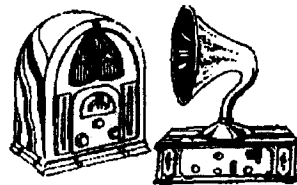


# Vintage Radio

by PETER LANKSHEAR



## Societies, the NZVRS badge and a classic 'cathedral'

Although Australian made receivers were produced in considerable variety, and were of excellent quality, increasing numbers of Australian vintage radio enthusiasts are broadening their horizons by importing receivers, and by membership of the New Zealand Vintage Radio Society.

Late in 1930, the Australian Government introduced tariff restrictions which severely limited the importation of radio receivers. This move fostered a strong and valuable indigenous Australian radio industry, but has limited the range available to today's vintage radio enthusiast.

New Zealand did not have restrictions for a further six years, permitting until 1936 a steady flow of imported receivers, particularly from America. This period is regarded as the golden age of radio, and America, by reason of its dominance in research, styling and quantity of manufacturing, led the field.

Fortunately, during the 1970's, a general awareness of the importance of preserving this technical heritage began to grow, encouraging the salvaging of valve receivers. Consequently, a relatively high proportion of these classics has survived, and New Zealand collectors have had a wide range of receivers to choose from, often at little cost.

Increasing numbers of Australians are

realising the significance of vintage radio, and many have discovered that New Zealand is something of an Aladdin's Cave of exotic radios. New Zealand collectors are now having to compete with Australian bidders at auctions, and in the process have discovered the real value of some of the classic receivers.

### Vintage societies

Before 1979, individual enthusiasts operated in relative isolation, but inevitably they realised the benefits of forming group organisations. Both Australia and New Zealand are now fortunate in having thriving and well managed societies, dedicated to fostering the various aspects of the hobby. A significant number of members on each side of the Tasman belong to both organisations.

For the past decade, the Historic Radio Association of Australia has been active in promoting the cause of vintage radio. An important service is the publishing of

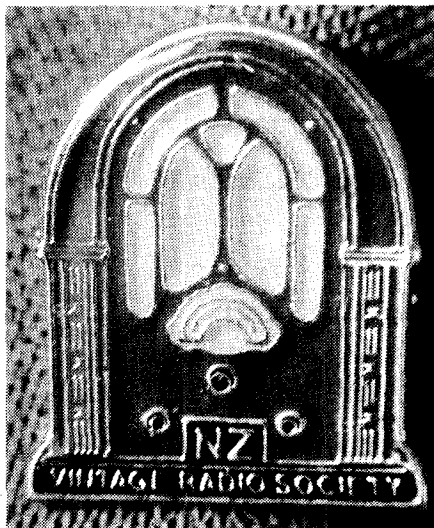
the quarterly magazine, the *H.R.S.A. Newsletter*, edited by Ray Kelly. Each issue contains articles covering various aspects of vintage radio, and most importantly buy, sell or swap columns. There are several active local branches where members can assist each other, exchange information and ideas, and trade equipment.

An organisation with similar objectives, The New Zealand Vintage Radio Society was established in 1979 and now has several hundred members. The parent group meets twice monthly in Auckland, and a very active branch is based in Wellington. The quarterly *NZVRS Bulletin* is the official publication, with international author John Stokes as its editor. Like its Australian counterpart the *Bulletin* includes articles and illustrations covering all aspects of vintage radio, and features both 'Wanted' and 'For Sale' columns.

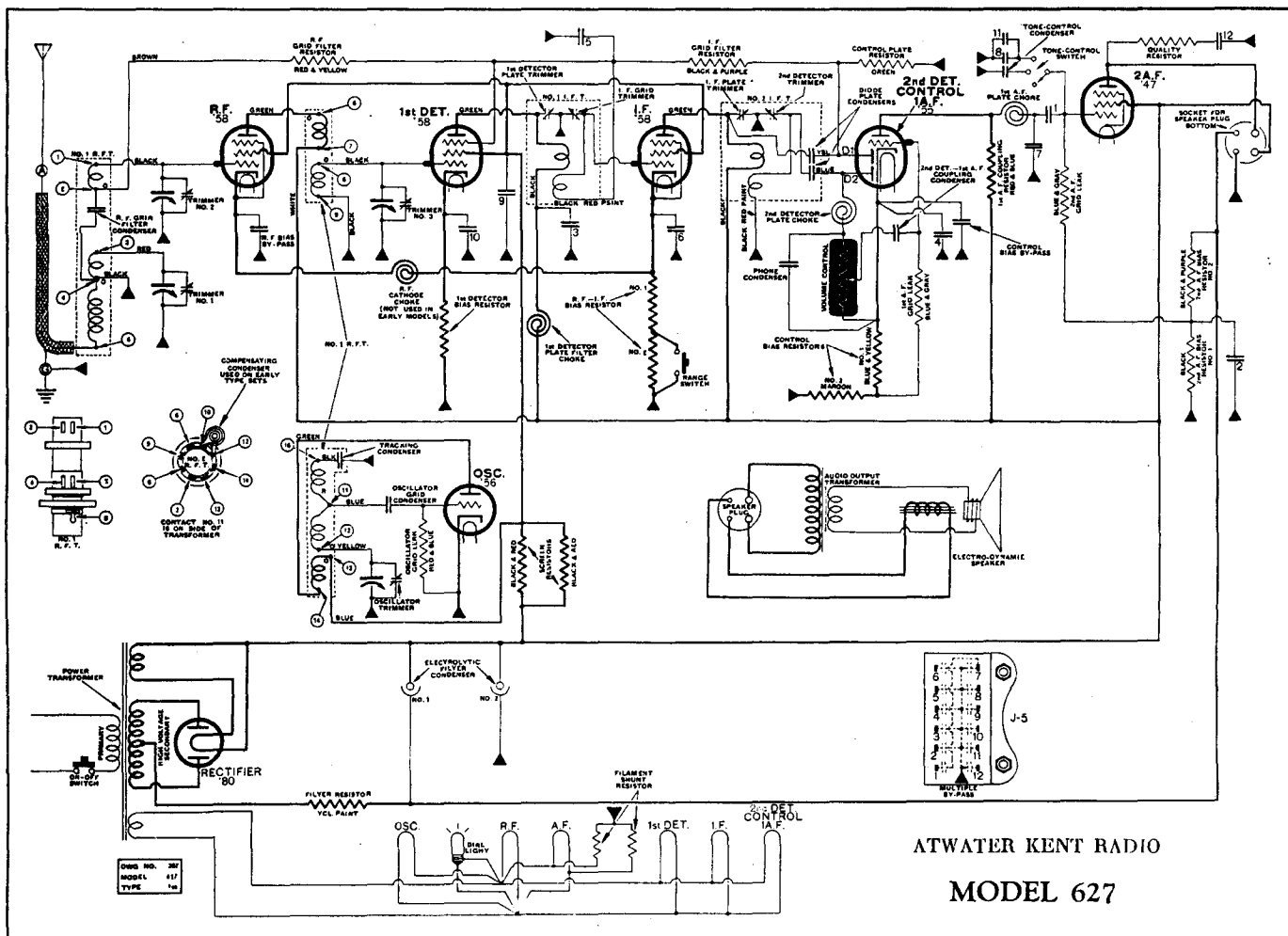
### Choice of symbol

The two threads in this article come together in the choice of the symbol for the NZVRS membership badge. Clearly the motif had to be instantly identifiable with a radio society and two subjects were possibilities. An 'R' type valve was considered, but this could be mistaken as representing a valve collectors' society. A radio was therefore chosen, and a round-topped 'cathedral' model seemed to be most appropriate as being unmistakably and instantly recognisable.

The classic cathedral cabinet is an example of very successful and functional industrial design. Originally introduced as a means of reducing the price of radios in a depressed industry, and in production for a period of only three or four years, it has become increasingly valued and appreciated by later generations. Cathedrals are now highly sought after, and when they appear at auctions are the centre of attention not only by collectors, but



Left: one of a dozen or more different 'cathedral' style cabinets by Atwater Kent, this one housed both the 558 and 627 models. At right is the NZVRS badge, which reproduces the cabinet to symbolise clearly the Society's interests.



ATWATER KENT RADIO  
MODEL 627

**Like all Atwater Kent receivers, the 627 was well designed. Thorough bypassing and the use of RF chokes for decoupling resulted in a very stable receiver.**

often by antique dealers and also the public, who regard ownership as prestigious. Significantly, in recent years, several replica cathedral models fitted with modern receivers have found a ready market.

How the term 'cathedral' originated is not certain, but a likely explanation is that it resulted from some of these cabinets having fascias reminiscent of the pointed or Gothic arch associated with medieval cathedrals.

The model chosen for the NZVRS badge is the quintessential cathedral model and a classic from one of the leading American makers, Atwater Kent. Dating from late 1932 and used for two models, the 627 and 558, this attractive cabinet has the classic arched fascia, with the Gothic motif echoed in the speaker fret.

### Atwater Kent quality

Fortunately Atwater Kent receivers were actively promoted and imported into New Zealand for most of the firm's existence, and their popularity and qual-

ity have ensured that a significant number have survived.

Arthur Atwater Kent set very high standards. He insisted on the highest quality finish for his Bakelite mouldings and metal pressings, and he had a flair for making attractive products. His earliest receivers, the much prized 'breadboards', were not intended to be hidden in cabinets at all, but stood alone as well finished instruments. Later he did accept the need for enclosures, but chassis without cabinets remained readily available.

When he did use cabinets, he made sure that they had style. Some of his consoles were ornate, but even the humble mantle sets reflected quality and attention to detail. Atwater Kent receivers are easily recognisable — a factor which, together with their fine performance and quality of workmanship, makes them classics.

As a pioneer and independent, Atwater Kent who was at one time America's largest manufacturer of radios, had his own unique and distinctive methods. He

used his own resistor colour code and at one stage his cabinet nameplates were gold plated.

### Receiver details

Inside the cabinets the chassis and speakers continued the tradition of good looking equipment. The usual cadmium or zinc plating on lightweight metal was not good enough. Atwater Kent chassis were *solid*, and nickel plated. Transformer covers and speakers were enamelled in a particularly rich shade of dark chocolate, matching the Bakelite mouldings. Setting them off were gold shields and a gold speaker magnet. The earlier aluminium IF transformer shields were unique: each had a neatly fitting lid concealing the trimmer capacitors, effectively guarding against unqualified 'tweaking'.

The 558 and 627 superheterodynes were typical of Atwater Kent circuit design: sound and conservative. Essentially the same as the 627, the 558 had an additional inter-station noise limiter or squelch valve.

Valves used included the then recently released 50 series: the 55 diode triode detector and audio voltage amplifier, 56 triode oscillator, 57 pentode noise silencer and 58 pentode RF amplifier, mixer and IF amplifier. The 47 output pentode and 80 rectifier were longer established valve types.

## Circuit analysis

The intermediate frequency of these sets is only 130kHz, and to avoid the possibility of images, the aerial transformer has an additional tuned winding. Consequently there is a four-ganged tuning capacitor, not often found in domestic superheterodynes. The RF amplifier is conventional and is connected by a third tuned circuit to the mixer or '1st detector'. Inductively coupled on the same coil former are the windings for the separate 56 oscillator valve.

Next is the IF amplifier stage, operating at 130kHz — one of the lowest frequencies used by US manufacturers, and resulting in very high gain and selectivity. Extreme sideband cutting is compensated for by a degree of overcoupling of the windings, and requires resistive damping of windings during alignment — another example of Atwater Kent's sound but unconventional engineering.

In high signal strength but noisy reception locations, effective automatic gain control systems can result in unpleasantly high noise levels between stations. To cope with this, the model 558 has an adjustable muting system using a type 57 valve, but the 627 relies on optional desensitising of the RF and IF amplifiers by means of an additional cathode bias resistor, controlled by a 'range' toggle switch on the left side of the cabinet.

## First diode-triode

Together with its type 85 companion, the 55 was the first double-diode-triode valve, and the diodes are used here conventionally for detection and delayed AGC. With triode characteristics not much different from the pioneer type 27, the gain as a resistance coupled amplifier is a modest 5, but sufficient to drive the 47 output pentode adequately.

The power amplifier type 47 was the first standard US output pentode and was shortly to be superseded in Atwater Kent receivers by the indirectly heated 2A5. A switched tone control in the grid circuit was standard Atwater Kent practice.

Except for the filter resistor in the negative supply lead, the power supply and biasing are conventional. The resistor was necessary for additional filtering, because Atwater Kent did not adopt hum bucking coils for loudspeakers until 1933. This was one area where they were behind current practice, but it must be pointed out that Atwater Kent was strongly independent and the industry was having a lot of patent problems.

## Under the chassis

The undersides of Atwater Kent chassis have their own character. One might expect the wiring to be geometrically precise, but instead the first impression is of a riotous jumble of flexible wire, mostly rubber covered. Perfectionist though he may have been, Atwater Kent was hard nosed enough to realise that fancy wiring was very expensive in time and did nothing at all for performance. Instead, although critical leads were short and carefully planned, the wiring operation was a typical mass production assembly line process, based on speed and simplicity. Some leads were actually wire wound resistors.

Sub-assemblies were common. Although hard to see in the photograph, most resistors in the 627 chassis are mounted on two circular formers.

Seen edge-on at the left side of the lower side of the chassis is another innovation: a rectangular multiple capacitor block containing 12 paper capacitors, mostly bypasses. A common foil formed the earthing electrode, while segments of foil formed the other electrodes. Connecting tabs were included and the whole assembly wound up like a bolt of cloth, to make a very compact unit.

One feature is appreciated when working on an Atwater Kent chassis. Many manufacturers wrapped and crimped leads around solder tags, making unsoldering and replacement difficult. Like AWA in Australia, Atwater Kent found that this method was unnecessary and to solder leads flat onto terminations was quicker and quite reliable.

In short, then, an Atwater Kent receiver was a very good choice for the NZVRS emblem.

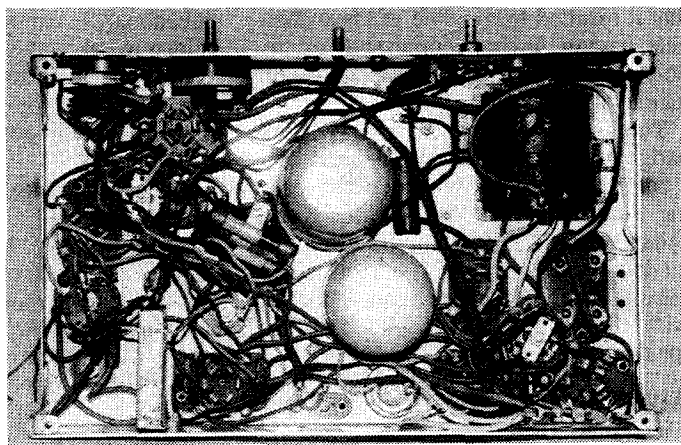
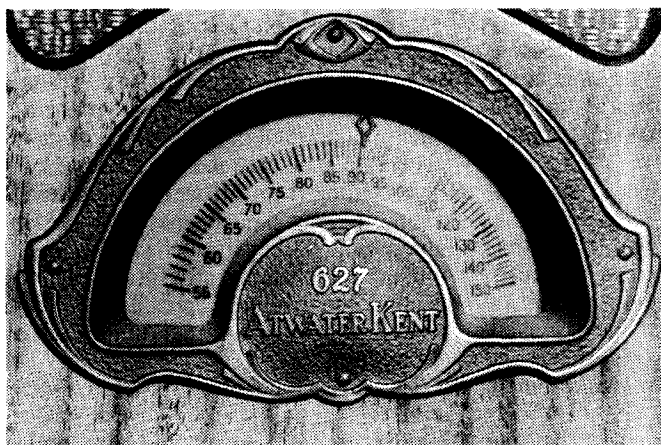
## Joining Societies

Regardless of their ability, and the size of their collections, all vintage radio enthusiasts can benefit from membership of Societies. Both the HRSA and the NZVRS welcome new members, and subscriptions are quite modest.

If you're interested in vintage radio, why not join one — or both. Contact addresses for the two societies are:

Historic Radio Society of Australia,  
c/- J.R. Wales,  
PO Box 283,  
Mt. Waverley 3149, Victoria.

NZ Vintage Radio Society,  
c/- The Treasurer,  
20 Rimu Road,  
Mangere Bridge, Auckland. ■



*Left: the dial escutcheon of the model 627 illustrates the attention to detail that was a characteristic of Atwater Kent receivers. Right: first impressions of an Atwater Kent chassis are of a disorderly jumble of wires, but closer inspection shows that in reality there has been a lot of planning. Most of the bypass capacitors are in the rectangular box at lower left.*