

# Vintage Radio

By Associate Professor Graham Parslow



## Tela-Verta 1948 Musiclock Model 204C Mantel Radio



Designated the model 204C, this classic art-deco mantel radio incorporated a 5-valve superhet chassis and a Smith's Selectric clock movement with alarm & sleep functions.

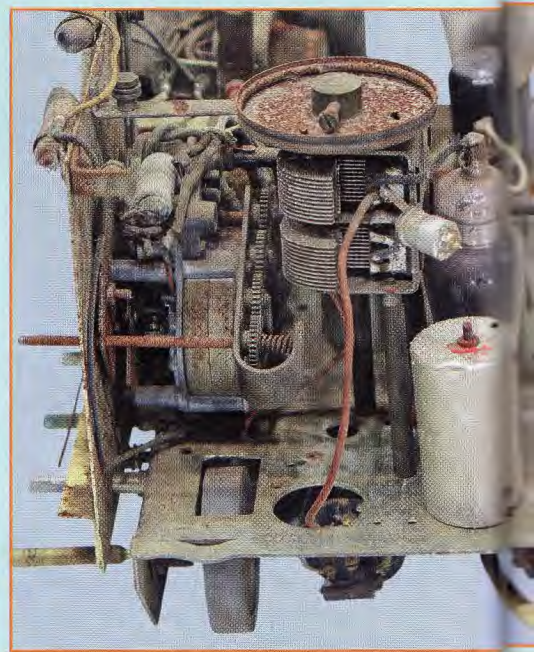
D. W. Radio Co (Tela-Verta) manufactured radios in Sydney from 1934-1948. It was owned by Herbert and Frank Warby who started their business as a partnership at 210 Willoughby Road, Naremburn.

The business subsequently moved in 1939 to 32 Alexander Avenue, Willoughby. It then relocated again in 1946 to 466 Victoria Avenue, Chatswood and a sketch of that building appears under the Tela-Verta banner reproduced with this article.

During their 14-year history, Tela-Verta produced over 30 models ranging up to 8-valve console radios of a

high standard. The advertisement for the TV-24A mantel radio reproduced later in this article shows that it used the same case as the model 204C. The cost of setting up a mould for a custom-made Bakelite case was prohibitive for small companies like D. W. Radio so they used a generic case and fitted a range of variant models inside.

This particular case was also shared by other manufacturers using the Mendelssohn, Aristone, Midlands and Air King brand names. The Tela-Verta colours of the case were eau de nil (green), ivory and figured walnut (as in the example featured here). Other



manufacturers offered additional colours including blue and pink.

### The Tela-Verta 204C

The 204C model incorporated a Smith's Selectric clock movement with alarm, wake-to-music and sleep functions. The photo immediately above shows the synchronous motor and gears used in this clock. It also clearly illustrates the poor state this example was in before work began.

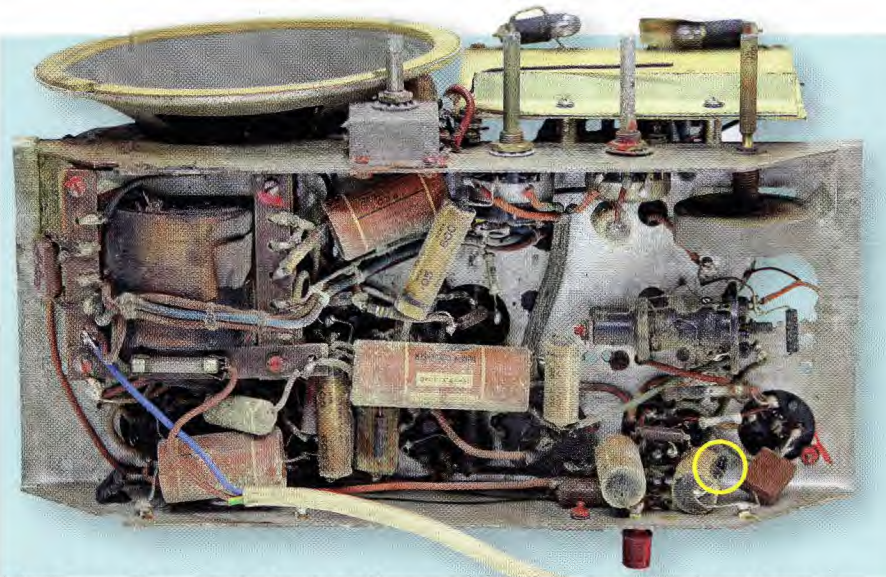
A front-panel control was used to switch the alarm function on and off but this was deleted from the restored radio. A small knob to the right of the dial sets the alarm time, while a knob at the rear sets the time.

Unfortunately, the clock's hands were missing and the rest of the mechanism was deemed to be beyond repair. As a result, all the electric clock parts were removed during the restoration and a modern quartz alarm clock movement substituted.

### Circuit details

Fig.1 shows the circuit details of the model 204C. It's a conventional

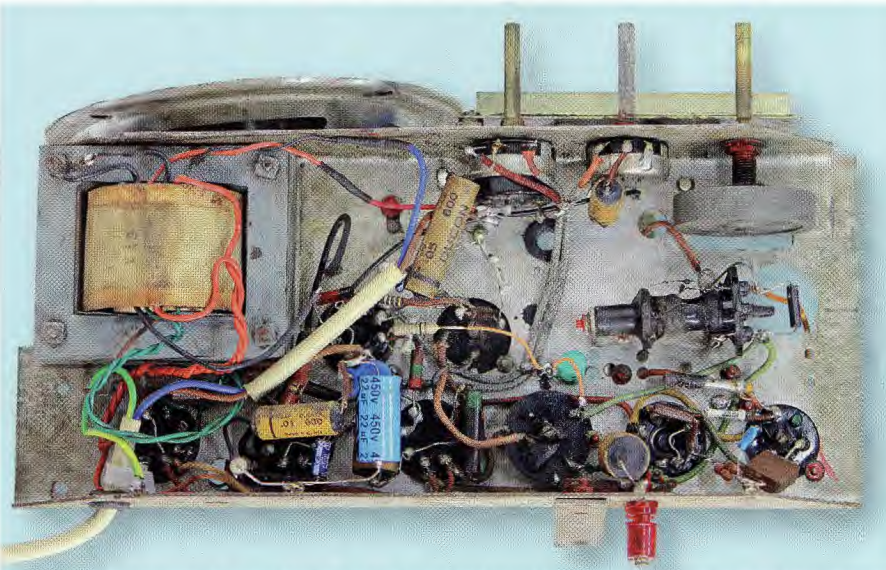




The reason the radio had originally stopped working was simple – the 450Ω resistor (circled) in the 6A8's cathode circuit had gone open circuit. This left the cathode floating so that the valve could no longer function as a mixer-oscillator.



The clock face is positioned directly behind the dial which carries the hours and minutes markings.



This photo shows the restored chassis with its replacement transformer & various other parts. The mains cord was later securely anchored using a clamp.

It worked well for many years until one day it suddenly stopped. My friend then stored it in an open-top cardboard box and that is how I eventually received the radio, as a gift to add to my collection.

By that time, it was in poor condition in every respect, particularly the exposed top of the cabinet where photochemical decomposition had powdered the surface of the Bakelite. It had no knobs fitted but an additional grimy plastic bag came with the unit and this contained the three knobs and two screws.

The screws secured the chassis to the moulded case but why had they and the knobs been removed? By deduction,

it was because the radio had stopped working and someone had slipped the chassis out, looked at it and given up on fixing it.

In the condition it was received, the cabinet looked like it would never see its glory days again. However, once the restoration work had been completed, I was delighted at just how well the figured walnut colour had survived under the layer of decomposed Bakelite.

The first step with the cabinet was to scrub it with degreaser to wash off a large amount of the brown residue. The water eventually stopped turning brown and the case was then wiped and dried. The result was a case that looked just as dull as when I started.

A miracle of transformation was brought about by application of several coats of ArmorAll silicone surface polish. The surface was porous and soaked up the polish until eventually a uniform gloss prevailed. In bright light, the walnut pattern was now beautifully evident as can be seen in the photo at the beginning of this article.

The speaker grille cloth was intact and was ultrasonically cleaned in soapy water. Lots of dirt literally fell out of the fabric and the cloth came up looking like new. The glass dial face was then carefully cleaned and glued back into position.

## Chassis restoration

By this stage, the cabinet was looking pristine and that encouraged me to get on with the electrical restoration. The chassis was corroded and covered with dust, so a fair amount of work would be required to restore it.

The set came with a mains cord fitted but its terminations at both ends left a lot to be desired. That, plus the general condition of the chassis, meant that it wouldn't be a matter of simply plugging it in and seeing what happened (an unwise move in any event).

Instead, I decided to try what a rather "rustic" member of the Historical Radio Society told me worked for him. That was to wash a chassis down aggressively then leave it for a month or so to let everything dry. As a result, I removed the valves and washed the chassis down. I couldn't see any practical way to protect the

power transformer with a plastic bag so I simply washed everything in-situ.

Fortunately, the weather was warm and dry and so I waited for just five days for it to dry out. Everything certainly looked dry by then, so I rewired the mains cord, disconnected all loads from the transformer secondaries and switched on.

It all seemed to be OK at first but then the power meter climbed rapidly to several hundred watts and the all-important smoke escaped from the transformer. Experience has taught me that electrical devices all run on smoke and when the smoke escapes, the device won't work any more.

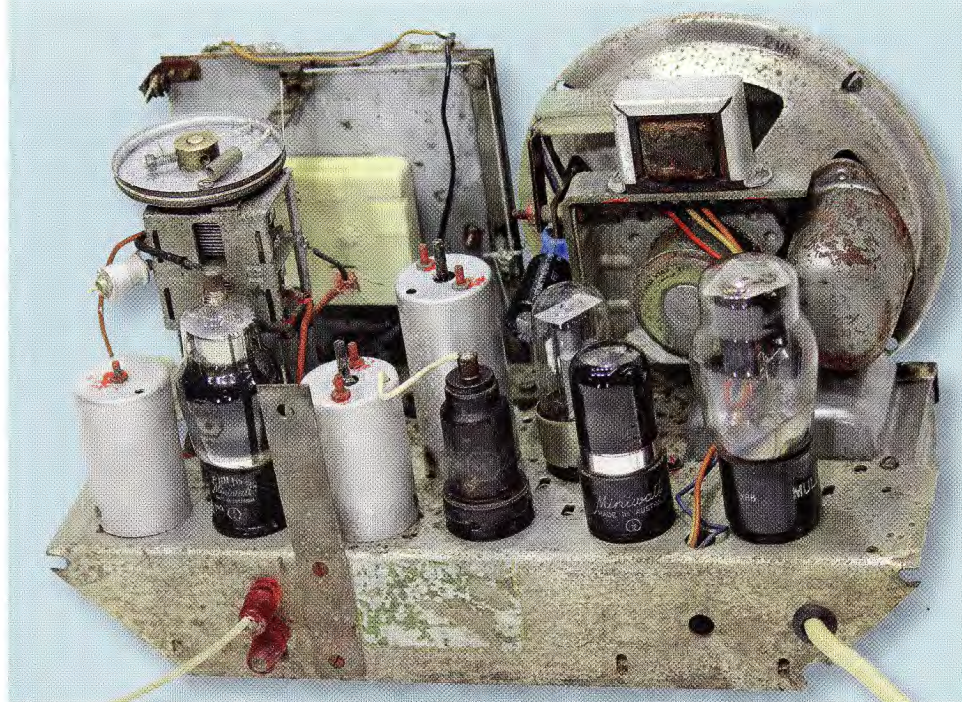
I was a bit hesitant to tell this story against myself but it allows me to share what I learnt from the mistake. Basically, it's much easier to remove a transformer before washing a soiled chassis than it is to replace the transformer. (Editor's note: it's also a good idea not to wash transformers and to use a high-voltage insulation tester to check an old transformer before applying power).

In this case, a Philips chassis on my parts shelf had a transformer that could be adapted, even though it was about 10mm longer and needed some creative metal work in order to slip it into place. The replacement transformer produced HT voltages that were spot-on to the circuit diagram values for the Tela-Verta and it had the necessary 5V and 6.3V heater windings.

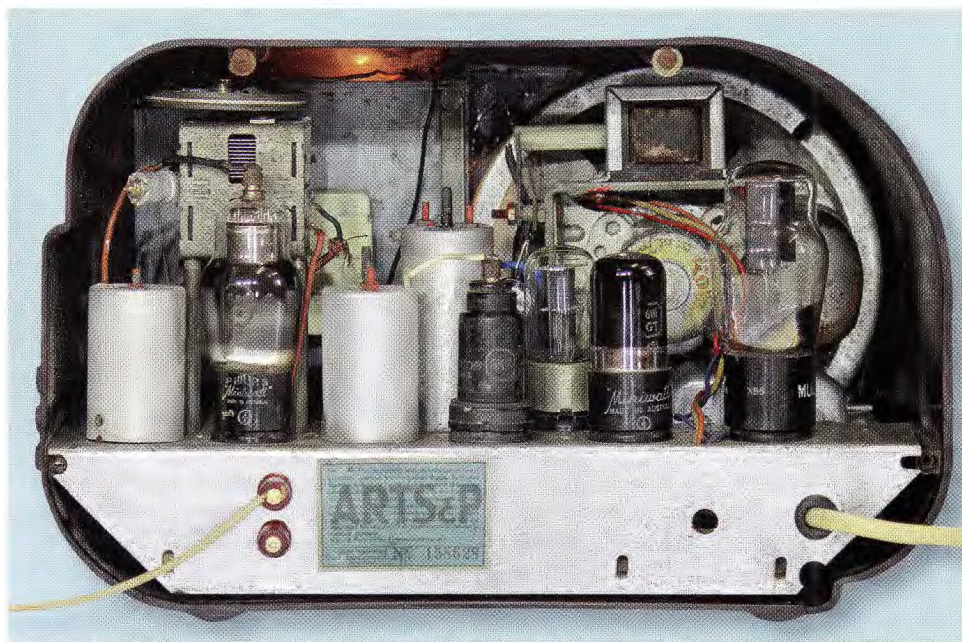
The layout of this radio is quite compact (the outside of the cabinet is just 330mm wide). To leave room for the large clock mechanism, the main transformer body is located under the chassis, while the filter choke is mounted on a metal bracket above the 6-inch (15cm) Rola loudspeaker. At first glance, the choke might be mistaken for the output transformer but the latter is actually mounted to the side of the speaker.

Two dried-out Ducon electrolytic capacitors were anchored to the chassis adjacent to the speaker and wired to the choke's fly-leads. It struck me as an elegant layout, even though it was necessitated by lack of space elsewhere.

It was almost amusing, after recovering from my initial disbelief, to discover that someone had soldered a shorting wire across the choke. This indicated that the choke was open circuit and indeed it was. Shorting it out was a cheap (and no doubt convenient) way



This rear view shows the replacement clock movement on the back of the dial plate (ie, immediately in front of the tuning gang).



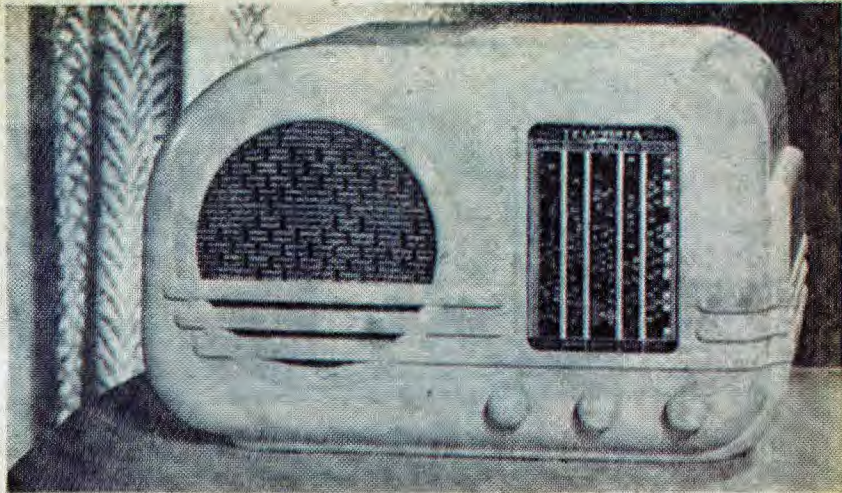
The restored chassis is a neat fit inside the Bakelite case and has been fitted with a new dial cord and a new ARTS&P sticker.

to get the radio working again but it's still a rather foolish thing to do. Valve radios are remarkably tolerant of large voltage variations but it was only by luck that the radio had survived this so-called "fix".

Reference to the Australian Official Radio Service Manual (AORSM) indicated that the choke used in this set should have a DC resistance of 1.5k $\Omega$ . As a result, a 1.5k $\Omega$  10W resistor was installed in its place. This resistor dropped the HT by some 30V (from 265V down to 235V).

The two replacement HT filter capacitors were installed next. These had values of 22 $\mu$ F and 100 $\mu$ F whereas the originals were 8 $\mu$ F and 16 $\mu$ F. As it turned out, the restored radio had negligible hum so the ripple filtering was excellent, even without the choke.

Three other electrolytic capacitors in the set were also replaced – one HT filter and two cathode bypasses. One benefit of removing the original transformer was that it gave access to a cluster of components that were otherwise inaccessible. These parts



# It's Here! / THE NEW "Tela-Verta" / MODEL TV24A

A 5-Valve A.C. Operated Dual Wave Mantel Radio housed in the attractive plastic cabinet depicted above, Model T.V. 24A will prove a real sales winner. Available in East de Nil, Ivory and Figured Walnut. Franchise still available in some districts. Write for particulars.



THE MODERN RADIO

DISTRIBUTORS:

SYDNEY & METROPOLITAN:  
R. Fitzgerald & Co.,  
24 Bond St., Sydney. (Phone) SW1061.

QUEENSLAND:  
H. E. Livett,  
McIndoe's Music,  
Queen Street, Brisbane.

N.E.W. COUNTRY:  
G. J. Macintyre & Co.,  
12 Margaret Street, Sydney.

WESTERN AUSTRALIA:  
Routledge Pty. Ltd.,  
60 Hay Street, Perth.

D. W. RADIO CO., PTY. LTD., 466 VICTORIA AVENUE, CHATSWOOD, N.S.W.

During their 14-year history, Tela-Verta produced over 30 models ranging up to 8-valve console radios. This advertisement for their TV-24A mantel radio shows the same case as used for the model 204C.

included a 6kΩ 1W resistor marked with the old 1940s colour scheme and a quick resistance check revealed that it was down to just 127Ω. This resistor was included to drop the HT to the screen of the 6V6 output valve and to the anode of the 6SQ7 preamplifier.

Of course, 6kΩ is no longer a preferred value and so a 5.6kΩ 1W resistor was substituted.

Further checks revealed that the 1MΩ resistor in the AGC feedback

path from the 6SQ7's detector actually measured 2.5MΩ and so it too was replaced. In addition, the 0.05μF capacitor between the secondary of the aerial coil and ground was replaced before switching on.

## Switching on

At this stage, the remaining original paper capacitors were left in place but I was still optimistic that the radio would work. After warming up, it settled down to a steady power reading of 38W which looked fine. The only problem was the silence – there wasn't even a reassuring hiss from the loudspeaker.

Touching a screwdriver on the volume control wiper produced a loud

50Hz hum from the speaker, so the audio section appeared to be working (at least to some extent). Some hopeful prodding and valve substitution in the front-end then did nothing, so I was going to have to track the fault down the hard way.

Fortunately, measuring the voltages around the 6A8 mixer-oscillator quickly revealed the problem. The cathode was at 118V (circuit indicates 3V) and all other voltages were way out. This indicated that the 450Ω 6A8 cathode resistor was open circuit and that indeed proved to be the case. As a result, the cathode resistor was replaced along with its parallel 0.05μF bypass capacitor.

As soon as that was done, the radio sprang into life and I was able to tune various stations. However, the sound quality was poor and a voltage check at the top of the tone control gave a reading of 10.3V. The tone control in this radio ingeniously doubles as the grid-earth resistor for the 6V6 output valve. Replacing the leaky audio coupling capacitor between the 6SQ7's plate and the 6V6's grid brought the grid voltage back to 0V.

The 6V6's cathode now gave a reading of 5.7V and this restored negative bias to the grid. And that solved the audio problem.

## Dial cord

The last remaining repair job involved restringing the dial cord. The thick, green string that someone had previously used was laughably inadequate for the job and had to be removed. Unlike ordinary string, proper dial cord will follow the rotation of the tuning shaft without binding on itself or slipping.

There was one more heart-sinking moment left. As shown in one of the photos, the ends of the chassis are acutely angled in order to clear the case. However, when I attempted to push the restored chassis back in, the mounting screws used for the replacement transformer fouled the edges. The solution proved to be quite simple – it was just a matter of cutting 3mm off the ends of the screw threads that secured the transformer, after which the case and the chassis married up.

And that was it. I now have a classic Art Deco radio that has recovered its former glory. It works well and I have the added pleasure of knowing its history.

SC



The Tela-Verta banner used by the D. W. Radio Company.