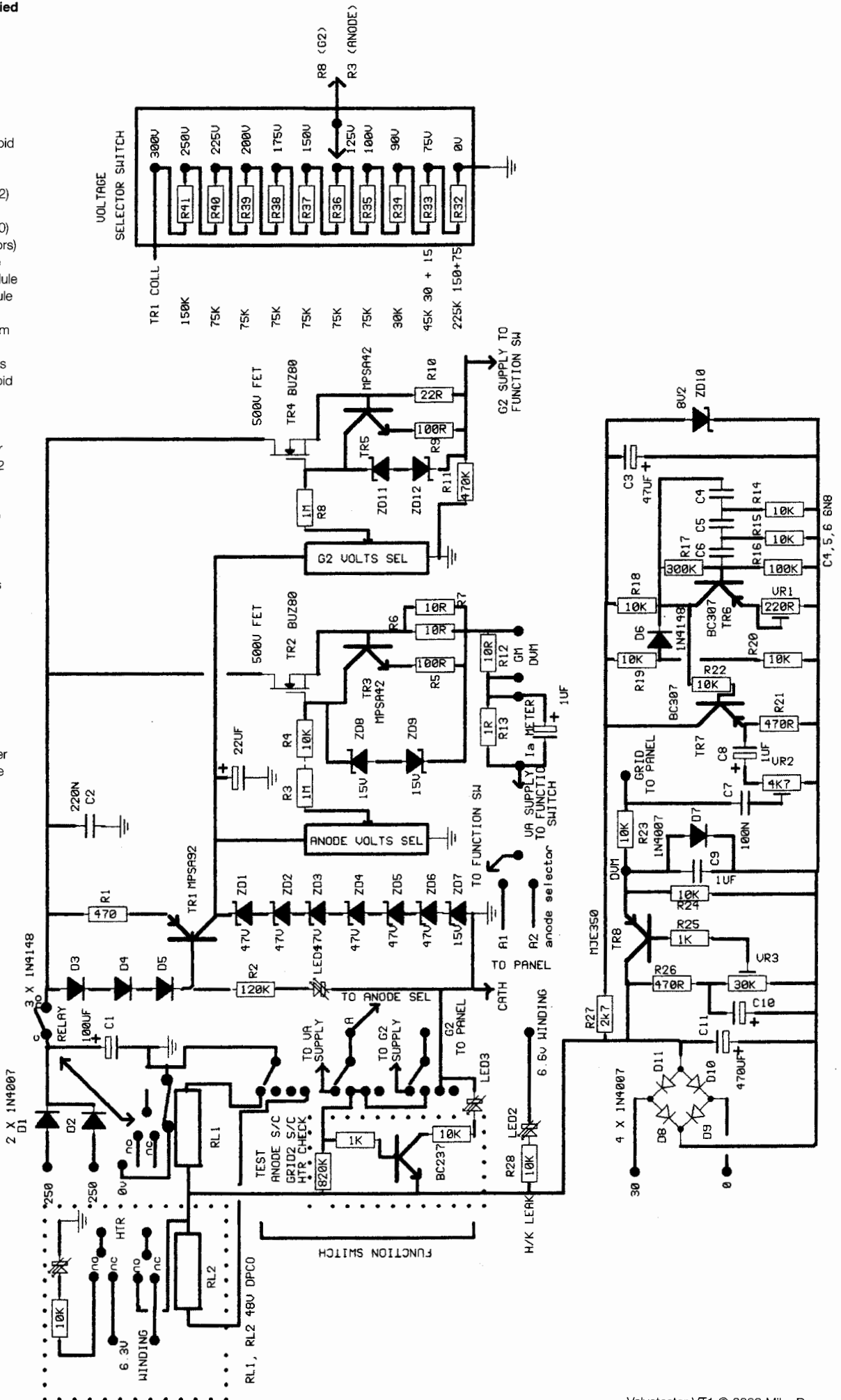
Set to "Leakage" positions 1 & 2, C/H and leakage LEDs should be off. Any slight illumination of the C/H Led may be ignored. The heater should now be on. Wait for a few moments, then switch to "test", anode current and Gm should now be displayed on the centre and right hand DVM.

**Components not specified on circuit diagram**

- C10 10uF 63v
- Not identified TR2/4
- BUZ80 or similar. TR1
- MPSA92. TR3/5 MPSA42
- 2 x 1p 12w Make before Break rotary switches (Rapid Electronics 79-0100)
- 1 x 3p 4w rotary switch (Rapid Electronics 79-0222)
- 10 x 1p 12w rotary switch (Rapid Electronics 79-0220)
- (A1/A2 sel + pin selectors)
- 1 x 200v DC DVM Module
- 1 x 200mV DC DVM Module
- 1 x 200mV AC DVM Module

These were purchased from www.accessory4you.com

- 1 x 6VA 0-6 + 0-6 Chassis mounting transformer (Rapid Electronics 88-0250 or similar) to power 2 DVMS
- 1 x 6VA 0 -15 + 0 -15 PCB mounting transformer (Rapid Electronics 88-3872 or similar) windings connected in series.
- LED1 Standard green LED
- LED on relay green LED
- Standard Green LED
- LED2 LED3 Low Current red LED (Rapid Electronics 56-0430 or similar)
- Relays 2 x 48v low profile 8A (Rapid Electronics 60-4854 or similar)
- Valve bases to choice
- Top cap sockets to choice
- Mains transformer Elstone replacement type, 250 - 0 - 250 @ 80mA, 6.3v @3A, 0 - 5 - 6,3v @2A (The latter winding used to power one of the DVMS). Any similar type could be used.

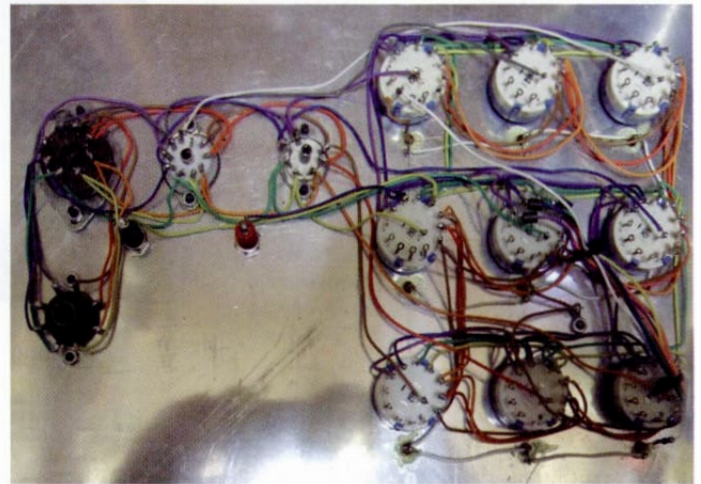


PCB tracking leakage amplifier

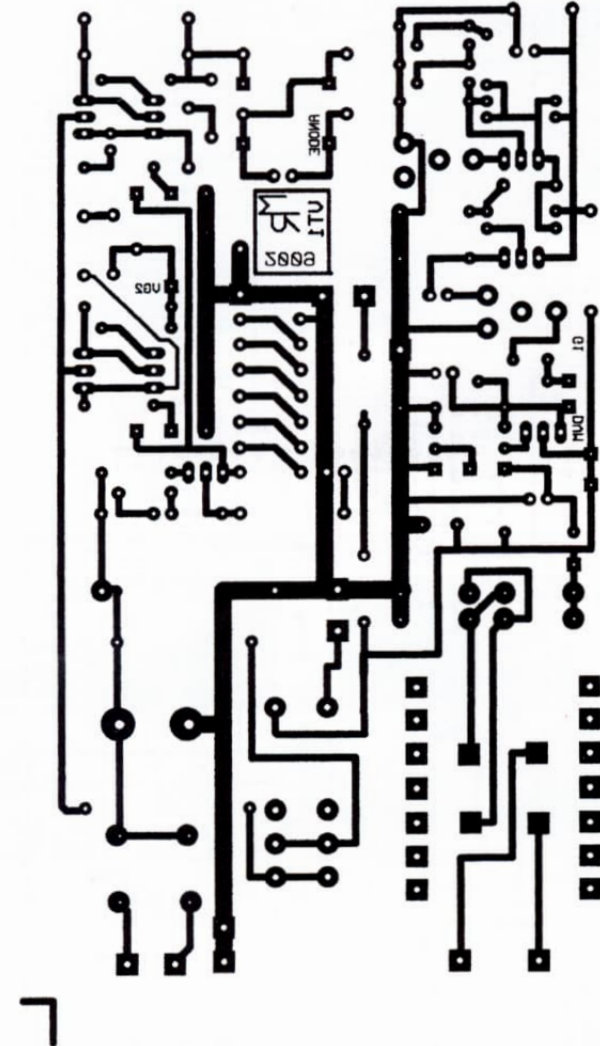
PCB Tracking heater relay



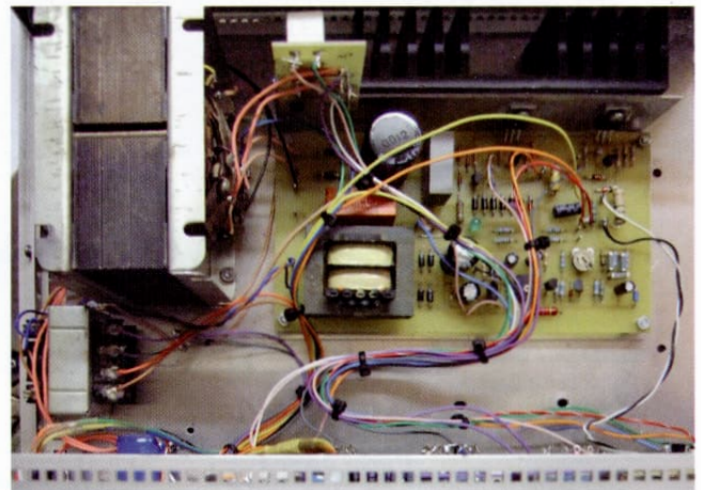
The top panel



Top panel wiring



Main PCB tracking. See note in Construction Hints regarding transformer tracking



Looking into the valve tester

Always switch back to leakage when changing the voltage settings for A2 when checking dual valves.

Always switch off (or switch to heater check) the tester before changing the pin selector switches

**Construction Hints**

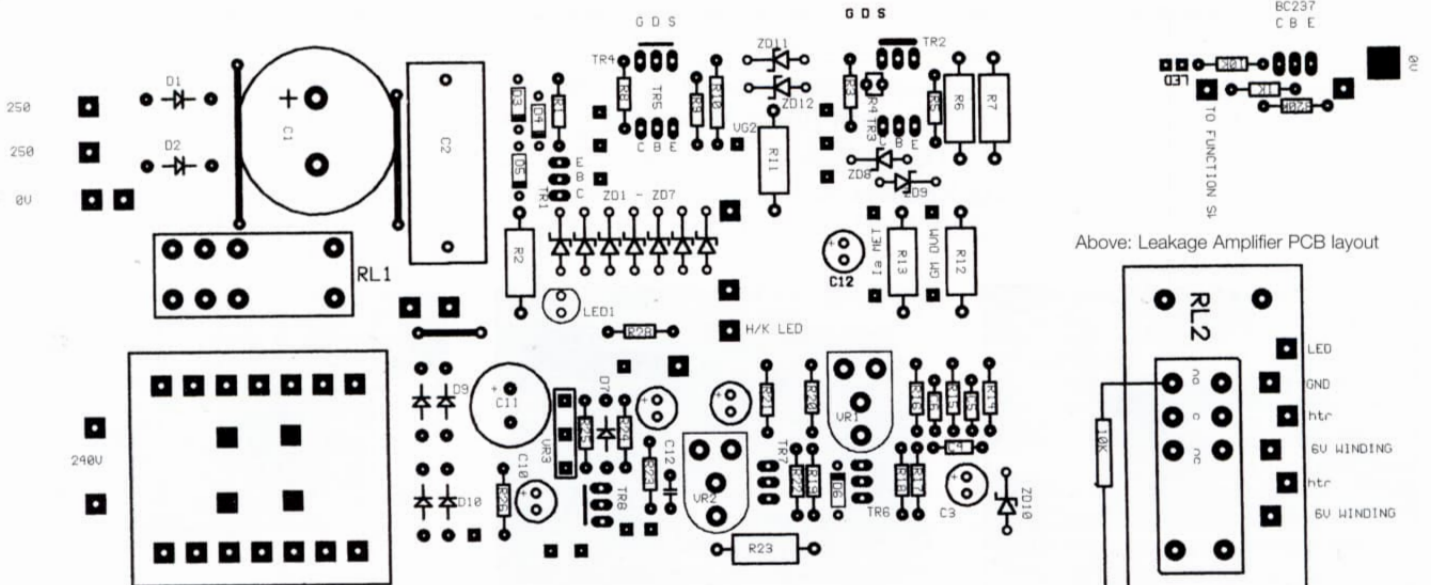
PCB tracking around the LT mains transformer needs some clarification. It appears that several pin layouts are used by different manufacturers. The pad pitch should accommodate this, but it will be necessary to hard wire the mains primary and LT secondary to the pads provided in the centre of the layout.

After building the PCB, I mounted this on a sub chassis with heatsink. It is necessary to fit mica insulating washers under the Power FETs. Fuses are fitted to the mains input to the primary of the mains transformers. A second fuse is fitted between the centre tap of the HT secondary and ground to protect in case of rectifier short circuits and HT short circuits. It is easier to use colour coded wire to connect up the valve bases and the wiper of each selector switch, also from each of the switch poles which are connected in parallel and the main body of the tester.

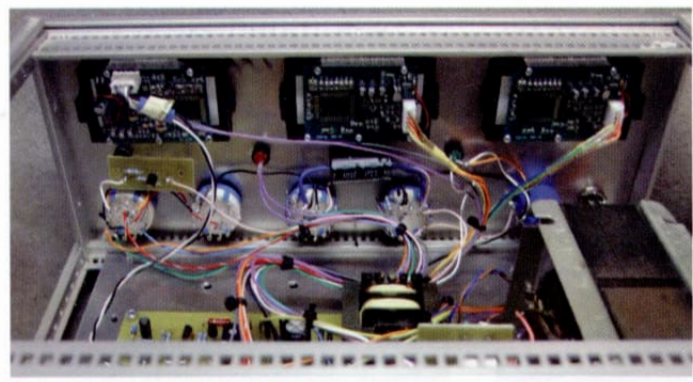
I did experience some instability when checking some high Gm valves (those with a

Gm in excess of 20mA/V, this was cured by fitting a couple of ferrite beads to each pin of every valveholder and to the common pin of each switch contact where it connects to the main assembly. Also connect the cathode pole of the selector switch to the top panel metalwork and the 0v line of the main PCB to the metalwork. It was not necessary on the prototype, but if the anode or screen voltages are incorrect, it may be necessary to insert a resistor in series with the voltage switch if the voltage is high, if low I would suggest altering the value of the 15v zener. The leakage LED PCB is supported by the LED and a stiff wire to a spare position on the anode selector switch.

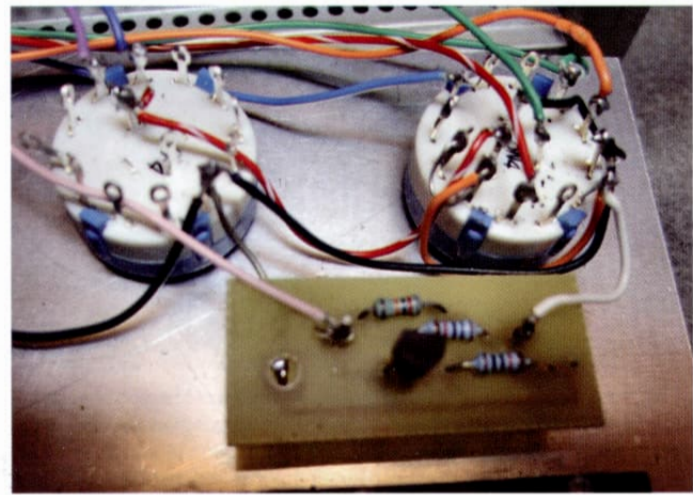




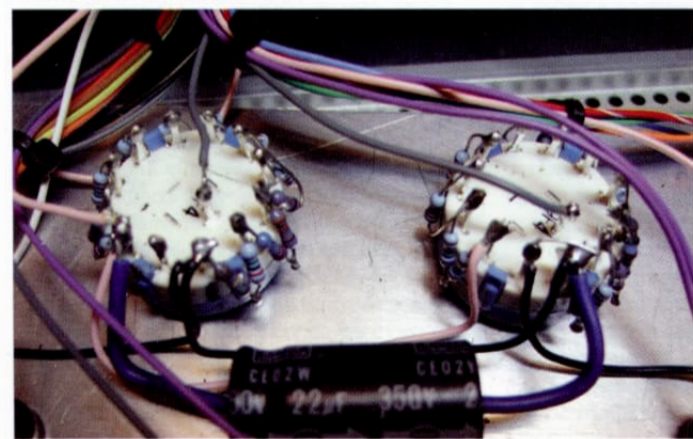
Printed circuit component placement



Rear view of front panel



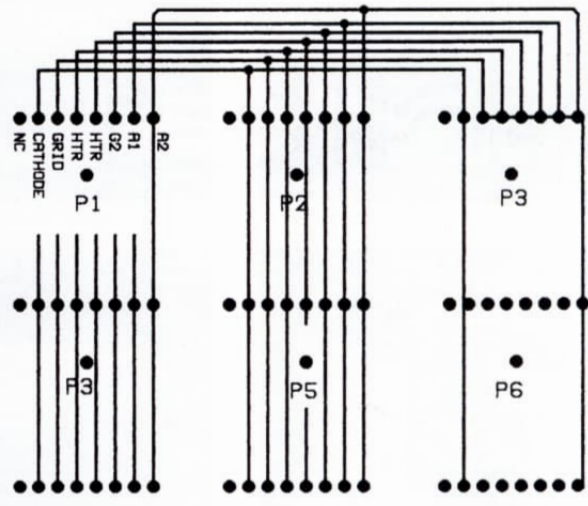
Function switch and anode selector



A and G2 Voltage selector switch wiring

Above: Leakage Amplifier PCB layout

Above: Heater relay PCB layout



P7 P8 P9  
 ALL SWITCH CONTACTS CONNECTED IN PARRALEL THEN WIRED BACK TO THE MAIN BODY OF TESTER  
 ALL VALVE PINS CONNECTED IN PARALLEL AND CONNECTED TO COMMON ON EACH SWITCH  
 ie BASE1 P1 TO BASE 2 P1 etc TO SWITCH1 COMMON

Panel selector switch wiring

**Setting up and checking**

Using an oscilloscope or DVM, check the audio oscillator (TR7 emitter) for reliable operation when switching on, adjust VR1 for best reliability and waveform.  
 The following checks on my prototype showed the following with Function Switch at Posn 4  
 HT at C1 386v  
 -VE at C11 -40v  
 Variation of bias 0 - 37v  
 Audio signal at grid pin 106mV set by VR2  
 Frequency of audio signal 1014Hz  
 Connect a 1M resistor between anode and grid, the leakage LED should light up  
 Connect a short circuit between HTR and Cathode pins on the valveholder, C/H LED should light.  
 Displays should show -ve Grid voltage and zero on both anode current and Gm meters

# French polishing for beginners by Colin Wood.

My introduction to French polishing goes back to 1976 when I had completed my first veneering project and wished to finish it with French polish. I bought a book entitled *Staining and Polishing* by the author Charles H. Hayward. The book was very detailed covering Staining; Filling-in; Fading; Colouring; Coating and Bodying followed by Stiffing; Spiriting and Acid finish. With materials such as Rose tint; Lamp black and Skin wadding included I varnished the project and put the book away.



Very limited space



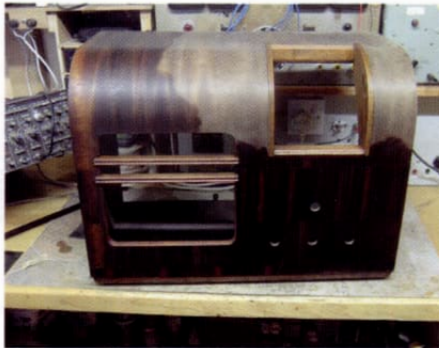
Scraping the front



Fully scraped



Bare cabinet



Applying linseed oil



Applying walnut stain



Spraying lacquer



Did I do that?



Nice shine

Adopting the restoration of vintage radios as a hobby when I retired in 2000 it wasn't long before I needed to French polish a cabinet. I remembered only too well how the subject had terrified me all those years ago but decided to try once again.

Buying the French polish (Shellac) was easy but tracking down skin wadding proved very difficult; eventually I was given a small piece by a local upholsterer and I now buy all my finishing materials including the wadding from Restoration Materials in Bury. This company supplies a vast assortment of hard to find materials all under one roof.

Over the years I've refined my method of French polishing and will use my Bush SW45 as a donor to show just how easy it is. I bought this Bush a few years ago thinking it to be the ugliest set I had ever seen; it looked so somber and dull leaving me to believe

it might be stripped for its valves with the remainder going to landfill had I not bought it; I used t-cut at the time but it still looked very poor although in general the finish was good.

I removed the old finish using a sharp cabinet scraper and was disappointed expecting to see better contrast between the Australian Walnut and Dark Macassar Ebony veneers. I removed the outer surface of the veneer taking care not to break through but the veneer was like scraping charcoal just producing dust rather than the usual fine shavings. With the cabinet completely scraped it looked ready for throwing into a skip as surely I couldn't restore this?

I spent a great deal of time flattening using 600 grit abrasive paper finishing off working with the grain. The cabinet looked better for this but still didn't inspire me. I repaired the veneer where it had parted

to the rear two top corners and also patched a small damaged piece adding new veneer all done using hot hide glue.

With the repairs completed and flattened the cabinet was dusted off; I applied walnut stain to both sides of the cabinet as they were much too light in colour allowing the stain to dry then I applied a coat of raw linseed oil; the effect was outstanding as the veneer colours suddenly jumped out at me and cheered me considerably. The linseed oil was left for a few days to completely dry.

I had bought some Button shellac from eBay and this was supplied in the form of large flat discs which I broke into smaller pieces using a hammer; I filled a clean jam jar to one third with the broken shellac pouring in two thirds of methylated spirit adding the lid. Like the scraping the shellac didn't want to behave; I spent over a week agitating the

shellac trying to dissolve it; I couldn't wait any longer so decided to apply two very heavy coats of this shellac to the cabinet using an artists No.2 fan brush. Whilst I was doing this work the weather outside was abysmal causing massive flooding in Cumbria leaving many homes flooded; it was constantly pouring with rain; cold and very dark; I was trying to work under a single strip light with the central heating radiator full on; it was like working in a black hole. The shellac was left overnight to dry.

The following morning I couldn't believe how badly the shellac had gone on, it was full of what looked like grit and had lots of tiny debris in the surface. The tramlines in the finish were so bad Mallard could have done its record breaking run on them. This cabinet was now starting to really test my patience as nothing at all was going to plan and I felt as miserable as the weather. I flatted the entire cabinet with 600 grit abrasive paper but used a tip I had picked up by lubricating the paper with talcum powder.

I made a traditional French polishing rubber using skin wadding inner and soft cotton cloth outer. The choice of outer cloth is critical if good results are to be obtained. I never try to use any cloth that is hard or shiny finding something like a clean worn out men's cotton hanky to be ideal; one that is threadbare having been washed many times. I charged the rubber with thinned shellac adding the shellac to the inner wadding and pressed the sole of the rubber onto two pages of an old TV Times taped to the bench; I do this every time I charge the rubber and it shows at a glance if the rubber is overcharged by shellac oozing out or undercharged not leaving a deposit on the paper. I'm looking for an even wet patch showing on the paper then I can apply the rubber to the cabinet.

I use circular motions of the rubber about 3" diameter and apply a layer of shellac to each panel in turn taking a great deal of care not to let panel edges or openings such as for the grille or dial to act like a scraper allowing runs onto adjacent panels. If runs occur then I leave them well alone because to try to remove runs at this early stage using abrasive paper will possibly result in cutting right through the thinner surrounding layers of shellac down to bare veneer; I find it better to ignore runs and apply more layers over the top; the runs tend to diminish in size as more layers are added and can be removed later with a light flattening. I keep applying more shellac charging the rubber as it becomes depleted and testing each time on the paper until the panels start to feel a bit tacky; this is the warning sign to stop and let the shellac dry for an hour or more before proceeding. I never use linseed oil to lubricate the rubber as this creates more work later by having to remove the oil and there is also a risk of trapped oil appearing at a much later date. I left the shellac to dry overnight.

The following morning the surface looked dire and I couldn't believe I had made such a poor job of it. In desperation I spent over six full hours flattening using 1,200 grit abrasive paper lubricated with talcum powder. The talcum powder is brilliant at preventing the

paper becoming coated with shellac and in all this flattening I used less than one sheet. I was very careful and kept checking to ensure the lines of gloss were being removed without breaking through to bare veneer whilst flattening. To supplement the strip light I hooked up a spotlight enabling me to see the surface more clearly. As I flatted I kept wiping across the surface with my free hand and watched as the tiny lines of gloss became smaller in the surface; these lines of gloss are where the shellac has settled into the grain filling it. By the time I had finished this marathon flattening session my arms were dropping off and in bed I was suffering terrible pain to my neck and shoulders.

The day after I couldn't continue as I still ached and couldn't face using my arms to apply more shellac so had a rest.

As I inspected the cabinet on my next session I knew everything was going to turn out well; the surface was dead smooth and the grain was filled and as in confirmation the incessant rain had cleared and the sun was shining. I changed the cloth on the rubber and added 50% meths to the shellac making the shellac very thin. I charged the rubber and tested it on the paper. What a difference the very first stroke made; the



The completed set

shellac went on perfectly leaving a lovely shiny trail behind the rubber; I now used straight strokes of the rubber working with the grain and applied many very light layers of shellac building up the finish. The final result amazed me after all the frustrations I had suffered. The cabinet had finally shaken hands with me making friends.

I still wasn't happy with the general appearance of the cabinet although the French polish now looked superb. In particular the grille surround; two grille bars; dial opening and feet didn't sit well with me at all as the colour was too light and the timbers used were nothing special. I decided to take a huge gamble and spray these items with auto satin black lacquer. I visited our local auto accessory shop and bought the spray can of lacquer but they were out of stock of masking tape. I had a supply of masking tape previously bought from Poundland and used this to mask the cabinet with paper; I only allowed approximately 1/8" of tape to touch the cabinet whilst masking. I opened the workshop window and sprayed the exposed parts in stages allowing each coat to flash off before applying more coats; I kept turning the cabinet exposing level surfaces as I didn't want any paint runs at this late

stage. The smell of the lacquer carried right through our bungalow and lingered for quite a while. Meths and lacquer are extremely volatile so ventilation is a must and also rags used to remove linseed oil must never be left in a pile as they can self ignite.

I very carefully removed the masking tape and paper as soon as the lacquer had flashed off only to find the lacquer solvent had attacked the tape adhesive allowing the lacquer to creep under the tape in places so this was yet another job in removing the unwanted lacquer. I hadn't noticed how the job had gone whilst removing the masking but as I stood back looking at the cabinet sitting on the bench all my frustrations vanished; the ugly duckling was now a beautiful swan.

The shine on this cabinet wasn't as good as I've achieved previously so I used a favourite product called Meguiars Swirl remover #09 topped with Meguiars Showcar glaze #07. I've used t-cut for many years but always disliked it; the finish would have a haze when viewed from a certain angle and if allowed to dry t-cut was a pain to remove; this applies to other products I've tried over the years. I can't praise Meguiars products enough and the shine now imparted to this cabinet caused problems with taking pictures due to reflections.

I'm pleased this cabinet gave me so much grief because if I can produce a finish such as this given all the difficulties encountered then anyone can; I was working in gloomy light; the weather was terrible; bench space was cramped; the shellac refused to dissolve; the veneers didn't want to be scraped and the masking tape was unsuitable.

In summer I can complete a French polish job on a cabinet in a week; usually in only three stages; apply heavy base coats of shellac by brush; carefully flat off using abrasive paper lubricated with talc and apply finish layers of shellac with a rubber initially using circular movements and finally straight strokes going with the grain. Whilst flattening extreme care is needed at edges or openings to avoid breaking through to bare veneer and I can't stress this enough.

I added this cabinet restoration to Paul Stenning's vintage radio forum in the hope of encouraging others to have a go because by exercising a great deal of patience French polishing using this method is easy.

As a final touch I'm going to experiment with making a Bush logo using computer graphics for the design and hopefully print onto water slide transfer paper. I located a website selling water slide transfer paper and am currently receiving a great deal of most welcome help from them.

**Materials** [www.restoration-materials.co.uk/](http://www.restoration-materials.co.uk/)

**Water slide transfer paper**

[www.craftycomputerpaper.co.uk/products-linkjet-water-slide-decal-paper\\_151.htm](http://www.craftycomputerpaper.co.uk/products-linkjet-water-slide-decal-paper_151.htm)

**Radio forum**

[www.vintage-radio.net/forum/index.php](http://www.vintage-radio.net/forum/index.php)

**Making a rubber**

[www.aw-antiques-collectibles.co.uk/furniture/french-polishing.php](http://www.aw-antiques-collectibles.co.uk/furniture/french-polishing.php)

**Swirl remover & Glaze**

[www.performancemotorcare.com/acatalog/Meguiars.html](http://www.performancemotorcare.com/acatalog/Meguiars.html)

# A useful perspective on John Logie Baird

Book review by Malcolm Baird

**Images Across Space: the electronic imaging of Baird Television.** Douglas Brown

Middlesex University Technical Resources, 2009, ISBN 978-1-874289-21-0, Paperback, pp 180 £19.95, available from the publisher, Amazon UK and elsewhere

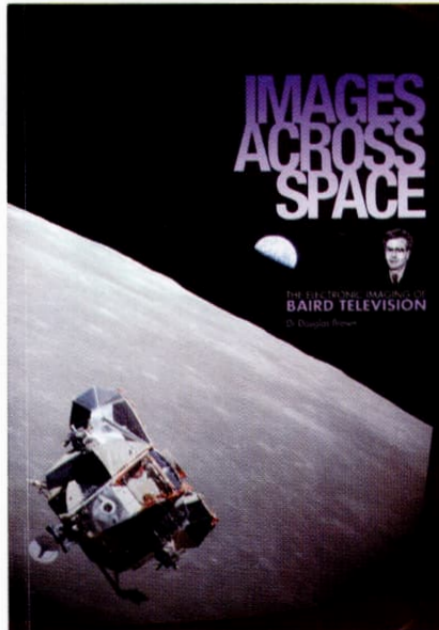
John Logie Baird is an illustrious and sometimes enigmatic figure in the history of television. Old press photographs show him as a long-haired young man wearing a rather loud checked sports jacket, standing by an assembly of rotating discs and neon lamps. This apparatus was mechanical television and in 1926 it was hailed as the first working television system in the world. In 1928, head-and-shoulders television pictures were sent across the Atlantic by short wave, making headline news in British and American newspapers. Baird's early fame has led to an inaccurate stereotype of him as a lone inventor whose achievement was limited to mechanical television.

Dr. Douglas Brown's long-awaited book helps to dispel this image by showing that Baird was active in electronic television from 1932 onwards. This book is not a biography in the usual sense. In his Preface, Professor John Cave of the University of Middlesex describes it as "an internalist history". The first half of the book contains about 40,000 words of close-packed text and the second half is taken up with a glossary, appendices and reference material. This includes lists of the 176 patents taken out by Baird himself and the 328 patents taken out by members of companies connected with him. There is a generous provision of photographs and diagrams. The book is based mainly on Dr. Brown's M.Phil and Ph.D. theses at the University of Strathclyde in Glasgow, completed in 1996 and 2000 respectively.

The book opens with a brief history of electronic television which by the early 1930s was beginning to replace mechanical television at the cutting edge. There is a biographical sketch of the American television pioneer Philo Farnsworth, whose Image Dissector camera tube was adopted and modified by Baird Television Ltd. (BTL). The other leading electronic pioneer was the Russian-born Vladimir Zworykin who was backed by the immense resources of the Radio Corporation of America (RCA). The competition between the two Americans for the title of "inventor of electronic television" is carefully analysed by Dr. Brown. Although a US court assigned priority to Farnsworth's patent, the more successful technology of Zworykin and RCA was adopted and modified in England by a specially-formed company called Marconi-EMI. Early in 1937, this company narrowly defeated BTL in the competition to provide the BBC's "high definition" television system. The British 405-line system, which was finally phased out in 1985, was remembered affectionately in a quarterly magazine entitled *405 Alive* which became part of the *B.V.W.S. Bulletin* in 2001.

The main coverage of this book starts in 1932 when BTL, which had been in financial difficulty, was taken over by Gaumont

British Pictures. Soon afterwards BTL moved from its cramped quarters in central London to more spacious premises at the Crystal Palace, located on high ground in the south-eastern suburb of Sydenham. After the takeover, Baird retained a nominal but well-paid position as managing director while a large new technical department was created under the direction of Captain A.G.D. West. Baird himself established a small but well-equipped private laboratory next to his house at Sydenham. For both Baird and the company, the main focus of research shifted from mechanical to electronic television. With its new financial backing, BTL set out to hire brilliant young scientists many of whom were refugees from Europe, including Dr. Alfred Sommer and Dr. Constantin Szegheo, as well as local people such as Gilbert Tomes and Ray Herbert. Dr. Brown quotes extensively from



the reminiscences of these individuals, whereas conventional biographies of Baird have focused more on his personal life and his interaction with higher-level figures such as colleagues on the board of BTL. Dr. Brown gives us a useful technical perspective on which he is well qualified as he holds several patents on 3D imaging.

The book takes us through BTL's troubled ten-year history, marred by its unsuccessful competition with Marconi-EMI for the BBC's high definition contract, and by the disastrous fire at the Crystal Palace which destroyed its laboratories and studios. The company partially recovered from its setbacks while research progress was being made on several fronts by its younger recruits. However in 1939 the BBC closed down its television broadcasting and BTL went

into receivership. Some of the company staff, including Captain West but not including Baird, were taken into a much smaller company called Cinema Television Ltd. (CTL) which had been created earlier as an offshoot of BTL. The CTL title was somewhat of a misnomer because during the war it became a defence electronics company, operating largely in secret and making proximity fuses, special cathode ray tubes for radar receivers, etc. It also changed ownership, being taken over by the Rank Organisation in 1941. As seen in the Public Records Office files in Appendix 4 of the book, CTL was referred to loosely as "Baird Television" or simply "Bairds". However Baird himself was not mentioned in person in the PRO files.

Baird continued an independent research programme at his private laboratory in Sydenham, largely at his own expense, obtaining 26 patents. In my opinion the most interesting chapter in Dr. Brown's book is the final one which describes Baird's very productive wartime research on 3D imaging. The work was performed under difficult conditions with one assistant, Edward Anderson. Baird's patent GB 573,008 goes far beyond the 3D television which is being promoted to modern consumers. The publicly available "3D" sets have a flat screen and require that the viewer should wear special glasses to give an illusion of depth. On the other hand, Patent 573,008 is on the formation of a truly three dimensional (volumetric) image enabling the viewer to look around it without special glasses. Baird died in June 1946, just a few months after his patent was granted, so his imaging device (which he tentatively named *The Phantoscope*) has not been publicised until now.

Although his book is detailed, Dr. Brown has discreetly refrained from comment on published claims that in World War II Baird was personally involved in secret work for the government concerning radar, etc. During the past 20 years these claims were hotly debated among historians of both television and radar. Critics of the claims argued that there was not enough information to justify them, while supporters argued that further information was still being gathered. While this book has taken no position in the debate, it will provide a good technical resource for the debaters. The descendants of John Logie Baird are hoping that the uncertainties about his wartime activities can eventually be resolved, one way or the other.

Malcolm Baird is the son of John Logie Baird and co-author with Antony Kamm of "John Logie Baird: A Life" (2002). He was co-author with Douglas Brown of an article entitled "John Logie Baird's Last Projects" in the *B.V.W.S. Bulletin*, p.43-45, winter 2008.

# George Hunt - his role in wireless

by Stuart Biellik

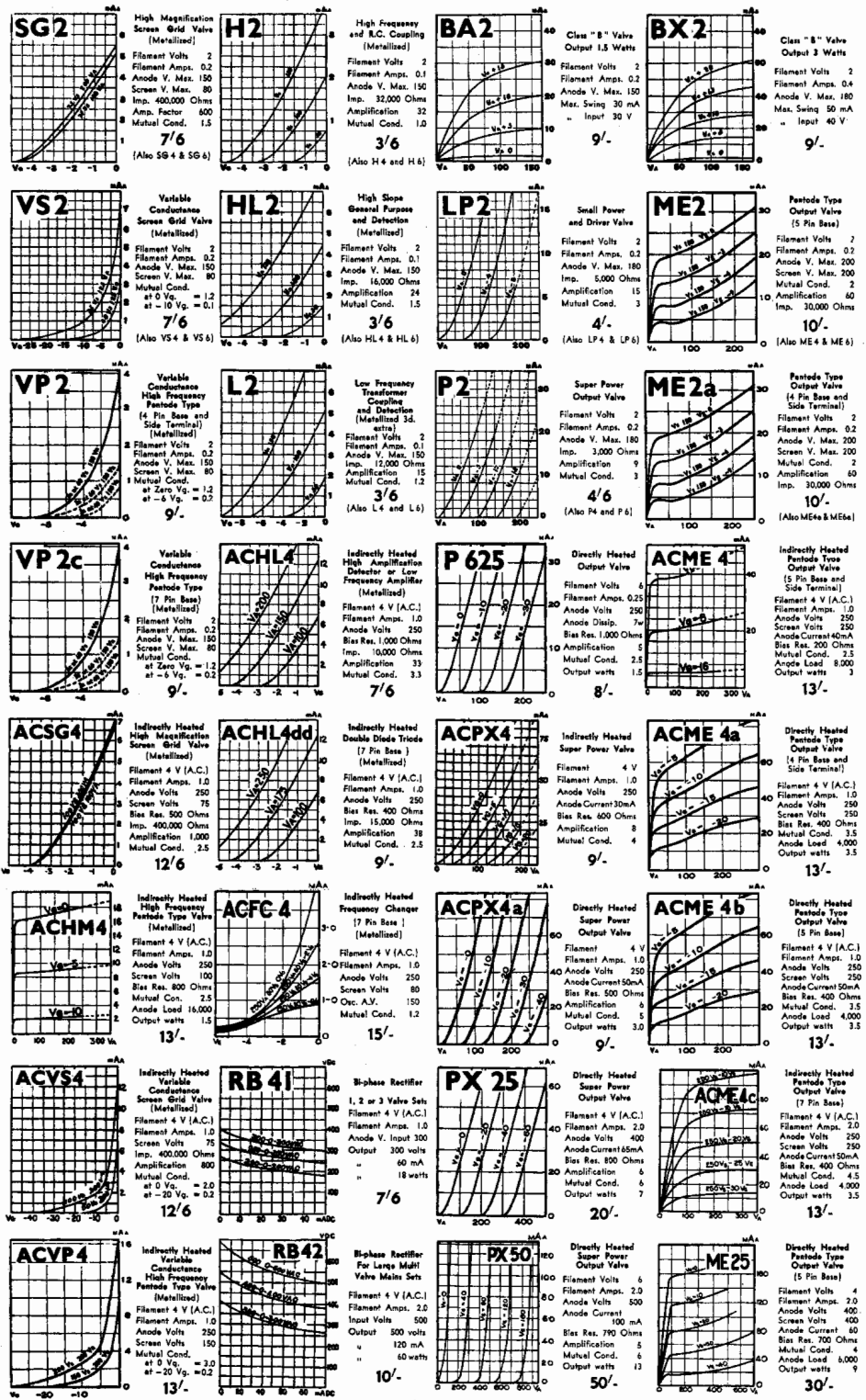
The leaflet partially reproduced on this page was found in the collection of Mr George Arthur Hunt B.Sc, C.Eng, and F.I.E.E. The leaflet is double-sided, approx. 13 1/2" X 8 1/2", and folded into quarters. George was born on 26th June 1911, and worked as a Technical Supervisor at the 362 Radio Valve Co. in charge of the Test department, Mounting Dept (!) and Stores. He was also employed in development work, ageing and testing. Here he was responsible for the 'Honeycomb' or cellular anode, and for the ACPX4a and ACME4(a), both of which used this Honeycomb anode. These were Triode and Pentode types respectively, and were conservatively rated at 12 watts Anode dissipation. A full article on his life and work is in progress, and will appear in a future edition of the Bulletin.

## Reliable Radio 362



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**THE 362 RADIO VALVE CO., LTD.**  
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Phone: CLISSOLD 1294 & 6607



COMPARATIVE TABLE  
**A.C. MAINS VALVES.**  
MAINS VALVES (4 Volt Indirectly Heated)

362	Concor	Marconi	Meade	Mullard	Tungsten	Hivac
AC84	H10/LA H82/LA	H54B AC84	AC31 S4V	S4V8	AS12B AC/SH	AC/SH
AC84A	H5/Pan	VYH4 H54	AC32Pm	S4	HIM100	AC/VP
AC84B	H55G	VY84 VY84	AC31VM	VY84	AS13B	AC/VP
ACV4	HV5/Pan	H54 VY84	ACV4	V4	H4105	AC/VP
ACV4A	41H/L 41H/L	H44 H44	ACV4A	46V 35V	AK101	AC/HL
ACV4B	41M/LP 41M/LP	H44 H44	ACV4B	46V 35V	AK101	AC/HL
ACV4C	H4/Pan	H44 H44	ACV4C	46V 35V	AK101	AC/HL
ACME4	H4/Pan	H44 H44	ACV4C	46V 35V	AK101	AC/HL
ACME4a	H4/Pan	H44 H44	ACV4C	46V 35V	AK101	AC/HL

DIRECTLY HEATED OUTPUT VALVES & RECTIFIERS

362	Concor	Marconi	Meade	Mullard	Tungsten	Hivac
RB41	808/LJ 808/LJ	U10 U10	U10A/20 U10	DW2	PV8	—
RB42	808/LJ 808/LJ	U14 U14	U10B/20 U10	DW2	PV8	—
ACPX4a	4XP	PX4	PX2/20	ACPX4	P40	—
ACPX4b	4XP	PX4	PX2/20	ACPX4	P40	—
ACPX4c	4XP	PX4	PX2/20	ACPX4	P40	—
ACPX4d	4XP	PX4	PX2/20	ACPX4	P40	—
ACPX4e	4XP	PX4	PX2/20	ACPX4	P40	—
ACPX4f	4XP	PX4	PX2/20	ACPX4	P40	—
ACPX4g	4XP	PX4	PX2/20	ACPX4	P40	—
ACPX4h	4XP	PX4	PX2/20	ACPX4	P40	—
ACPX4i	4XP	PX4	PX2/20	ACPX4	P40	—
ACPX4j	4XP	PX4	PX2/20	ACPX4	P40	—
ACPX4k	4XP	PX4	PX2/20	ACPX4	P40	—
ACPX4l	4XP	PX4	PX2/20	ACPX4	P40	—
ACPX4m	4XP	PX4	PX2/20	ACPX4	P40	—
ACPX4n	4XP	PX4	PX2/20	ACPX4	P40	—
ACPX4o	4XP	PX4	PX2/20	ACPX4	P40	—
ACPX4p	4XP	PX4	PX2/20	ACPX4	P40	—
ACPX4q	4XP	PX4	PX2/20	ACPX4	P40	—
ACPX4r	4XP	PX4	PX2/20	ACPX4	P40	—
ACPX4s	4XP	PX4	PX2/20	ACPX4	P40	—
ACPX4t	4XP	PX4	PX2/20	ACPX4	P40	—
ACPX4u	4XP	PX4	PX2/20	ACPX4	P40	—
ACPX4v	4XP	PX4	PX2/20	ACPX4	P40	—
ACPX4w	4XP	PX4	PX2/20	ACPX4	P40	—
ACPX4x	4XP	PX4	PX2/20	ACPX4	P40	—
ACPX4y	4XP	PX4	PX2/20	ACPX4	P40	—
ACPX4z	4XP	PX4	PX2/20	ACPX4	P40	—

In the above comparative table the valves shown in HEAVY type are for EXACT replacement.

COMPARATIVE TABLE  
**BATTERY VALVES (TWO VOLT)**

362	Concor	Marconi	Meade	Mullard	Tungsten	Hivac
VB2	220SG 21SSG	S24 S21SA S21SB	PM12 SG215 S215B	PM12 HP12A	S210 SG210	SG220 SG210
VB2	220VS 220VSG	S24K VS2	S215VM VS2	PM12V PM12M	SE320 HP211	VS120
VP2	220VPT 210SPT	—	—	—	—	VP215 HP215
VP2a	220VPT 210SPT	—	—	—	—	VP215 HP215
H2	210HL 210HC	—	H2	PH1H PH1A	HR210	H210
HL2	210DET 210HF	HL2K HL2	HL210 HL2	PH2DX PH1HL	—	D210
LP2	215P 220PA	LP2	P215 P220	PM2 PM2A	LP220	P220
P2	230XP 220P	P2	P220A PM252	PM200 PM252	SP220 LP220	PX230 PX220
ME2	220HPY 230PT	PT2K PT2	Pen220 PM220	PM22C PM22A	PP220 PX230	Y220
ME2a	220HPY 230PT	PT2K PT2	Pen220 PM220	PM22C PM22A	PP220 PX230	Y220
BA2	230B 230B	B21 PD220	PM2B CB220	CB220	B230	B230
B22	240B	—	PD220	—	—	—

In the above comparative table the valves shown in HEAVY type are for EXACT replacement.

COMPARATIVE TABLE  
**BATTERY VALVES (FOUR & SIX VOLT)**

362	Concor	Marconi	Meade	Mullard	Tungsten	Hivac
BB4	410SG VB4	S410 —	PM14 —	PM14	—	—
HA	410RC 410HF	H410 HL410	—	—	PM3	—
HL4	410HF	HL410	—	—	PM4DX	—
L4	410LP	L410	—	—	—	—
LP4	410P	P410	—	—	PM4	—
P4	425XP 415XP	P415 P425	P425	PM254 PM254	P430 SP414	—
ME4	410PT 415PT	PT425 —	—	—	PM24 PM431	—
ME4a	415PT 410PT	—	—	—	PM24	—
SB8	610SG	S610	—	—	PM16	—
VB8	—	—	S625	—	—	—
HB	610RC	H610	H607 H610	—	PM5X	—
HL8	610HF	HL610	—	—	PM6D	—
L8	610LP	L610	—	—	—	—
LP8	610P	—	—	—	PM6	—
P8	610XP	P610	—	—	—	—
ME8	615PT	PT625	—	—	PM26	—

In the above comparative table the valves shown in HEAVY type are for EXACT replacement.

# Letters

## Dear Editor

This advertisement for the "EXTRAPHONE" appeared in the November and December, 1924 editions of the journal Popular Wireless and Wireless Review. Priced at 2/9d., each "EXTRAPHONE" apparently allowed an additional pair of headphones to be connected to a crystal set without signal loss, and with no limit to the number that could be used with one receiver. According to the advertisement, it was available in nine colours. I am curious if any BVWS member might know exactly what the mysterious (and colourful) "EXTRAPHONE" was, or have any information about the manufacturer, W. John Miller of East London?

Sincerely,

Ian L. Sanders.

(author@crystal-sets.com)

Popular Wireless and Wireless Review,  
November 24th, 1924.

**ONE**  
**"EXTRAPHONE"**  
**at 2/9**

for each additional pair of telephones will allow you to add any number of 'phones to your crystal set without loss of signal strength.

**STRANGE BUT TRUE**  
Tested and Proved by Experts  
*Try it yourself.*  
Obtainable everywhere, 2/9 each, in nine colours, or samples direct from

**W. JOHN MILLER,**  
**68, FARRINGDON STREET, E.C. 4**  
(2nd and 3rd Floor) Phone: Central 1950  
*Agents wanted throughout Great Britain*

## Dear Editor

Regarding the article by Roger Grant about the EBL31 in the recent Winter Bulletin. I have found that a 6B8, although not designed as an output valve, will work without any pin modification whatsoever. Obviously, the output is considerably less than a perfect EBL31 would give, but at least it would enable an otherwise defunct receiver to keep going. Although I have not tried one, on looking at WJ May's radio valve guide book 1 it looks as if a Mullard EBF32 might also function in substitution for a defunct EBL31.

If one or two members are in need of an EBL31, I have a few used ones which I would be willing to share without charging them the proverbial King's ransom.

Your sincerely  
Rodney Dews

## Dear Editor

I read with great interest RJ Grant's article in the last Bulletin about his brief



Some of Peter Brunnings photographs taken at Marconi's Villa

encounters with the EBL31 valve as I also have a receiver which uses this valve. In his article Mr Grant says that he has only seen these valves in sets made just after WWII although they were produced before hostilities began. I believe that I can add some information as my set is not post-war, it is a Philips 206A three-band in a moulded cabinet. According to trader sheet 478 this receiver was released in May 1940 and originally had side-contact valves ECH3, EF9 EBL1 and AZ1. However, by the time Wireless World got to do a test report on it in April 1941 the valve range had changed to ECH35, EF39, EBL31 and AZ31. My receiver has these valves.

The EBL31 in my set differs slightly in appearance from the one illustrated in the Bulletin. It does not have the metallised red skirting towards the bottom and the writing on the side of the envelope is red instead! Maybe the design changed during the course of production?

The set is of British manufacture according to the various stickers and print found within the wireless. From the information provided by various articles I have dated it to late 1940 or early 1941. The station names on the dial are pre-war however, suggesting the original release date for this set would have been earlier than the trader sheet suggested.

I bought this attractive little set about six months ago from an antique centre in Lewes where it had been sitting for some considerable time amongst a few other receivers of similar vintage. They were selling slowly (maybe because of the high prices displayed) and I finally plucked up courage to ask the seller if I could examine it. It subsequently proved to be in good condition cosmetically and I decided to make an offer when the owner offered to sell it for a third off the asking price, which I accepted. A trip to a museum workshop soon after revealed that the set was working (just about) and mostly in original condition but with one or two 'previous convictions'. We did some work on it but it proved to be more than could be done in a day to make it work to a satisfactory level. It is currently a display set only.

In his article Mr Grant mentions that he can find no equivalents to the Mullard valve, however in my Valve and Tube Supplies catalogue an equivalent is given as CV2926. Unfortunately I do not know who the manufacturer is and this designation is unfamiliar to me. I hope that this information is of interest and Mr Grant's article has certainly rekindled



my interest in what appears to be an unusual as well as attractive set.

Best regards,  
Del Burgess

## Marconi's House

### Dear Editor,

I was most impressed by Ralph Barrett's article on the Villa. I too, have been to Marconi's house. It was some years ago when my wife and I were touring Italy in our motorcamper. As you may know it is difficult to get into the Villa as the premises are occupied by the staff of Bologna University and the room is only open to the public on certain occasions. However, I mentioned Enrico Tedeschi's name and it appeared to open the doors.

One of the staff took us round, showed us the room with an exhibition provided by, I believe, the Marconi Society. We were allowed to browse, take photos and wander around the grounds. They gave us a selection of postcards which I am unable to find at the moment.

The pictures are of me with the villa as backdrop, me in Marconi's room with various shots of the equipment and my shot of the hill taken from the window.

Regards,  
Peter Brunning

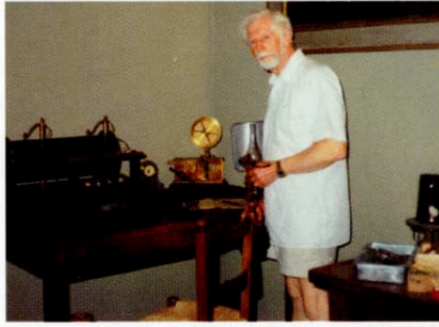
### Dear Editor

Well, once again the gorgeous BVWS 'Bulletin' dropped through the door ready for post-Christmas reading, and I was thinking it was about time to pass on the thanks to all.

First of all, I know limited amounts about the workings of 'Radio' but I imagine not every Bugatti or Aston Martin admirer knows everything about the workings of the Motor car? You don't really have to, pleasure can be visual. I collect what I like to see around me, and some of it is beautiful items from the Wireless/Radio eras that others, well, would have dumped.

I do support the table sales and visit Gerry when I can however, sometimes selfishly to hear him talk about EK Cole or some other such hero of the Radio World, fabulous!

What we have is an Editorship exceptional. The Photography is probably the best of any magazine that any of us have seen, and the articles (let's not forget mainly submitted by 'ordinary' members) are engrossing. Look at the last edition with 10 pages of the history of the 'Brownie' Crystal



sets. That relates to 20 sides of A5, not much short of a 'Shire' book? And what an article?

The magazine quality is 'Book' quality, full gloss and square-bound, not stapled fold. No 'Argos' catalogue smell about this one. Take a good look.

Last but very much not least, Terry Martini painstakingly restoring/re-mastering (whatever that actually means?) old films for us, the members at Christmas.

We have experts in all these fields amongst us, and fortunately for our benefit.

All of you deserve a very large pat on the back, may your valves continue to glow bright this coming year.

Thank You,  
George Smith

**Dear Editor**

In reply to the letter in the latest issue of the Bulletin (Volume 34, issue 4) concerning previous repairs. Were they restoration or botched repair jobs? A view was expressed that poor workmanship which was probably done many years ago might have been the only way of getting the set working at the time.

Nowadays valve wirelesses are collectors' pieces and museum items, and as such must always be returned to as close to original condition or left alone. It is widely accepted in the BVWS that we have a duty of care to our hobby as collectors in a similar way that historic buildings are preserved for all to enjoy.

In 1959 whilst working for a wireless dealer in Sussex a Murphy set came in for repair. The transformer needed replacing, which we did with one manufactured by Radio Spares. In due course Murphy found out what we had done to the set and removed the franchise from our dealership for five years, thus preventing us from retailing any Murphy sets for the period. Our duty as a dealer was to fit authorised parts in leading brands.

Some manufacturers at the time gave very little service information, others would restrict it to only authorised dealers, some gave information 'in confidence' to try and protect the quality of the product.

So what is the preferred method of restoration? My own view is that nothing short of original will do; this can be achieved with patience and persistence, for example the replacement of resistors and capacitors with small, modern components placed inside original items.

I hope that this letter will bring out views on restoration from the membership; I look forward to future issues of the Bulletin.

Yours sincerely,  
Colin G Mansfield

**Dear Editor,**

I have been a member of the BVWS for several years and have seen the quality of The Bulletin go from strength to strength. This is no mean feat and is due to a dedicated Editorial team. Well done! I usually read The Bulletin from cover to cover, often several times over. The technical articles are on a par with Rad-Com which says a lot. Of course, the magazine cannot survive without input from the society's members in the form of articles no matter how small, so get writing!

My 'shack' is full to the gunwhales with a varying array of 1920's to 1960's radios all in full working condition. I also have several 405 line televisions including a very nice nine inch Pye which produces a full, bright raster. Could somebody put together an article on a 405-625 standards converter which can be built using readily available components.

When I get a few minutes free, I will write again, until then thanks for a great magazine.

Yours sincerely  
John Gregory

**Dear Editor**

Hello,  
I am the secretary general of the Association Radiofil radio enthusiasts and reproducing in France which includes 2500adhérents ([www.radiofil.com](http://www.radiofil.com)). This year our organization holds its annual fellowship exchange across the Channel to Achicourt (62) near Arras in the Pas de Calais in France. Would you be able to announce this event to your members? Thank you enclose the announcement of this event

Association Radiofil ([www.radiofil.com](http://www.radiofil.com)) which includes radio enthusiasts and sound reproduction is organizing its annual stock exchange April 11, 2010 at Achicourt Espace François Mitterrand street March 10, 1962 (62217 Achicourt Pas de Calais) near Arras, the day after its General Assembly. Information and Information: [secretaire-general@radiofil.com](mailto:secretaire-general@radiofil.com) or Albert Chartres ([jacqueline.chartres@wanadoo.fr](mailto:jacqueline.chartres@wanadoo.fr)) Phone: 00 33 3 21 23 44 50

Thank you  
Regards

**Dear Editor,**

Many members of the Society will be saddened to learn of the death of Ron Simpson of Bognor Regis in the Summer of 2009 at the age of 81. Ron was a member of the Society, an avid wireless collector and was curator of Bognor Regis Museum for many years. It was my misfortune never to have met Ron but when I heard the story of what happened just after his passing I decided to become involved with the Bognor Museum and to help, in a small way, to redress; the wrongs that were perpetrated. Briefly, the executor of Ron's will decided that his wireless collection, kept at his home and comprising some hundreds of items, together with thousands of documents and his computer containing all his research notes, had no value and would be thrown away. I have been told that everything was duly sent to be scrapped but I am rather at a loss about this. Firstly, why would someone, supposedly a friend of Ron's, entrusted with the onerous task of administering his will, just decide that everything should be scrapped? Secondly, why would his family concur in this action? I don't know the answers to these questions but maybe someone who reads this does know, or may have some clues about it. I would be very interested to hear from anyone who knew Ron and may be able to fill in some of the background information about him that I am lacking. The Museum had been given a substantial part of Ron's collection some years ago and they have now decided to call this 'The Ron Simpson Wireless Collection' in his honour. I would be delighted to hear from anyone, my email address is [don@fowdrey.co.uk](mailto:don@fowdrey.co.uk). Or the Society secretary would, I believe, forward a letter to me.

Don Fowdrey  
2 Thomas Middlecott Drive  
Kirtan-in-Holland  
Boston  
PE20 1HU  
01205 725 030  
07831 362 978

**Dear Editor,**

Anyone considering a trip to the Northwest of the USA in the Seattle area should factor in a visit to the American Museum of Radio and Electricity in Bellingham.

It features exhibits and hands-on experiments ranging from the beginnings of electricity, through wireless telegraph, telephone and broadcast radio to valve technology.

You can see fascinating collections

of electrostatic and electromagnetic devices, lots of original books and papers and over a thousand radios, including a wall of European types. There is plenty for the youngsters to do and see, so take them along, too. They actually offer a science education programme at the museum and at mobile stations throughout the area.

The museum originated as a private collection belonging to Jonathan Winter, who decided to share his treasures with the public and later moved to the present museum of which he is curator and president. He and co-curator John Jenkins are delighted to meet any BVWS member and show you around. It is well worth the effort.

The website is [www.amre.us](http://www.amre.us), the telephone number in the USA 360 738 3886

Sincerely,  
John Panton



**Minutes of the BVWS Committee meeting held at Pound Cottage, Coate, Devizes SN10 3LG at 6.30 pm on Saturday 6th December 2008.**

Present: Mike Barker (chair), Graham Terry, Guy Peskett, Paul Stenning, Terry Martini, Jeremy Day, Jon Evans, Martyn Bennett.

1. Apologies for absence: Ian Higginbottom, Carl Glover,
2. The minutes of the meeting held on Thursday 23rd October 2008 were accepted as a true record.
- Matters arising: item 8, the Committee commended TM on the transfer of the important Sargrove film. TM reported that two copies would be sent to John Liffen as a token of appreciation for his help.
3. GT reported that on the day of the meeting the membership stood at 1524 including 57 complimentary and 6 honorary members.
4. The Treasurer (JD) tabled interim accounts for the Society and the NVCF. They showed a rise of £1,230 to £38,828 in the net assets of the Society and a profit of £3,538 from the 2007 NVCF.

- He announced that subscription rates would be unchanged for 2009. (GP announced that charges for the 2009 NVCF would also be held at 2008 levels.)
5. The Chairman reported for the Editor that the winter Bulletin was at the printers and should be delivered to the Museum for mailing next week. Several pages of the Spring issue were now complete.
  6. TM reported that the Christmas DVDs had been delivered to the Museum. He reminded the Committee that material for future DVDs was in very short supply. There was an urgent need to clarify the copyright position on BBC archive material. The Chairman proposed taking legal advice on the position. JE was working on the transfer of a set of Murphy slides and accompanying audio material.
  7. The Chairman reminded the Committee to review the year's Bulletins and vote for the best article on restoration for the Geoffrey Dixon-Nuttall award. The Duncan Neale award for preservation was discussed and the unanimous decision was taken to award it to Paul Marshall for his preservation of a TV outside broadcast unit.

8. AOB
  - (i) GT suggested that next year the Bulletin issue dates be moved forward one month to February, May, August, and November. Membership cards could then be sent out with the spring issue eliminating the special mailing and its considerable cost in postage. The chairman will check with CG that this doesn't raise any problems for him. The treasurer noted that this would put the printing costs for 5 issues into the 2009 financial year but otherwise could see no problem.
  - (ii) A discussion took place around the issue of the numerous communications being received by the Committee about the sale of the Marconi Coherer at the September sale. A statement to Society members which gave the factual details was agreed upon for the Winter Bulletin posting.
  - (iii) Martyn Bennett reported on discussions of matters of mutual interest with one of the French Societies.
  - (iv) TM raised the question of cleaning the Museum.

The meeting closed at 8.15 pm

**Out Now on DVD!**

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Gerald Wells is Valveman. His life's work has been to amass one of the world's largest collection of valves, vintage radios and other early apparatus from the pioneering days of wireless communication. These are all kept in his house in London.

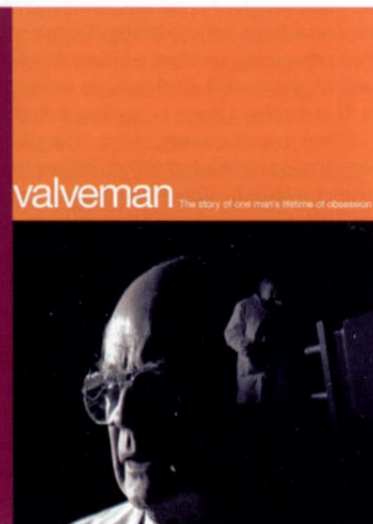
This documentary film innovatively blends, using a variety of motion design and filmed reenactments, the last hundred years since radio began through to the early days of television.

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Swindon, Wiltshire, SN5 5GD

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# BVWS Books

Out Now!



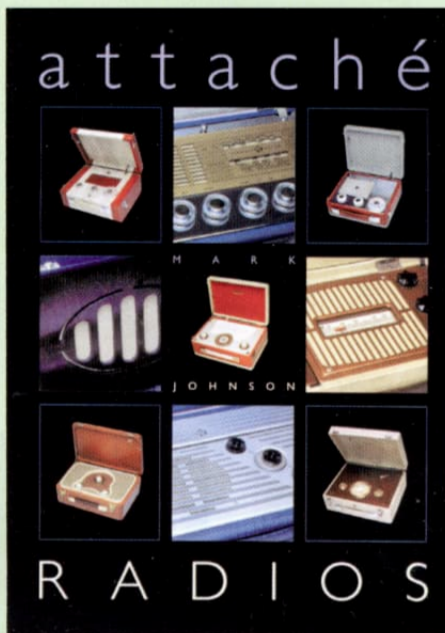
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by Ian L. Sanders. Photography by Carl Glover

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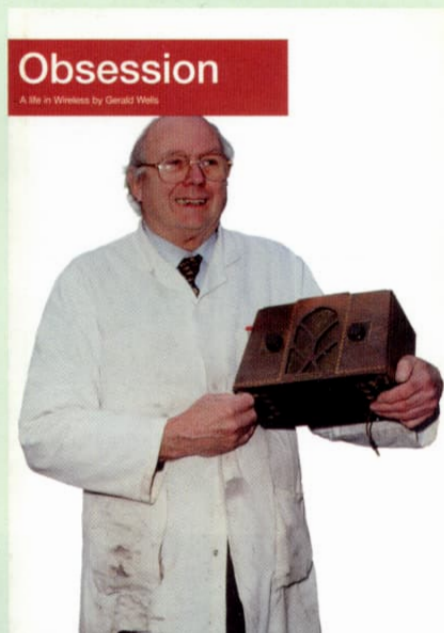
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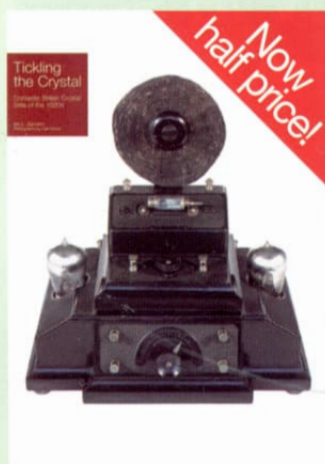
## Obsession

by Gerald Wells

Gerry Wells had led an extraordinary life. Growing up in the London suburb of Dulwich in the inter-war years, he shunned a conventional 1930's childhood, preferring wireless and other household items. After the war he managed a career as a radio and TV service engineer and even designed and managed amplifiers, PA equipment and TVs. Today he runs the Vintage Wireless and Television Museum from the same family home from where he was born in 1929.

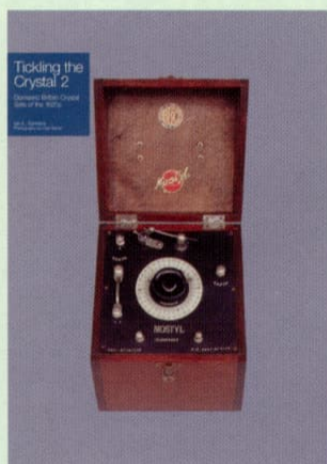
In this book Gerry brings to life his colourful past. This is the story of one man's dedication to wireless

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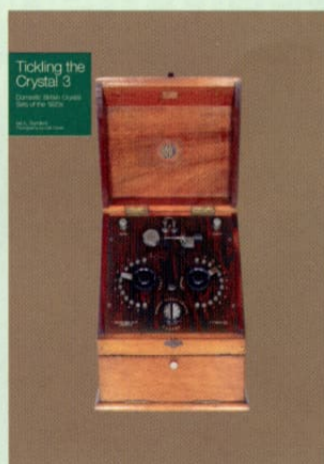
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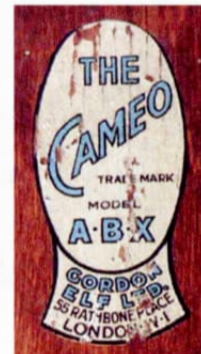
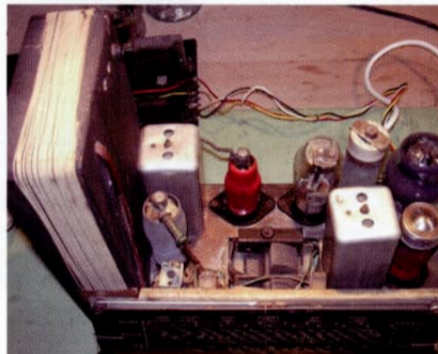
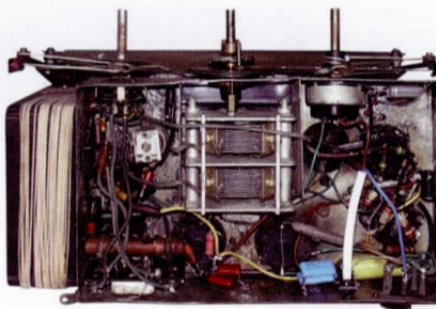
BVWS, 26 Castleton Road, Swindon, Wilts SN5 5GD  
Tel: 01793 886062



BVWS Books

# Gordon Elf Cameo ABX by Richard Allen

This little radio was used by my late father in law who was a Naval Officer on board ship during the Norway Campaign during WW2. It was in regular use until the early 1980's mainly for listening to *The Archers*. It must have been purchased in late 1939 or early 1940 and he related how he would use it with a wire aerial slung through the porthole of his cabin



The Cameo is a three waveband, five valve superhet, AC/DC transportable valve radio with an intermediate frequency of 430 kHz. It is housed in a walnut veneered wood case with a leather carrying handle. The three wavebands cover 15-60m, 200-500m and 850-2200m. The set has an internal frame aerial and sockets for connection to aerial and earth. It is suitable for voltages between 100 and 250 volts 40-100Hz. The valve line-up is as follows: TH233, EF9, EBC3, PEN383 and CY1 (but see later). Three of these have side contact (Ct8) and two have Mazda octal (MO) bases. It has been retrofitted with a plywood circular base on which the radio can be turned for best reception. At the rear of the cabinet is a recessed tone control.

As can be seen from the logo on the back cover, the factory was in 55 Rathbone Place (off Tottenham Court Road) London W1. Interestingly all three controls on the front panel use systems of strings and pulleys to control pointers on the glass scale. The tuning control is coupled to the variable capacitor via two reduction gears thus enabling precise tuning.

The output transformer, tone control and smoothing capacitors are mounted on a wooden panel which is attached to the inside top of the case.

I was given the set in about 1986 and at that time replaced the coloured wires between the radio chassis and

this wooden panel and little else, although it was clear that a number of repairs had been made in the past.

Recently, I noticed that the tuning knob no longer moved the pointer along the scale so the radio had to be taken apart to effect a repair. It was soon apparent, after removing the chassis, cleaning off the dust, that quite a number of things needed attention. My next job was to remove the

**The picture of the underside of the chassis shows the flimsy nature of the tin plate chassis construction and another puzzling anomaly, the holder for the output valve is fixed with nuts and bolts but all the others are rivetted in place.**

valves, clean them and remove corrosion from the contacts of the side contact ones. I then turned my attention to the flimsy tin plate chassis and re-soldered the corners and the strip across the front of the tuning capacitor. The rubber grommets supporting the latter had perished and with a considerable amount of fiddling I managed to replace these. Whilst I was doing this I noticed a curious modification, the nuts had been soldered to the screws and a solder had been applied to the large

nut on the wave-change switch. I can only guess that this was done because of the vibration on board ship had caused parts of the set to come adrift! To examine and work on the underside I temporarily clamped a wooden support to the chassis so that it could be supported on the frame aerial.

The screened rubber lead to the frequency changer was perished and in danger of shorting to the screen so this had to be replaced which meant that the components in the vicinity of the volume control had to be removed. Although the 50 $\mu$ F Plessey capacitor was perfectly satisfactory it was easier to replace it with a modern much smaller item. The mains bypass and earth isolating capacitors were both absent and two 630 volt X2 capacitors which were to hand were pressed into service. In addition two decoupling 0.05 $\mu$ F capacitors were replaced with 0.047 400V items.

Some of the rust was scraped from the chassis and the contacts on the Ct8 bases were scraped with a watchmaker's screwdriver and lubricated with contact cleaner. I then turned my attention to the panel supporting the output transformer and dual 16/24  $\mu$ F smoothing capacitor, apart from the capacitors which had dried out and had to be replaced all was well. Modern replacements were wired inside the cardboard tube.

The plywood bottom of the case had de-laminated and part was missing, but

what surprised me was that the intermediate layer has been stamped with what appears to be the serial number ( B3290L) of the radio. The remains of the top layer were removed to provide a uniform surface and glue was inserted between the lower loose areas towards the rear of the cabinet. The picture shows how the broken strings have been replaced with white nylon cord and how the tuning control is coupled by two slow motion drives to the variable capacitor. Note too how the rigidity of the chassis relies on solder.

The picture of the underside of the chassis shows the flimsy nature of the tin plate chassis construction and another puzzling anomaly, the holder for the output valve is fixed with nuts and bolts but all the others are rivetted in place. I fitted a new two core mains lead with a cable clamp in place of the 'figure of eight' lead originally fitted.

When the set was energised it was silent but not completely lifeless, hum could be elicited by touching the wiper of the volume control, so obviously no signal was coming through from the previous stage. Placing the probe of my AVO on one of the valve holder pins of the EF9 disturbed one of the

connections and set the radio into a roar of noise. The poor connection required further scraping of the contacts on the valve holder but when the valve was replaced the noise was continuous and when the volume control was turned up the radio 'motor boated'. Screening the valve by gripping it caused the noise to cease. Presumably in removing the valve to clean the contacts I had disturbed the connection to the red metallising. It is not easy to remove a Ct8 valve from its holder without holding onto the glass envelope. The solution to the problem was to make good the connection between the metallising on the valve envelope and the thin wire connected to pin 1. The red paint was removed with paint stripper over a small area and a bunch of fine wire wound tightly round the envelope to make an intimate contact. Solder made the connection and 'superglue' kept the wire in place. Red nail varnish made the repair more presentable. The radio then worked well, pulling in many stations on all three wavebands.

I found two service sheets at [www.savoy-hill.co.uk/](http://www.savoy-hill.co.uk/) "Radio Marketing" Service Man's Manual April 1939 which indicates that the price would have been £9.19s.6d

and another dated July 1940 but the "Trader" sheet 455 dated March 1940 is the one that matches my radio, this states that the release date was August 1939. Although all three refer to the 'Cameo' model ABX they are considerably different, there are differences in the valves used and the component layouts: April 1939 TH2320, EF8, EBC3, PEN3520 and UR3C July 1940 TH233, EF9, EBC3, PEN383 and UR1C.

The case was rather scruffy and thankfully not blessed with woodworm holes so a light application of shellac varnish after a thorough clean and light rub down made a great improvement to the appearance. The handle was treated with saddle soap and the metal clamps wire-brushed prior to being coated with copper sulphate to give the slight copper finish. The speaker fabric was carefully washed and the faded brown lines touched up with a brown felt tip pen prior to reassembly. Replacement knobs which I felt were more in keeping with the original design were fitted and the case given a final wax polish. When reassembled I noted that the dial was no longer quite horizontal, but with such a flimsy chassis I reasoned that this was going to be as good as it would get.



Sunday 14th February 2009 10.30AM - 4.30PM

# AUDIOJUMBLE 2010

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Bookings/Enquiries 01892-540022 [info@audiojumble.co.uk](mailto:info@audiojumble.co.uk)





## The British Vintage Wireless and Television Museum

23 Rosendale Road, West Dulwich, London SE21 8DS  
020 8670 3667 Registered Charity No. 1111516  
[www.bvwm.org.uk](http://www.bvwm.org.uk) Please make appointments beforehand



## HT Supplies for Battery Operated Portable Radios

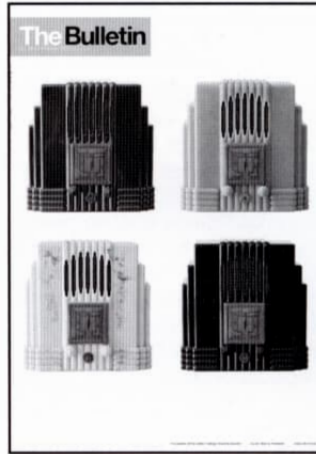
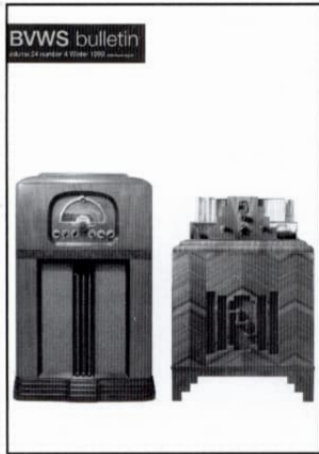
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**Vol 11** Numbers 1, 2, 3, 4 Inc. BTH VR3 (1924) receiver, Marconi's 1897 tests, Origin of the term 'Radio', Baird or Jenkins first with TV?

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

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

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

**Vol 16** Numbers 1, 2, 3, 4 Inc. The Stenode, The Philips 2511, Inside the Round Ekcos.

**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.

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**Vol 24** Numbers 1, 2, 3, 4 Inc. The Superhet for beginners, Triode valves in radio receivers, History of GEC and the Marconi - Osram valve, KB FB10, Great Scotts!, Riders manuals.

**Vol 25** Numbers 1, 2, 3, 4 Inc. Repair of an Aerodyne 302, Henry Jackson, pioneer of Wireless communication at sea, Zenith 500 series, Confessions of a wireless fiend, RGD B2351, John Bailey 1938

Alexandra palace and the BBC, Ekco during the phoney war, Repairing a BTH loudspeaker, The portable radio in British life.

**Vol 26** Numbers 1, 2 Inc. How green was your Ekco?, The Amplion Dragon, Crystal gazing, The BVWS at the NEC, Installing aerials and earths, novelty radios, Machine-age Ekco stands of the 1930s, Volksempfänger; myth & reality.

### 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.

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## News and Meetings

### GPO registration Numbers

Martyn Bennett is the custodian of the BVWS GPO Registration Numbers list. As many members know, the project of assembling this list was started in the early days of the BVWS and was carried on by the late Pat Leggatt. Members are strongly urged to help build the list, whenever they get the opportunity, particularly as it is something that will help with the identification of vintage wireless in years to come. The list is by no means complete and the GPO no longer have a record of the numbers granted to wireless manufacturers. The BVWS Handbook contains the current listings - one in numerical order and one ordered by name. Please let Martyn have any additions, or suggestions for corrections, by mail or over the phone.

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

### 2010 meetings

**February 14th** Audiojumble

**March 7th** Harpenden

**April 11th** Lowton

**April 25th** Table Top Sale at The British Vintage Wireless and Television Museum

**May 9th** NVCF

**June 5th** BVWS Garden Party

**June 6th** Harpenden AGM & Auction

**July 11th** Wootton Bassett

**August 13th** Friday Night is Music Night at The British Vintage Wireless and Television Museum

**September 12th** Table Top Sale at The British Vintage Wireless and Television Museum

**September 19th** Murphy Day at Mill Green Museum

**October 10th** Audiojumble

**October 17th** Harpenden

**November 21st** Lowton

**November 26th** Festive Music Night at The British Vintage Wireless and Television Museum

**December 5th** Wootton Bassett

### Workshops, Vintage Wireless and Television Museum:

For location and phone see advert in Bulletin. 11:00 start.

**Harpenden:** Harpenden Public Halls, Southdown Rd. Harpenden. Doors open at 10:00, tickets for sale from 09:30, Auction at 13:30. Contact Vic Williamson, 01582 593102

**Audiojumble:** The Angel Leisure Centre, Tonbridge, Kent. Enquiries. 01892 540022

### NVCF: National Vintage Communications Fair

See advert in Bulletin. www.nvcf.co.uk

**Wootton Bassett:** The Memorial Hall, Station Rd. Wootton Bassett. Nr. Swindon (J16/M4). Doors open 10:30.

Contact Mike Barker, 01380 860787

**Lowton:** Lowton Civic Hall, Hesketh Meadow Lane, Lowton, WA3 2AH

**For more details with maps to locations see the BVWS Website:**  
www.bvws.org.uk/events/locations.htm

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### Illustrated

A Kolster-Brandes neon shop sign, circa 1950, with stepped top, large company letters in shaped red neon tube, miniature lightbox below with TV and Radio backlit in green.  
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Bonhams would like to thank all BVWS members who attended the recent Michael Bennett-Levy early Technology sale at Knightsbridge, for which three new world records were broken in the television section alone.

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