

Vintage Radio

By Kevin Poulter



An insight into the manufacture of quality valve radios in the USA nearly 100 years ago

Radio Manufacturing in 1925: the Wells Gardner story

This month we take a look at high quality radio manufacturing during the 1920s in the USA. This was on a much larger scale than in Australia but the methods were largely the same, with similar machinery and tools.

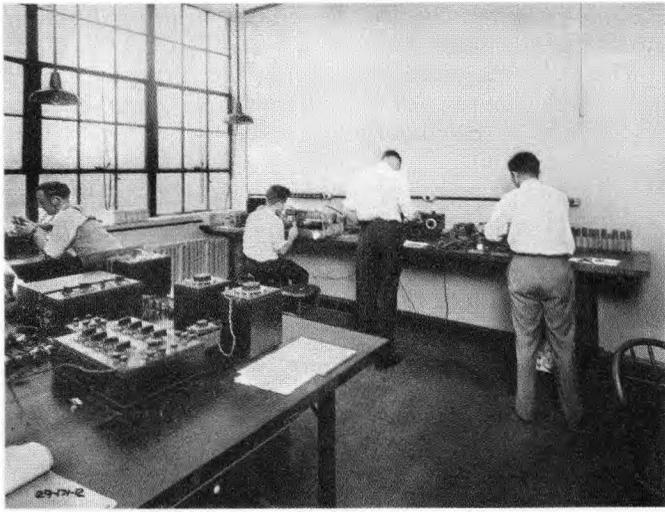
In the 1920s, radio manufacturing proliferated. Yet from the thousands of companies that then existed, few images of production were ever taken or remain. It was considered a breach of security for an employee to photograph inside a factory so some factories eventually closed without a single photograph taken.

Fortunately the US company Wells Gardner produced some images, most likely for salesmen to show stores that they were a big operation and not just a suburban garage or tiny factory. This provides us with wonderful insight into

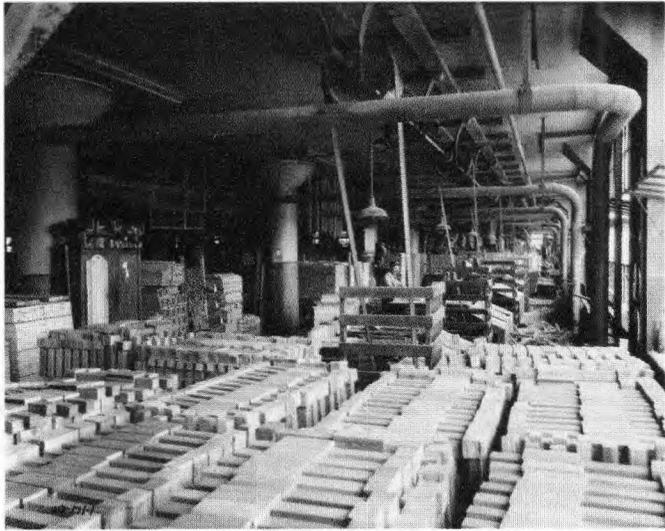
the manufacturing techniques of the late 1920s.

In 1925 production started at Wells Gardner with a discussion between the Manager, Sales Manager and Design, regarding the best radios to meet market trends. In the mid to late 20s, the only choices were a console radio, a "coffin" bread-box style, or a mantel in a wooden cabinet – and how many valves to have in the design. As was common practice, a number of brands were used, with many consoles and huge table sets sold under the M. Wards' "Airline" name.

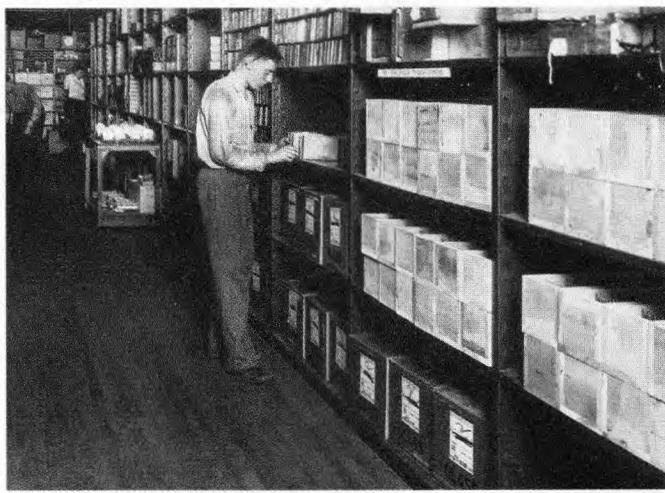
This strongly influenced the selling price and most manu-



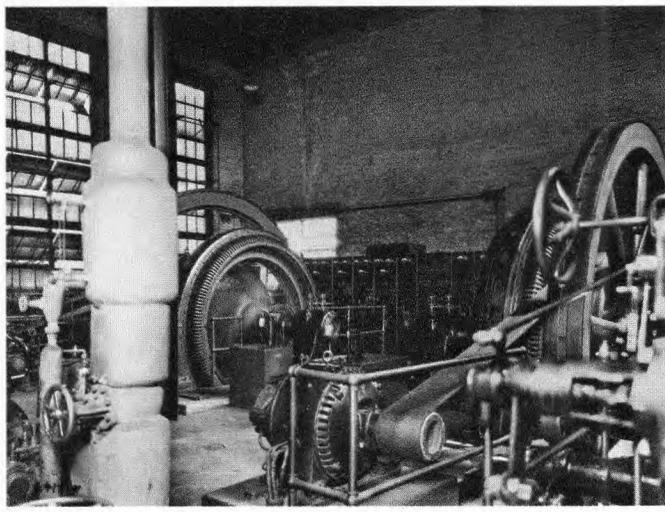
facturers had economy and top-end models. It appears that Wells Gardner mainly supplied the top end of the market, as many of their radios were nine-valve.



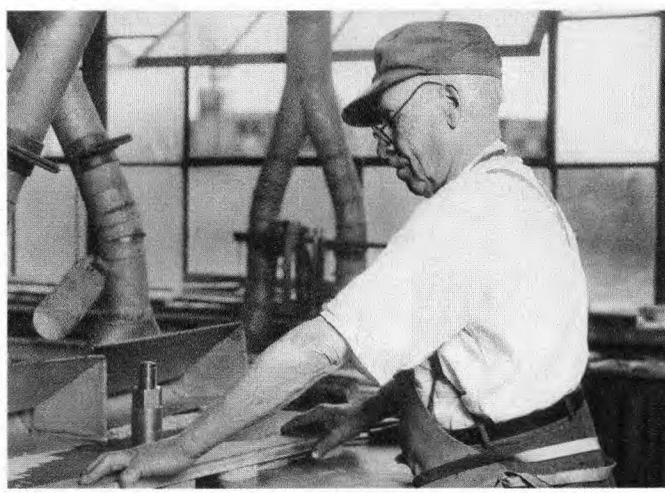
A major part of the production at that time was huge stacks of fine timber and the best craftsmen to fabricate it into beautiful cabinets.



When the design was completed and approved, parts were ordered in and kept in the secure store. Staff had no access, as many liked to build their own hobby radios or knew people that did and may otherwise have 'lifted' some parts.



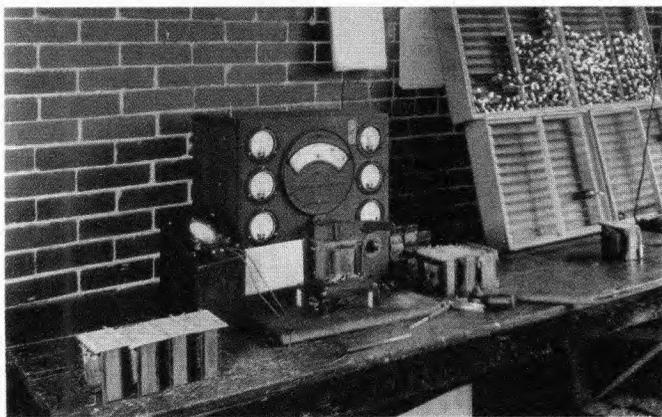
The 'engine room' generated all of the electric power required by the factory and offices, due to the generally unreliable reticulated power at the time.



Not having enough of some parts to complete a production run was even worse than the pilfering, as production, distribution and sales were all then delayed.



Many components were made in-house, though most likely not valves nor capacitors, as they were more specialised. Transformers and coils were definitely made in the plant, as they often were in Australian factories of the era. Here women wind and assemble coils.



Transformers made in the factory were tested in a jig, with seven meters plus an auxiliary meter. The jig's contacts match the pins on the transformer, and the lever in the centre applied a little pressure to ensure all contacts were sound. So the test was essentially automated - place the transformer upside down on the jig, push on the lever and switch on.



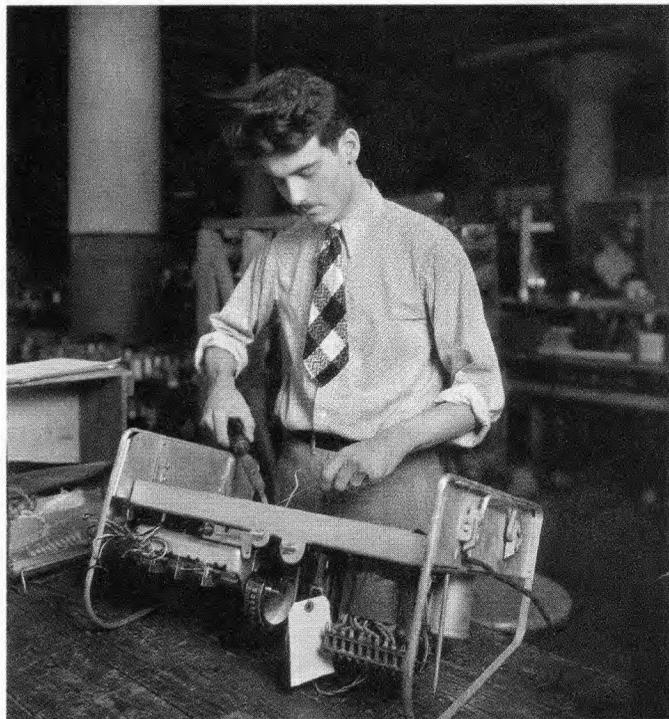
When all the components were made or purchased in, a production run commenced. Each section had a supervisor (you can just see his hat in this photograph) to ensure the people worked hard and to a good standard. Toilet breaks were generally not permitted. He was also expected to ensure the continuous supply of parts to the line.



In the foreground, wires are being cut to length, stripped on their ends and pre-tinned with solder. Some would have heat-resistant sleeving added. Prepared wires were

included in looms or used singularly for direct links between components.

The following photographs show the construction of a nine-valve receiver. All the radios were assembled using the factory jig, with handles to enable easy roll-over of the chassis.



Looms were made in factory, to connect most of the components together electrically. A loom jig was a piece of wood with the loom plan drawn on paper and attached. Conventional building nails in the wood guided every bend and other nails indicated the end of each wire's course.

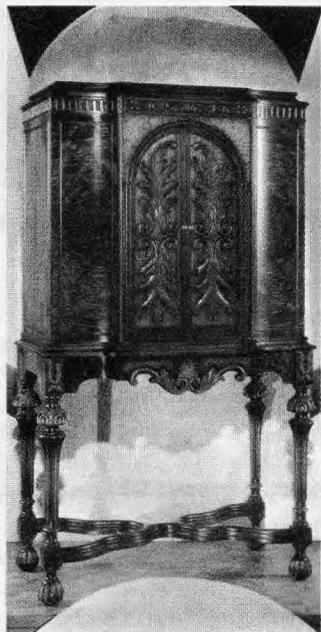


When a wire was run through to its destination, it was terminated by winding once around the end nail and then cut off. On completion, the entire loom was hand-stitched together and/or bound with cloth strip.

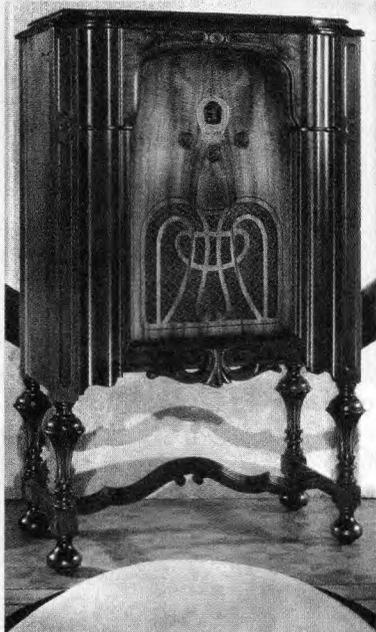
Eighty years later, this exact method is still used to make custom looms for vehicle restoration.

The male in the centre of the above picture is the supervisor, with his desk in the foreground.

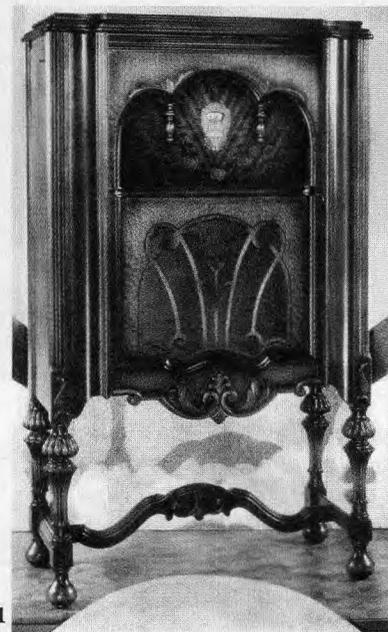
THE GALLERY: SOME OF WELLS GARDNER'S RADIO MASTERPIECES



92-1929



WG-82

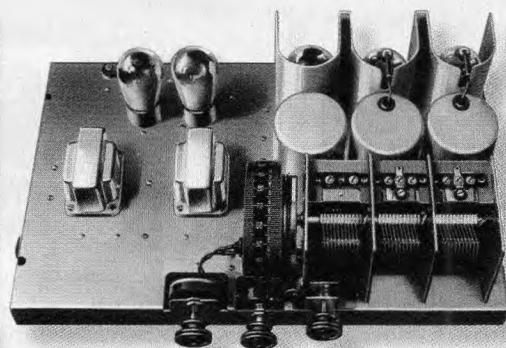


WG-161



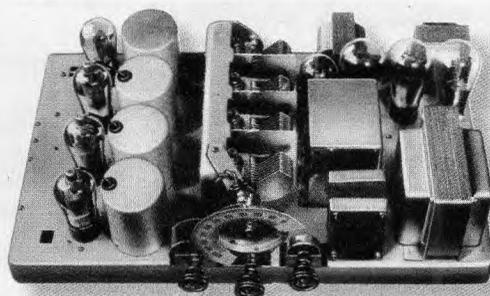
Wells-1933
A 1933
console
radio

1933 Airline Superhet
and a closeup of the dial

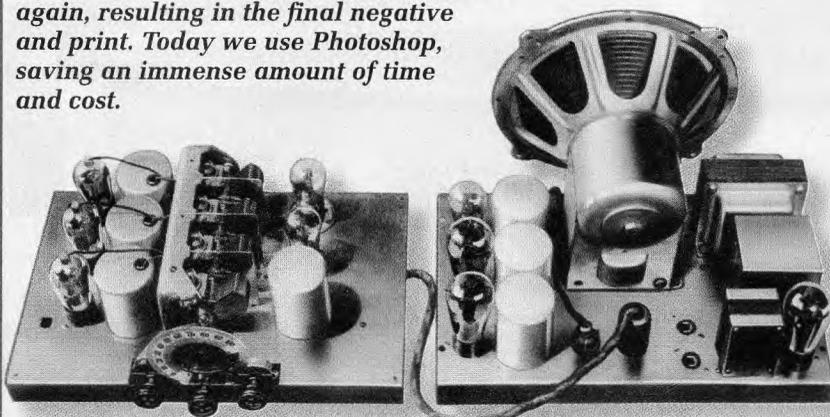


Five valve chassis WG-30-126-2

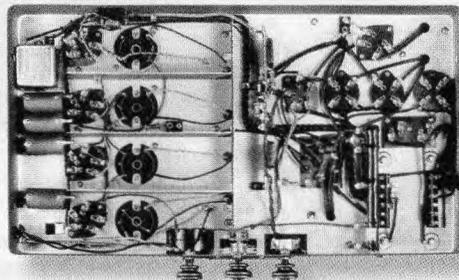
These chassis were photographed in a studio, printed to a large size, air-brushed and retouched, then the retouched image photographed again, resulting in the final negative and print. Today we use Photoshop, saving an immense amount of time and cost.



Eight-valve WG-30-106-3 showing top side and underchassis

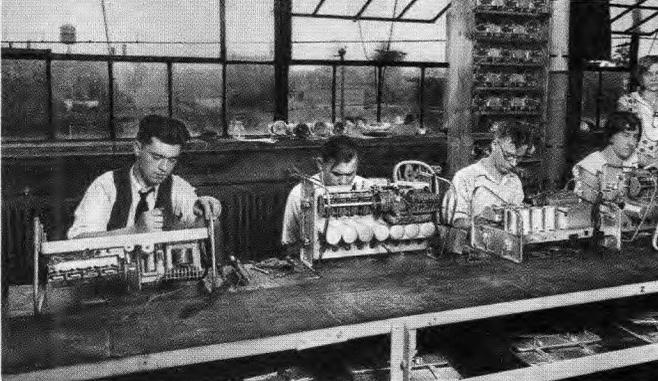


The connection loom between the two chassis appears to be covered by winding a fabric strip over, an early version of the tape used in later looms.

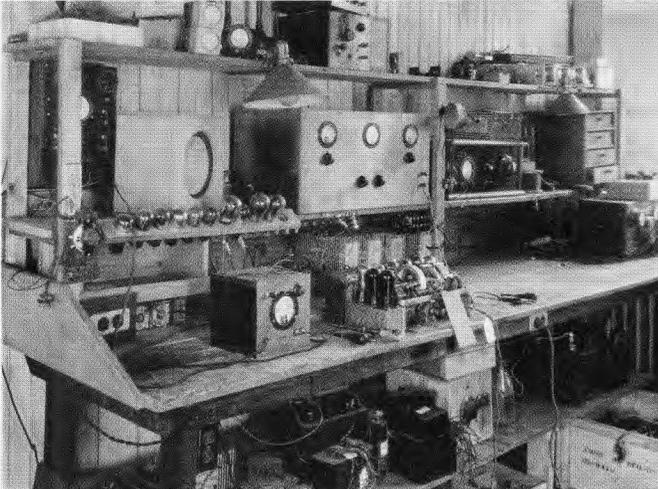




Production was not easy for the staff. Conditions were high-pressure and the area poorly lit. Note the 4-gang variable condensers and the age of the women – from teens to seniors. The caged area in the rear is most likely a lockable store.



The final assembly was mainly done by men, with the woman on the far right probably a long-term employee with advanced experience. A supervisor stands on the far right and in the foreground there's a row of disassembled jigs, below the desk.



The final test bench has custom-built test equipment, Burgess "B" batteries, plus wet cells near the floor and spare valves if needed. The photograph is so clear, some boxes of RCA UX-280 valves can be seen at the top and a row of valves in the centre. There's a screwdriver, radio pliers, soldering iron and an open end spanner on hand too.

About these photos: restoration from glass negatives by Kevin Poulter*



The images in this feature were 'rescued' from an American owner and were reproduced from the original glass-plate negatives.

The images were top quality, as the photographers almost certainly shot them in a view (bellows) camera.

It's likely they had at least one incandescent spot-lamp, however shutter speeds still needed to be down to about one second or even longer. The result was at least one of these images showed double-imaging.



The sheer size of the glass negatives – four inches x five inches – overcame the low quality of the lenses. These intrepid photographers had to load, carry and process glass plates! Some even coated their own plates (negatives).

Recently I used Photoshop to restore them to better-than-original. This included lightening the areas where the main photographic light was much dimmer in the distance, due to the inverse square law (the phenomena where doubling the distance reduces illumination to approximately one quarter). Other than the restoration mentioned, the images are identical to the day they were photographed.

As recently as the 1950s to 1970s, radio and television factory employees in Australia still worked in conditions similar to those shown here, seated in long rows, with the women doing the most repetitive work and men doing more advanced functions, like design, cabinet crafting and final testing.

* Kevin Poulter is a professional photographer based in Melbourne. You can see more of Kevin's work at www.imageaustralia.info

On completion, the radios were packed in wooden boxes, then when ready for shipping, were loaded into a rail car at the company's own rail siding.

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