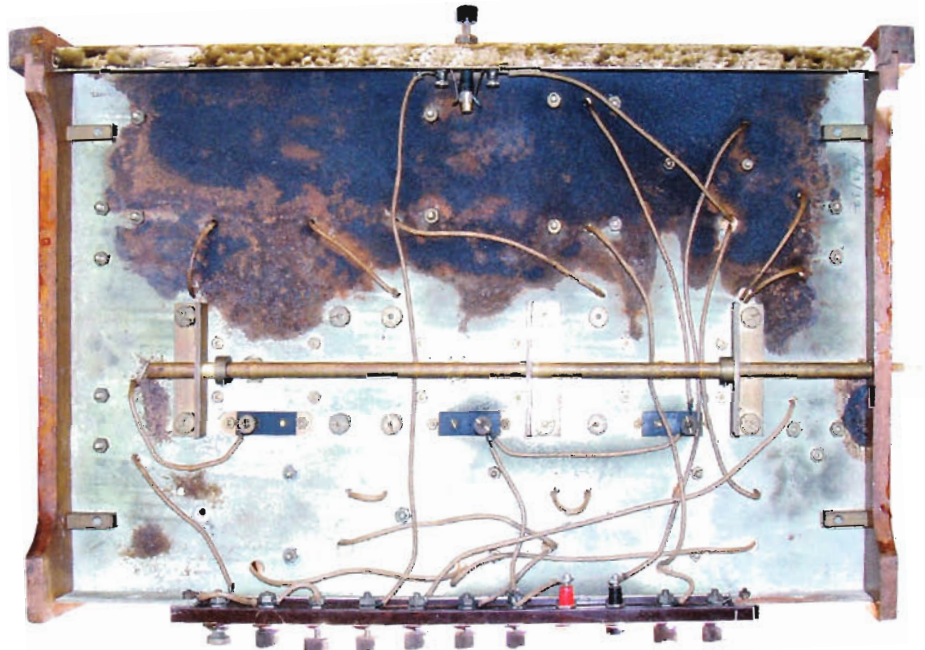


# Restoring an Osram 'Four' New Music Magnet

by Gwyn Griffiths

This set caught my attention at the July 2009 BWWS Swapmeet at Wootton Bassett. Having previously worked on a Scott-Taggart ST300 of about the same vintage, and been impressed with its performance, I was intrigued to find out how this four-valve set from a commercial kit would compare. The generally tidy cabinet and upper part of the chassis, and the evocative transfers for the set's logo and the supplier, 'W.M. Hardwick, The Garage, Shuttlewood Road, Bolsover' clinched it - the Osram 'Four' New Music Magnet would become my autumn project.

The front half of the underside of the chassis was corroded, and would need attention, but I wanted to see if it was working before dismantling the set entirely, which was my intention. In this regard, working with what was originally a kit had several advantages. As the receiver was meant to be assembled with few tools, disassembly would be very easy; almost all connections were by screw terminals.



Despite the straightforward nature of the set, and the ease of tracing out the circuit, I first tried finding a circuit on the Internet. Success, but only one useful article, and that with text in German (footnote 1). However, thanks to Nigel Squibb, the key information was soon extracted. There were some differences between the circuit and the set - surely the output valve that was present, a KT2 critical distance tetrode, was not right? Was the use of B5 bases when valves with B4 bases were fitted common, I wondered? Of course, the KT2 could have been a later modification, but there was no evidence that there had ever been a wire from the screen grid terminal of the valve base. Furthermore, the LP220 in the detector position also seemed wrong. Consulting the entry for the Osram 'Four' New Music Magnet in 'The Saga of the Marconi Osram Valve', page 107, elicited the line up as two S215 RF amplifiers, a H210 detector and a P2 output valve. At least the two S215s were present and correct. The LP220 that was present in the detector position could be used as the output triode, and a 210HL was found for the detector. All of these valves

were checked on a simple home-built valve tester that doubles as a metered battery eliminator and found to have acceptable emission and mutual conductance.

With an Amplion moving magnet loudspeaker connected, long wave reception was quite reasonable, but medium wave was poor and intermittent. I made a note to look at, and clean carefully, the wonderful mechanism of the six-pole wave-change switch. The strip-down started.

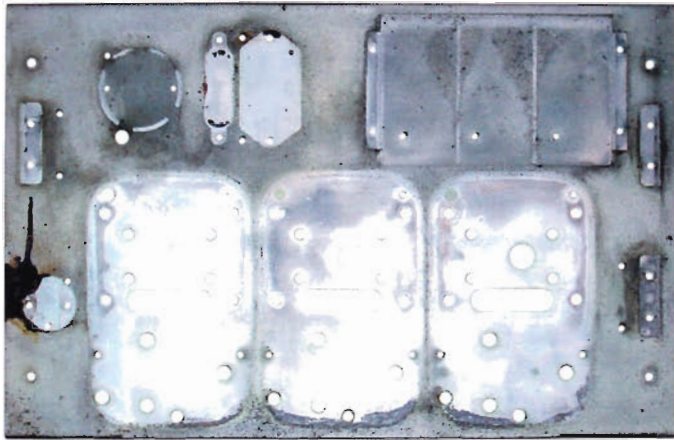
The wooden lid was hinged to the side cheeks using simple brass pins in a strip of hardwood. Without a retaining chain, it is not surprising that at some time the lid had been forced back and the hardwood strip split. The strip had been glued at least once before. It needed repair again, but this time a restraining chain was added, after weighing up originality against the risk of, one day, worse damage to the case.

The set-screws and nuts securing the plywood back to the aluminium angle corner pieces were removed and set aside for cleaning in an ultrasonic bath (as were all of the knurled terminals, the brasswork of the wavechange switch and all the other nuts

and bolts). Systematic disassembly then commenced. A notebook with step-by-step notes was kept, and each (cotton-covered?) wire labelled with its step number. The original GECophone BC542 1  $\mu\text{F}$  and BC342 0.25  $\mu\text{F}$  capacitors tested good, and were kept. As the solid dielectric reaction differential variable capacitor was removed, a small pencilled date became visible: 16/3/32. The GECophone BC710 3:1 interstage transformer was removed and cleaned. A modern, tape-wrapped 1.5Mohm resistor had been added across the original glass-tube encased grid leak resistor, which read 3.8MOhm.

All the bare ends of the connecting wires were abraded with 160 grit aluminium oxide paper. The chassis was bead-blasted clean (thanks to Andy Webb), and to my amazement, the only area of pitting was not on the underside, but on the upper side by the bulb-holder. Several coats of a silver enamel paint rubbed down between each coat made for a neat and very similar finish.

A close look had shown that the wave-change mechanism was actuated with three ball bearings, one for each of the two



RF stages, and one at the detector. Care was taken not to let them escape! Each of the three coil assemblies was then dismantled. This gave access to the three sets of switch contact pairs for the wave-change mechanism. Crocus paper and a switch cleaner restored the contacts to reliable operation.

Reassembly was the reverse of disassembly and was straightforward. The date, 27/12/09 was added in pencil next to the original (hopefully the set will survive another 77 years). After a final check of the wiring, the heater voltage was applied and the current checked, followed by the grid bias (-3V), HT+ (105V) and the SG+ (70V) from the power supply. With the set now receiving stations on medium wave and long wave, using a 60' long wire aerial in the loft, how did it compare with the ST300? First, reaction was rather fierce; it was easier to control on the ST300, no doubt aided by the low HT voltage on the

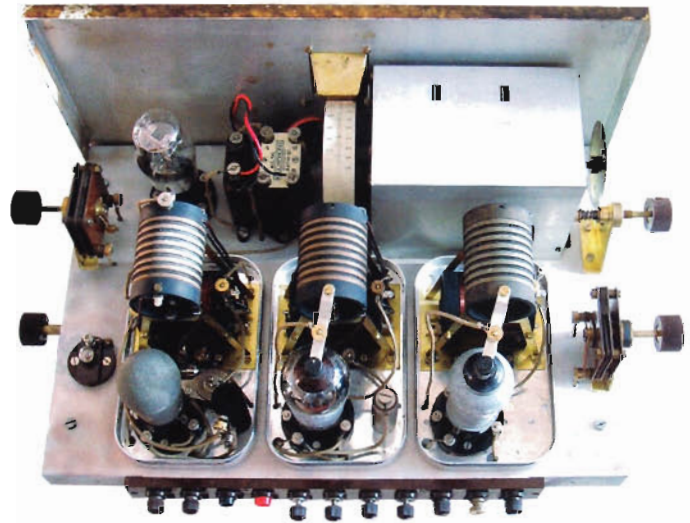
detector as suggested by Scott-Taggart and implemented through a separate HT line. Nevertheless, over a few winter days and evenings, a good number of stations from across Europe were received on medium wave. A creditable performance, and a fitting close to an enjoyable restoration.

A postscript to these notes is appropriate. Thanks to Bill Hewitt (footnote 2), I now have a reprint of the original booklet for the construction and operation of the set, including the circuit diagram. This has settled a number of misconceptions I'd had. First, the use of four B5 valve holders was standard in this kit. Second, the recommended output valve for dry battery operation was an LP2, with a grid bias of -3 to -4.5V, whereas the Osram P2 'Super Power' valve was suggested 'when it is desired to handle more volume without distortion', although at the cost of an additional

4-6mA of current from the HT battery.

The advertisement for the kit proclaimed in a banner headline, 'There's no drilling and no soldering - no carpentering - the cabinet and components almost fall into place'. Ten special features were

- 1 The two Screen Grid high frequency stages give extreme selectivity and sensitivity with an unrivalled range.
- 2 Enormous amplification with perfect stability is given by the complete shielding of the H.F. circuits
- 3 Equal efficiency guaranteed on both wavelength bands.
- 4 Change of wavelength is effected by an external switch and the set need not therefore be opened.



5 Maximum ease in tuning by single knob controlling triple gang condenser.

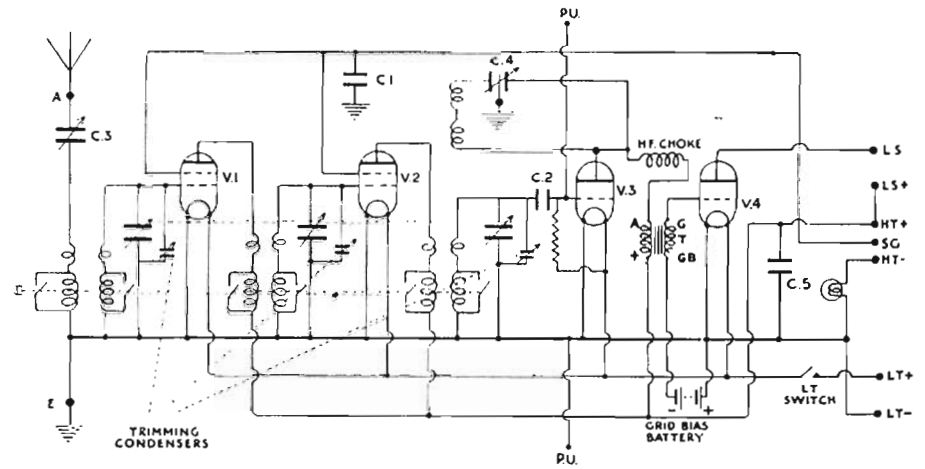
6. Assembly is the essence of simplicity. Volume control is provided not only to act as such but to procure extreme selectivity.

7. Two terminals provide connection for gramophone pickup.

8. May be built for all A.C. Mains operation at small additional cost.

10. Attractive Walnut Constructors Cabinet of modern design with front panel to match.

Items for the kit were packed in separate packets, with all of the components with the exception of screws, nuts, etc. given GECOPHONE BC part numbers. A list of wires, with their lengths to 1/2" was provided with brief descriptions of each end termination. After the baseplate assembly, the next step was to wire the baseplate, guided by diagrams showing numbered wires and lettered holes, and the length to be cut; 33 wires were to be connected at this stage. The panel was assembled to the baseplate, a key fixture being the L.T. switch. The wiring was completed for the final 7 wires. A note explained that when wired for battery operation, each of the valve holders would have one unconnected terminal. This was to allow for the use of the set with AC valves, 'when the GECOPHONE



A.C. All Power Unit is employed'.

The wooden cabinet comprised two sides, a back, and a hinged lid. Aluminium angle brackets facilitated the joining of the side plates to the back. Brass support blocks under the baseplate with tapped set-screw holes enabled the baseplate to be fixed to the side plates. The next part to assemble was the wave-change switch, with its three small steel balls, and the warning in italics, 'taking great care not to lose the small balls'. The knob with no indicating dot was to be used for the slow motion tuning drive. The spindles of the aerial coupling capacitor (volume control)

and the reaction variable capacitor were to be set as far anti-clockwise as they would go, and their knobs fitted with their spots at '6 o'clock'. Connecting the batteries, fitting the valves and screening boxes, a final check of the wiring, and screwing in the fuse lamp in its holder saw the assembly complete, and the set ready for use.

1 "Wirshien nach England" originally by F. Strobel made available as a pdf by Thomas Günzel at [http://www.radiomuseum.org/forumdata/users/5100/Osram\\_Music\\_Magnet\\_Four\\_v20.pdf](http://www.radiomuseum.org/forumdata/users/5100/Osram_Music_Magnet_Four_v20.pdf) A circuit for a later variant is available at [www.electrojumble.org/DATA/Music\\_Magnet\\_4\\_with\\_AC.pdf](http://www.electrojumble.org/DATA/Music_Magnet_4_with_AC.pdf) 2 At <http://tinyurl.com/3ynuynt>

## MURPHY TELEVISION

The blank screens of 1939  
by Mike Barker

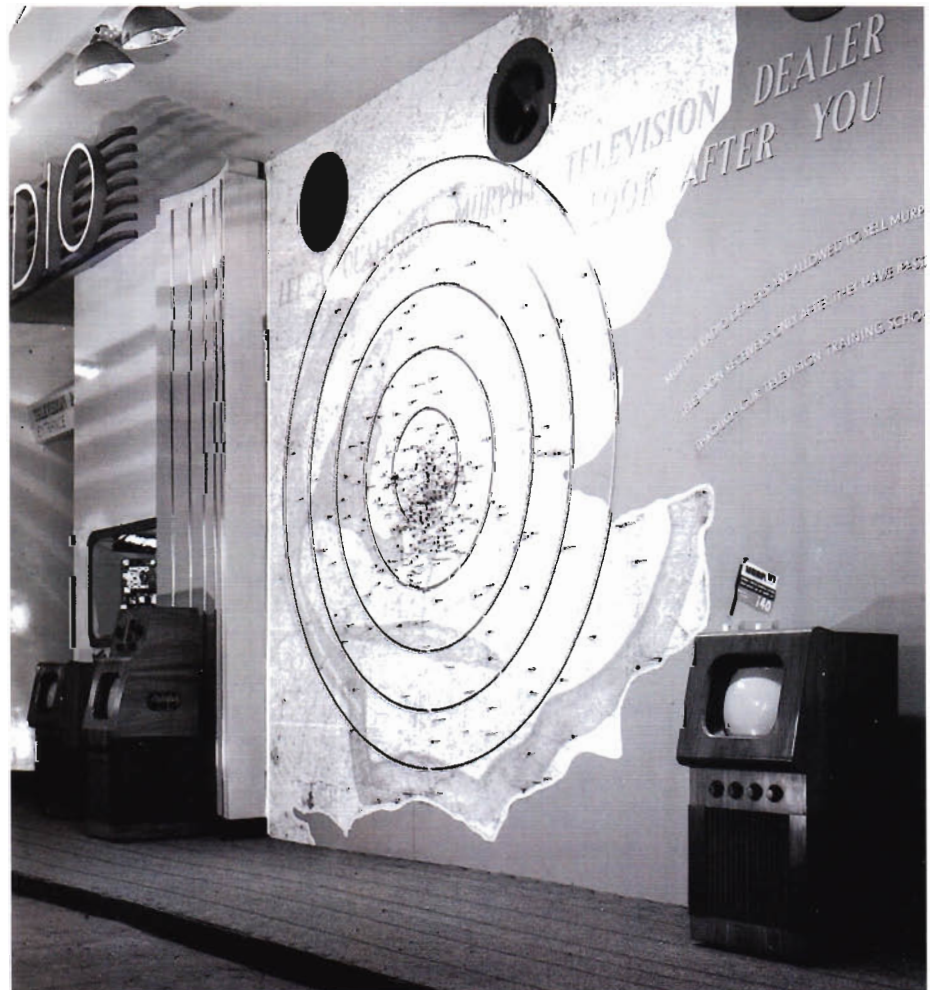
As with most manufacturers, the new Murphy radio and TV receivers were shown each year at 'Radiolympia' prior to being available for the public to purchase in the new sales season.

Wednesday 23rd August 1939 saw the opening of such a show and the first public display of their newest television receivers, the V84, V84C, V86C and lastly the V88C.

We know that none of these had gone into production, so there could only have been a very few made. Certainly only a tiny number are known to have been dispatched out to the larger 'Television trained' Murphy dealers as show pieces from which to take customer orders.

Murphy Radio weren't to know that a couple of weeks later there would be no television service and that all the different manufacturers would be in a position of holding redundant stocks and receivers.

By way of a taster for a restoration article to come later this year, here is a sales brochure for the Murphy 1939 Television range and a shot of the Radiolympia stand. Note how the V88C looks so very bulky and awkward in its form of a radio grafted onto the top of the Television. Has anyone ever seen any of these in the flesh?





V 88 CONSOLE

**V88C. TELEVISION AND ALL-WAVE RADIO RECEIVER**

The Television side this model provides exactly the same quality of performance and picture size as the "B", standard and standard model. It gives, in addition, the excellent all-wave radio reception provided by a standard Murphy Radio receiver. Over fifty station names are printed on the front-panel scale, and the high quality of picture is further enhanced with all Murphy console sets (over 1000 lines).

The Radio and Television receiver are originally "designed" in order to avoid confusion in operation. A simple switch changes over from "Television" to "Radio". The optimum arrangement provides maximum comfort in viewing the picture and a warning of audience. The cabinet is in fact **Cash Price £50**

**TELEVISION AERIALS**

The usual type of radio aerial cannot be used for Television reception. The two Television aerials shown below are recommended in order to obtain the best results, and are both available from your Murphy Dealer who will advise you on which type is best for your locality.

**WALL-MOUNTING DI-POLE**  
As shown in the sketch above for fixing to a wall, is also available for mounting on a pole at no extra cost.  
**PRICE 25/-**

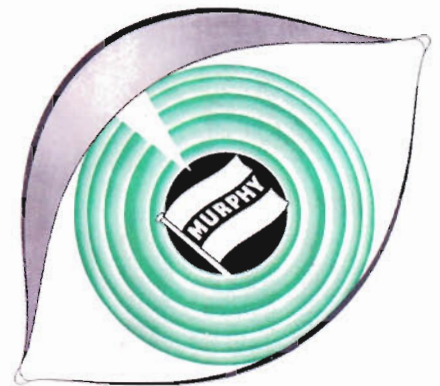
**WALL-MOUNTING DI-POLE AND REFLECTOR**  
Also available for pole mounting at the same price. This type is advised in a locality where there is interference, or where the signal strength is weak.  
**PRICE 44/-**

**MURPHY DEALERS ARE PEOPLE YOU CAN TRUST**

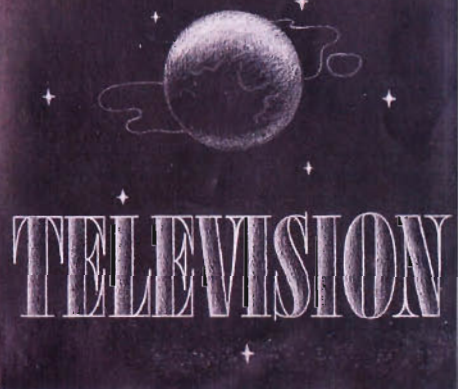
At Murphy Radio we like to be certain that any dealer who sells and services Murphy Television Sets is competent both to advise you and handle our sets properly. This is one of the reasons why we sell only through a limited number of selected dealers; and, what is more, no Murphy Dealer is allowed to sell Murphy Television Receivers until he has satisfied us that he has the necessary Television engineering qualifications, or has passed through our own Television School at Welwyn Garden City.

You may rest assured that your Murphy Television Dealer knows his job, and has the knowledge and ability to give you sound advice and good service.

405-505, Welwyn by Murphy Radio Ltd., Welwyn Garden City, Herts. PRINTED IN ENGLAND



**SEE WORLD EVENTS ON MURPHY**



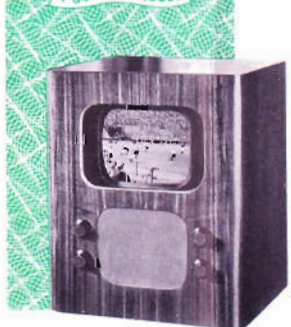
**V84 TABLE MODEL TELEVISION, SOUND AND PICTURE RECEIVER**

For those to whom space and cost are important, a table television receiver is obviously the best proposition. A light receiver such as this could easily be obtained for anyone requiring a picture size beyond development in design has been made for the first time a table-top television receiver on a cabinet not much larger than that of an ordinary radio set. It gives a brilliant picture of a size which has proved to be very satisfactory for use in the average home, and the high sensitivity of this model ensures good reception anywhere within the service area of the Alexandra Palace Station.

There are only four controls on the front of the cabinet, and operation is, in fact, easier than with an ordinary radio set. The receiver from adjacent station frequencies is screened so the Television soundlessly enables very good quality of reception to be provided, and some control by means of a knob is provided for a semi-developed or not developed.

The cabinet is very simply designed in walnut without ornamentation, and the whole set fits on which the picture is seen is protected by a standard of hand-drawn lines.  
**Cash Price £29**

V 84 TABLE MODEL



V 84 CONSOLE



**V81C. TELEVISION, SOUND AND PICTURE RECEIVER**

This set is a complete model in the radio-receiver standard above, giving exactly the same high standard of performance on the television sound and picture performance. The larger cabinet permits the use of a larger and better loud speaker and a direct control of frequency, so that the sound quality is better than that of the table set, with the same results from sound.

The very attractive cabinet is approved in two lines of walnut, and the front paneling the picture screen is light shielded to give the most comfortable viewing angle from a sitting position. Now a child people can watch a set of the type without any difficulty, and the controls are not only very simple, but cannot be used for further attention.  
**Cash Price £33**

**V86C. TELEVISION, SOUND AND PICTURE RECEIVER**

Some people who have never seen Television in the home will have the idea that it will only be a "toy" or "fun" when the picture is very much larger than at present. For home entertainment, however, that is quite incorrect. At all the available sizes the biggest is, perhaps, a 12 in. outside size. This gives a picture size of roughly 10 in. x 10 in., which is large enough for ordinary size viewing, but big for a child people and small enough to minimize the effect of the "glare" of which a Television receiver is made up.

This receiver is therefore exactly the same as the smaller console, except for the larger picture size. Brilliant picture, simplicity of control, adequate reception, freedom from noise and the very high quality of sound reproduction are the same high standard.  
**Cash Price £40**

**MURPHY TELEVISION**

*Seats in all parts!*



Quite a lot of people are still inclined to be doubtful about the quality of Television because they think it is not, so to speak, the local luxury cinema screen brought into their own house. They say this, quite cheerfully, without ever having "looked in" to a Television programme. Actually, I can tell you from my own personal experience, that anyone seeing Television for the first time in a home is astonished at the reality of it. See a Television show on one of our Murphy Receivers, or you can have one brought to your home. I know you'll be impressed by the clarity of the picture, and most of all by the reality of the characters on the screen, without any feeling of crampedness which people, who have not seen Television, imagine they will experience.

You can buy a Murphy Television with a good-sized screen, and which will give you consistently reliable performance, for as little as £29, and you can take it from me that it will be a very long time before prices are likely to drop much lower.

E. J. POWER, Managing Director