AVAILABLE (cont.)

Capacitors, 10mF, 450V., Electrolytics. Brand new stock. Owing to a rapid increase in the cost of these caps. in NZ we have imported a large quantity and they are available at $1.00 each plus postage. These caps will be available at the Easter Exhibition or contact Gerry Billman . 09/6256568. email billman@xtra.co.nz

WANTED

845 and 805 valves. Free - one model 90 Majestic chassis to give away. Reply to Brian Smith 24 Coley St., Foxton. Ph. 06/3637774.

The following circuits are wanted for the NZVRS library.
Collier and Beale; Sea Bee marine receiver, Gulbransen 88612 Arizona, 618P, 512, 70, 72. Benmore, Gainsborough, Telstar, Gulbransen 756.
Radio Limited; CUS, BIC, COR, EBU, RGB. Ernie Hakanson, 17 Williamson Ave, Grey Lynn, Auckland. Ph 09/3766059

Copy of "Radio Frequency Measurements by Bridge and Resonance Methods" by L. Hartshorn. Any reasonable price.
Reg Motion, 2A Hazel Terrace, Tauranga. email, regmotion@xtra.co.nz Ph 06/5768733.

One wooden cabinet for Philips R588, (1934), also any other bits for this model - back, knobs, speaker etc. D J Smith, 156 Rangitoto Rd, Papatoetoe, Auckland.

One only 5 pin ceramic socket for an 803 transmitting valve. Needed for display purposes only. Barry Williams, 4 Kay Drive, Blockhouse Bay, Auckland. Ph 09/6279070.

Majestic Chassis models 90, 91, 92, 93, 102, 103 or any other models. Sam Lowe, 23 Hurdon St, New Plymouth. Ph 06/7536693.

Two wooden rossete radio knobs for RCA model 110, one large and one small. Paul Burt , 44 Hastings St, Christchurch 8002.

Rear cover for Pacemaker Leader (blue) portable. 3 or 4 curved chrome bars for HMV NZ model 467SB (1947). Circled H badge for Hallicrafters S38. Arthur Williams, 26 Centre St., Invercargill. Ph 03/2168985.

BOOKS by John Stokes

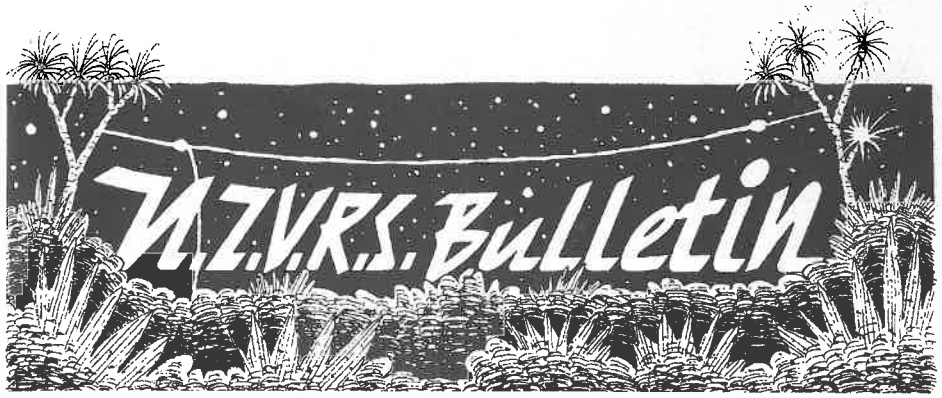
The NZVRS now has a stock of the following books written by .John Stokes. These are available to members at cost as follows:

The Golden Age of Radio in the Home.
$38 plus $5 post and package.

More Golden Age of Radio in the Home
$55 plus $5 post and package.

70 Years of Radio Tubes and Valves (2nd edition)
$46 plus $5 post and package.

All of these are available from the Treasurer, David Crozier, 154 Grey St, Onehunga, Auckland. Ph 09-6365954 or 0800-187161.
Cheques to be made out to the New Zealand Vintage Radio Society please



NEW ZEALAND VINTAGE RADIO SOCIETY

Vol. 21 No.1 May 2000

KEITH MARSDEN WRIGLEY - FOUNDER OF AKRAD RADIO

NEW ZEALAND VINTAGE RADIO SOCIETY INC.

A non-profit organisation devoted to the preservation of early radio equipment and associated historical information

PRESIDENT: Ian Sangster, 75 Anawata Rd, Piha, R.D, New Lynn, 1250. Ph 09-8149597, email: Ian.Sangster@airnz.co.nz

SECRETARY: Grahame Lindsey, 13 Rosalind Road, Glenfield, North Shore, Auckland. Ph 09-4432033 or 025-446293. General correspondence, requests for purchase of books, badges and power cable are handled by the Secretary.

TREASURER: David Crozier, 154 Grey St, Onehunga. Ph 09-6365954 or 0800-187161. email- dckh@pl.net Financial and membership matters are handled by the Treasurer. A list of members is available on application to the Treasurer with a self-addressed, stamped envelope.

LIBRARIAN, Ernie Hakanson, 17 Williamson Ave, Grey Lynn, Auckland. Ph 09/3766059. Requests for circuit diagrams, books and magazines are handled by the Librarian at a small charge. Back numbers of most NZVRS bulletins are also available from the Librarian at $1.50 each for Vols 1 to 10 and $2 for issues from Vol 11 onwards. Cheques to be made out to NZVRS.

NZVRS BULLETIN is published quarterly in the months of February, May, August and November. Opinions expressed by writers are not necessarily those of the Society. Contributions should be sent to the EDITOR , Reg Motion, 2A Hazel Terrace, Tauranga. Ph 07-5768733, email - regmotion@xtra.co.nz..
Bulletin distribution is arranged by Rod Osborne, P.O. Box 2098, Tauranga.

AUCKLAND MEETINGS are held on the third Monday of each month at 7.30pm in the Horticultural Society Hall, upstairs in the old Chamberlain Park Golf Clubhouse, 990 Great North Rd., (opposite Motions Rd.). Sales of vintage items are held at these meetings in the months of March, June, September and December.

WAIKATO AREA. Next meeting and garage sale:- 1pm on 4th June at Reg and Rose Motion's place, 2A Hazel Tce. Tauranga. Ph 07/5768733.

WELLINGTON MEETINGS are held typically from 1pm on the second Sunday of every month at Tireti Hall, Te Pene Ave, Titahi Bay. For details contact Bob Hatton, 40 Rose St, Wadestown. Ph 04-4728788.

CHRISTCHURCH AREA. Contact Jim Lovell, 41 Yardley St, Avonhead, Christchurch 8004.. Ph 03-3427760.

CONTENTS

FROM THE EDITOR

As promised, Don Osborne has an interesting story in this issue covering the history of the AKRAD, Waihi and Dons personal involvement with that company.

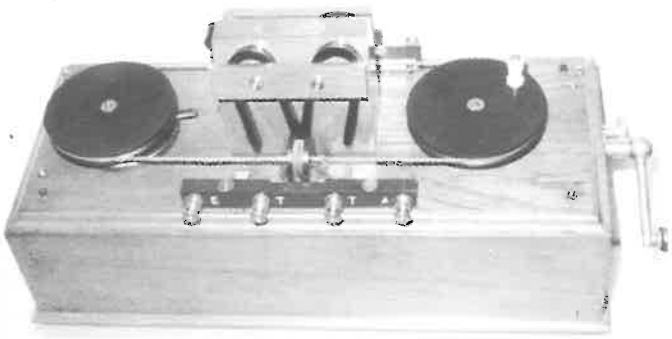
This is the time of the year for a reminder to members about their subscriptions. If the Treasurer has not received your subscription at the time this bulletin is distributed (early May) you will find that there is a cross marked on the label of your copy when you receive it.
Keep those articles rolling in. Your personal contact with people and organisations of our radio past are always of interest to other members. Your experiences in restoring the "golden oldies" as well as the not so golden oldies, both triumphs and failures can help others carrying out similar projects. Let me hear from you.

AUCKLAND MEETING CALENDAR	June 19th;	Auction sale.
	July 17th;	Westco Radios
	August 21st;	Early NZ commercial and homebuilt TVs

NEW MEMBERS

S. Hopkins	Whangarei	F Rigby	Oxford
R E Lozier	Monroe, USA	H D Marshall	Australia
B Alexandrov	Auckland.		

THE MARCONI MAGNETIC DETECTOR



Reproduction of photo on front of Vol 16 No3.
One of John Stokes prized collection. This Marconi Magnetic Detector was originally used by Cable and Wireless at their station in Suva, Fiji.
Familiarly known as the "maggie" this is a later version of the original device developed by Marconi to replace the erratic coherer rectifier. Its operation is based on the results of experiments by Rutherford and other scientists. Detection depends on magnetisation of a rotating band of soft iron wires by a permanent magnet leaving a remanent magnetism which is then modified by a radio frequency field from the received signal. A second coil connected to headphones has a current induced in it by the field modifications thus giving an audible response.

Interestingly, an apparently identical instrument was auctioned at Christies in South Kensington, London recently where it was sold for 9000 pounds (approx NZ$27000).

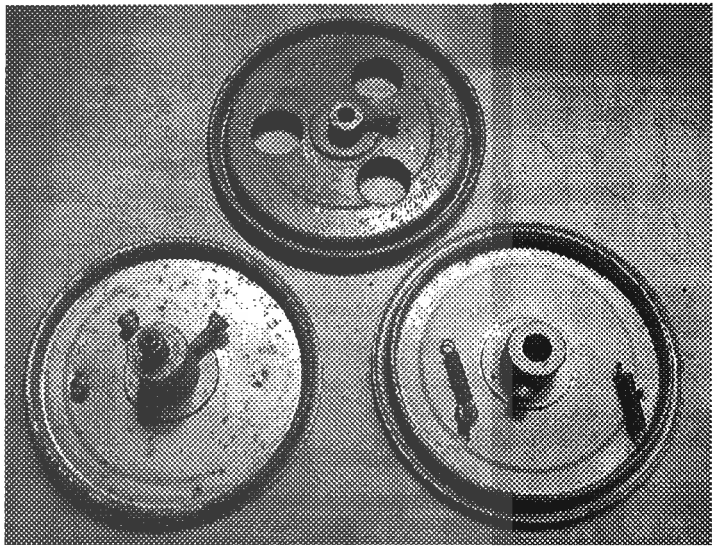
AND MORE ON HARD TIMES HARDWARE

Ian Greaves

It is interesting how one thing leads to another. Articles on hard times hardware prompted me to write about a paint tin lid dial drive drum I had come across in a junk box (Vol 20/2, August 1999). My writings in turn prompted a response from Alan Stanley, the essence of which, with Alan's consent, follows.

Alan begins by relating that he began the use of paint tin lid dial drive drums around 1934 as a substitute for the friction drive "CROWE" units which had unsuitable ratios and were prone to slippage. The paint tin lids were sourced from a manufacturer whose factory was located at the top end of Taranaki Street, Wellington. The groove was rolled on to the lid using a Southbend lathe. Suitable drive reduction was achieved by turning down the spindle that the tuning knob attached to. The drums were used on ATLAS brand radios (Nimmo's) and later, from 1936 when Alan started Stanley-Clarke Radio Co., the drums were used on LYRIC, TELERAD, RANKIN and BRAITHWAITE radios. It appears that Radio Ltd. used the same technique as Alan has encountered a COURIER circa 1936 (2A7, 58, 2B7, 2A5, 80) which used a doubled up drum.

I now have 4 of these paint tin lid dial drums - all the same diameter - that is 3 ¾" in imperial terms. (I hope this isn't the start of another collection!). I imagine the lids I have would have been for the pint size paint tin. As Alan points out, for slide rule dial type applications, the diameter of the lid has a direct relationship with the length of the dial scale, ie the length of the dial scale must equal ½ the circumference of the dial drum.



All four are different and I am now sure that if I were to examine my collection of spare chassis, more would come to light.

Many thanks to Alan Stanley for the information he supplied for this sequel to the previous article.

AKRAD RADIO

A personal view and a brief history

Rod Osborne.

I was born in Waihi and joined Akrad in the 50's on leaving school. I worked there for 8 years, serving a "sort of" apprenticeship. In those days the Serviceman's Registration Board would not accept factory experience as part of a serviceman's time so I had to appear to be apprenticed to one of the registered Akrad technicians. We received a very thorough grounding at Akrad by being shifted around the factory departments. I worked in the machine shop, plating room, winding room, radio assembly, chassis wiring -(my best was 1600 solder joints per day – some of the young ladies could do over 2000) – alignment, fault finding and final assembly.

Mr E. W. Grant, chief engineer for the Pye Group of Companies

My starting wage was 30 shillings per week at age 15 and I had the ignominy of my wage dropping to 27 shillings when I became 16 and had to start paying tax. Akrad had a policy of paying us an extra 10 shillings per week when we passed the Amateur Radio Certificate, 10 shillings more for the Radio Serviceman's exam and 10 shillings more for a First Class Certificate in Radio Technology, so by getting all these I enjoyed a good wage. The senior technician at the time, Ted Grant, and the factory manager Ron Skinner, were unstinting in the time they were prepared to give us to further our education. Ron Skinner was prepared, at any time, to give us on the job practical and technical instruction. I spent many evenings at Ted Grant's house being taught electronics, but being a young fellow at the time, I was lured there as much by the cooking of his wife, Tui, as by the technical instruction. Her suppers were legendary.

Mr R. E. Skinner, manager of Akrad.

Waihi was born in a gold rush in the 1800's. The fabulous Martha lode, discovered by a prospector who noticed a white gleam of quartz, saw the region as one of the great gold and silver mines.

Much later, in 1932, was the start of another Waihi industry, which was to be the town's main saviour when the gold mine eventually closed. This industry, manufacturing radios and other electronic products, was founded by an 18-year-old local, recently returned from Auckland. He had worked for Johns Radio since leaving school and had just received his Radio Serviceman's Certificate. The man was Keith Marsden Wrigley and the business was Akrad Radio. It started as a radio sales and repair shop in Seddon St and if you drive down that street to its junction with Haszard St and look above the door of the corner shop you will see a plaque commemorating this event.

Top: AKRAD staff early in WW2

Centre: The radio assembly line at the Haszard St. factory about 1949

At left: AKRAD assembled and magnetised all its own loudspeaker (Barry Roycroft testing one).

The business commenced with a capital of 52 pounds, one mantel radio, and a handful of radio parts. Keith's test equipment included a test meter, which he had built himself, and a secondhand valve tester. In typical do it yourself fashion, Keith had painted the shop inside and out, written the signs and built all the shop fittings. Within a year, business was so good he had employed two more staff. He then decided he could make radios cheaper and better than the ones he was buying so a production run of 12 radios was made. The chassis were drilled by hand and painted with a homemade spray gun. Having completed the manufacture of this and subsequent runs, Keith would load up his car and set off to sell them.

"Akrad", as the firm was known, was an abbreviation of "Auckland Radio" and was the brand name used for simple manufactured components such as coils and transformers. Complete radios had brand names such as Futura, Luxor, Everest and after 1940, Pacific.

Over the next 10 years staff increased to 50 and there were several changes of premises. New products were added including battery chargers, electric fences, and pokerwork machines. The first electric fence was given to a local farmer to try and it promptly electrocuted his dog, so it was recalled for "modifications".

After the outbreak of the war many key Akrad personnel joined the forces creating a tremendous workload for those left.

In 1943 the government decreed that all domestic production must cease. Eventually defence contracts were procured and again larger premises were required, resulting in the purchase of the Kings Hall in Haszard St for 600 pounds (shown at left) which the firm occupied until its demise.

As the war neared its end, Keith realised there were real problems looming for his firm. Staff numbers had almost doubled and he was not sure he could obtain enough components to maintain full employment nor was he sure he could sell the output even if he could obtain the parts.

He attacked this problem in two ways. Firstly he decided to diversify into children's tricycles for which he could obtain local raw materials and secondly he decided to arrange

for a separate marketing organisation to market the increased output. This bought to Akrad a marketing and production specialist, George Wooller. He was to market Akrad's products through his firm G A Wooller & Co. Unfortunately Keith never saw his ideas come to fruition. He died suddenly on New Year's day 1946. Under his will a company was formed under the direction of the Public Trustee, G A Wooller, W Leitch, and W Meiklejohn. As the Public Trustee had no knowledge of radio manufacturing they called on Mr Wooller and Mr Moore Haszard to guide the company through this transition period. In early 1947 Mr T J F Spencer was appointed manager and later the business was sold to shareholders and formed into a limited liability company, "Akrad Radio Corp Ltd", with a capital of 30,000 pounds.

When Akrad made its 50,000th tricycle in 1949, Mr T J. F. Spencer, the managing director, presented it to Mr H. J. Pickett, who was then Mayor of Waihi, in a special ceremony held in the Hinzaul Street factory.

Although radio continued as the main focus of production almost 200,000 tricycles were produced and at one stage, in 1947, over half of the staff were engaged in tricycle production.

The main radio brands now produced were Pacific, Regent and Five Star, with the total production being sold through G A Wooller & Co. In 1949, the directors, well aware of the growth and importance of television, decided to try and link up with a major overseas TV manufacturer. They consequently invited Mr C O Stanley, the chairman of PYE Ltd of Cambridge England, to visit Akrad. As a result PYE NZ Ltd was set up in 1951 with PYE England as a substantial shareholder.

Alongside their established brands, which now included Clipper, Akrad produced PYE radios for the NZ market. These radios were an immediate success and there was a need for further expansion. By 1956 the area of the factory had increased from 17,000 sq ft to 40,000 sq ft. and over 200 people worked there. At this time we were producing about 50 sets per day with about 12 people on the assembly line. After completion the sets were tested, aligned, assembled and packed ready for shipment. The employee who had the record for the shortest time employed by Akrad was taken on at 8am to work in the dispatch department and by 10am they found he could neither read nor write.

Staff was well looked after at Akrad and strikes or stop work meetings were unknown during my time there. The cafeteria was on a mezzanine floor above the assembly line and provided drinks at 10am, noon and 3pm. At one time it was run by a young lady who was quite a friendly soul and one very hot summer's day she decided to take her top off to help her cool down. A move that was very popular with the men but didn't go down too well with the ladies. She "left" soon after. Amateur Radio was an absorbing hobby for me and early "Hams" will remember that to obtain a High Frequency Permit, among other requirements, your station had to be inspected by the Radio Inspector. Our Inspector, I'll call him Mac, came to inspect my station. I was very proud of it and had polished up everything and thought it looked great. On the day Mac arrived to carry out his inspection, my 18-year-old sister and her girlfriend were sunbathing on the lawn in fairly brief swimsuits. He engaged them in lengthy conversation while I champed at the bit waiting for him to see my homemade station. After about an hour I asked him when he was going to do the inspection and he said, "your station is fine" and went home without ever seeing it. My opinion of Radio Inspectors went down after that but my sister thought he was great.

PYE NZ Ltd had some notable firsts in the electronics field: -

- The first single cabinet stereo developed in only 2 months in 1958.
  This was done in great secrecy as the New Zealand manufacturers had an unwritten agreement not to produce stereo sets quickly. This agreement was made to give everyone a chance to clear existing stocks of mono sets.
- The first transistorised radios.
  I well remember the first transistor radios, as thermometers were used to set up the collector current according to the temperature of the day. This was to minimise distortion.
- The first to manufacture and use printed circuit boards.

- The first television outside broadcast.
  This took place at Rugby Park, Waihi, and was a Harlequins versus Barbarians match. This telecast, complete with commentary, was viewed on hundreds of PYE sets. This station was bought to NZ for the Queen's visit in 1953-54. For several years it was the only one of its kind in NZ.

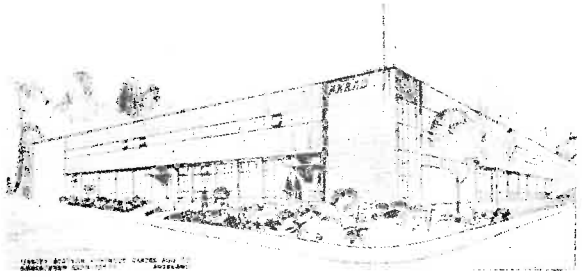
- The first NZ manufacturer to supply a radio for the Queen.
  This public relations coup was to provide a radio for Her Majesty's use at Waitomo. The model chosen was a 1467, which was a 14 valve monster with separate chrome plated tuner and amplifier chassis, using push pull 6L6's. After the chassis were chrome plated, the ladies on the wiring line were unable to solder to the earth tags so an air grinder was used to clean every earth tag prior to soldering. The cabinet was matched burl walnut veneer and the set seemed to be checked by everyone in the factory, including the tea lady, before being delivered to Waitomo. If visiting Waihi, phone Kevin Horne and ask to see his collection – he has a model 1467. Might even be the Queen's one!!
  The first in NZ to produce a 20 watt transistorised marine radio.

- The first in NZ to produce a 20 watt transistorised marine radio.

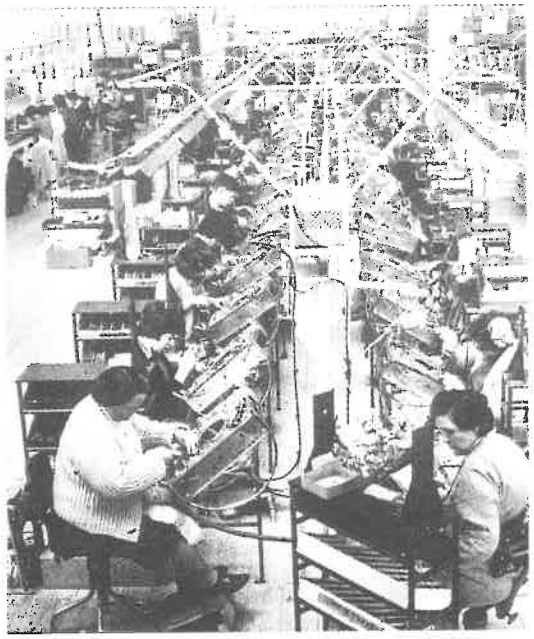
  Another successful Waihi project was the development of a medium frequency marine DSB transceiver for use in small craft. Called the MT20 it had an output of 20 watts and a 2 band receiver. NZ fishermen, who had a very successful and cheap 2045KC radio network using mainly war surplus ZC1 transceivers, were reluctant to change to the relatively expensive new technology. However the MT20 was a great success overseas, with its low battery consumption and solid state power supply. The Australian Royal Flying Doctor Service purchased 200, the Kenya Police and Settlers purchased 150 and smaller orders were sent to Singapore, North Borneo and Sarawak. Although designed and developed at Waihi many of the sets were produced at another PYE acquired factory, Radio Corporation of NZ, (how the mighty had fallen) which was PYE's second largest NZ manufacturing unit. I visited Radio Corp in 1960 and was shown through the factory by the production manager. At that time they had two radio production lines set up but only one was in use. I asked the reason for this and was told that as the United States Navy boats were in port there weren't enough ladies reporting for work and the second line would resume when the ships left. Quite a revelation for someone from conservative Waihi.

VHF Radiotelephones were introduced in 1947 through Green & Cooper Ltd who then joined the PYE Group of Companies. The Auckland Traffic Dept, Auckland Fire Brigade and Wellington Taxis were early users of the PYE VHF sets. PYE was also the leading supplier of base station transmitters, receivers and repeaters used by the NZ Post Office.

PYE also won the right, against strong opposition from Autocrat, to supply major car firms with radios. One such contract was with Ford NZ Ltd Wellington. One shipment of several hundred radios were proving very noisy and I was sent to Ford to fix the problem. It turned out to be insufficient shielding between the power supply and tuner. When I arrived at Ford, in a Company car, we went through some very imposing front steel gates complete with an American style armed and uniformed guard. He searched the car to ensure we weren't bringing in anything we shouldn't and let us in. It was most impressive. After finding the problem I wanted to take some radios back to the PYE Wellington workshop for testing and asked the Ford representative if we could get permission to take them out of the factory and past the guard. "No problem" he said "when we want to take goods out we go through the side gate and don't go past the guard.



In 1967 an event happened overseas which would eventually affect the future of Akrad. This was the sale of PYE Cambridge to the giant Philips organisation. An additional factory building was established in Moresby Avenue at this period largely for TV production (illustrated at left).



The Television Assembly line at Moresby Avenue

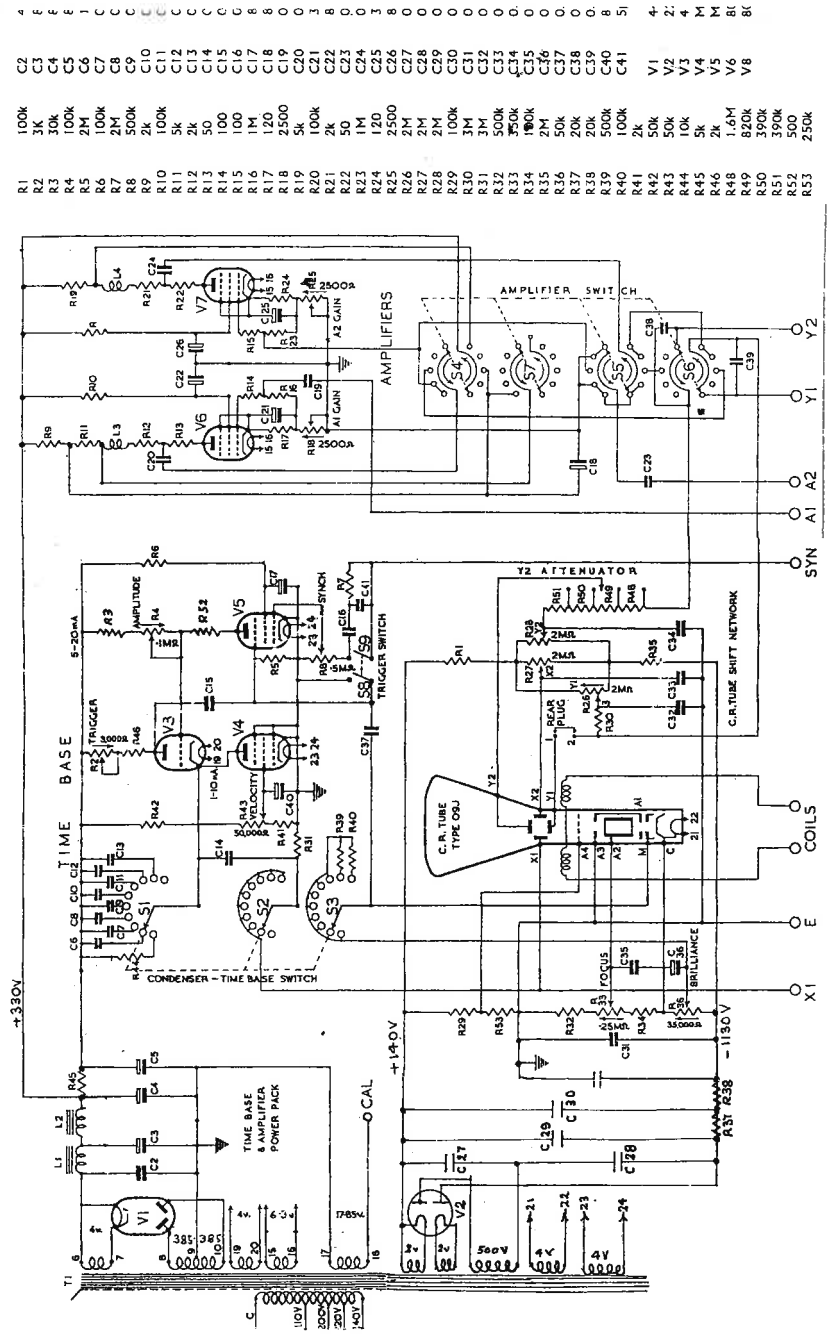
The effect of the Philips takeover wasn't felt until 1980 when Philips also took over PYE NZ Ltd. Philips then introduced their policy of "universal rationalisation" which saw all TV production moved to Naenae and only Audio produced at Waihi. Several subsidiary factories in nearby towns were closed and in 1982-83 over 200 people from a staff of 550 were laid off. At this time Mr R Evans was appointed manager and the factory production slowly increased with the addition of new and varied products such as coffee makers, irons, toasters, telephones and post office products.

But the glory days were gone. The demise of Akrad and all other domestic radio manufacturers in NZ was bought about by the Government's decision to lift import restrictions and allow the market to be taken over by imports from cheap labour countries. At the time I worked at Akrad there were five other large manufacturers in Waihi. They produced shoes, clothes, cast steel products, motor mowers, ironing boards and dairy products. All except one are now closed and successive Governments claim that the resultant increase in unemployment and the subsequent rise in crime, are really huge advances. We are apparently much better off providing employment for overseas workers while we pay huge amounts in unemployment benefits and fight increasing crime in NZ caused by this unemployment. The factory buildings now house several small local cottage industries, some owned by previous Akrad employees.

To complete the circle, the gold mine has restarted, as an open cast facility and produces more gold than ever before. If you visit Waihi, have a look at this project. Where there was once an imposing Martha hill, there is now a huge hole in the ground which gets bigger every day. Waihi lives on and prospers but Akrad is only memories for those of us who worked there and for those who now collect and restore their radios.

Pictures of Akrad products have not been included with this article as they are well represented in John Stokes books, pages 37-40 also 85 of Golden Age of Radio and pages 97-98 of More Golden Age of Radio.

In conclusion I would like to acknowledge information from Akrad and PYE publicity brochures of the day.



A CLASSIC OSCILLOSCOPE

Reg Motion

Some 45 or more years ago I attended a government surplus auction sale and came away with a Cossor model 3339 oscillograph. I was attracted to it having used a similar instrument in radio development work at the NZ Post Office Radio Section during and just after the war years. However, on test, it didn't work so it joined a number of other devices which were scheduled for attention,"some day".

Cossor Double Beam Oscillograph Type 3339

Somehow my ancient 3339 survived a number of shifts; then, recently, I read an article on early Cossor Oscilloscopes in that excellent British journal 'Radio Bygones' where the author described the 3339 among other Cossor scopes and extolled some of its virtues. This prompted me to get out my holding and consider it's restoration.

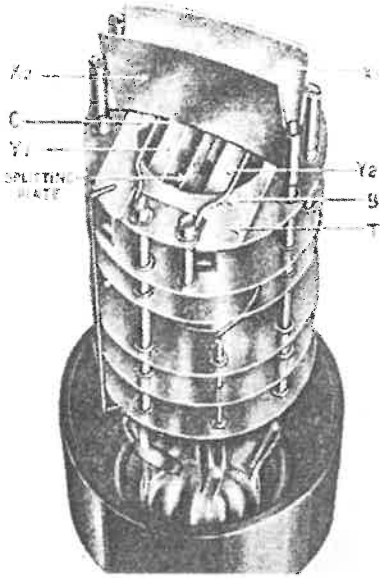
Preliminary checks were reasonably encouraging. The valves were all in good condition and the power transformer functioned OK which surprised me until I noted that it had been rewound in 1952 by Radio Service Ltd., of Dunedin. So far so good but a big question mark hung over the scope tube which, if faulty, would have been almost impossible to replace. To test it properly the rest of the scope had to be made to function.

Further checks revealed that every paper capacitor in the 3339 was either shot or low resistance. Replacement, took some time and ingenuity as, apart from often being buried in almost inaccessible places most were high capacity and relatively high voltage types (500 to 1500 volts). All flexible leads conecting the scope tube socket and valve anode

caps were of rubber which had hardened and cracked requiring replacement but the insulation on the solid conductor fixed wiring was in good condition.

Eventually all was ready and I was delighted when, with power on, the scope tube brightened up in satisfactory manner. After a few applications of CRC to the switches, the time base and amplifiers also showed promise.

Determining the actual circuit diagram proved a difficult and time consuming problem. Some years ago I had managed to acquire a full manual for the 3339 which included a circuit diagram and the article in Radio Bygones gave a diagram for the type 339. I am confused as to which model came first, the 339 or the 3339. The circuit of my 3339 does not conform to either but contains parts of both. Apparently Cossor were not averse to including some new developments in scopes as they went along.



Why bother about such an ancient instrument you may well ask. Partly nostalgia I suppose, but also I was aware that this instrument has many refinements which were not available elsewhere in prewar designs. To start with, it is a true double beam instrument, to the best of my knowledge the first of its kind. The double beam is achieved by placing a screen between the Y plates to split the focussed beam as it leaves the final anode providing two separate electron streams each of which are independantly deflected in the vertical direction by the two Y plates in an assymetrical deflection arrangement (Y1 to screen and Y2 to screen). Following the Y deflections both beams are jointly deflected by the X plates (see diagram).

The "Y" amplifiers each cover 20Hz to over 100kHz with inputs and outputs separately brought out to front-of-panel terminals which allows them to be connected for some abnormal uses such as one as vertical amplifier while the second is employed to modulate the electron stream. A five way switch on the front panel gives the following switchable options

1. DC connection direct to X and Y plates of the oscilloscope tube.
2. AC connection direct to X and Y plates of the oscilloscope tube.
3. Y1 amp to Y1 plates, Y2 amp to Y2 plates, X plates to timebase..
4. Y1 amp and Y2 amp cascaded to give higher gain feeding the Y1 plate.
5. Y1 amp and Y2 amp cascaded but with lowered resistors plus frequency compensating inductors in the anode circuits thus widening the response band to well over a megahertz.

The number 5 option allowed the scope to be used on the prewar 441 line British TV system and the radar which played a part in saving Britain from invasion during WW2.

Most popular scopes of the 1930s used a gaseous discharge tube to provide the required sawtooth time base. These had quite low switching speeds allowing only audio frequencies to be comfortable viewed. Mr Puckle who worked for Cossor at that time developed a hard valve time base which operated up to about one MHz facilitating the viewing of video waveforms. The 3339 uses the Puckle time base which has the added advantage that it can be switched for triggered operation when required.

Two magnetic deflection coils are fitted allowing magnetic as well as electrostatic deflection of the scope beams. The connections to these coils are brought out to pin connectors on the front of the oscilloscope.

While a green phosphor tube could be fitted on special request the scope was normally supplied with a blue phosphor tube which is eminently suitable for photographing - though a little dim for direct viewing.

A comprehensive and well written handbook supplied with the scope covered its use in considerable detail as befitted an instrument with many unusual applications for that day and time. Altogether a very useful device for the imaginative engineer (radio or otherwise).

Shortcomings Having described its virtues the 3339 had its shortcomings.

1. The blue display needs to be viewed in fairly dim ambient lighting especially when video waveforms are under investigation. A brighter display could have been gained by increasing the beam accelerating voltage but this would have reduced the deflection sensitivity and to gain the bandwidth, high power, high Gm amplifier valves were already required - my 3339 uses type 807's in these positions. The choice is a compromise favouring the need for bandwidth.
2. Power transformer and paper capacitors, pushed as they are to the limit by the high voltages involved, tend to fail quite frequently.
3. Time base adjustment and synchronisation is quite finnicky, especially at the higher frequencies.

Nevertheless, the scope design was a landmark development and it took some time for other scope suppliers to catch up with the advanced features it provided in a medium priced instrument.

References

1. Cossor Double Beam Oscillograph model 3339. Instruction manual CB55A.
2. Early Cossor Oscilloscopes. by 'Phosphor'. Radio Bygones No 42 August/Sept. 1996.
3. Radio Laboratory Handbook. by M G Scroggie. 2nd edn.(c1944), pages 104-119.

Working for "The Radio Corporation of New Zealand"

by W.E. (Bill) Heinz.

My father (W. F. (Bill) Heinz) worked for The Radio Corporation of New Zealand in the years 1942 to 1947. He transferred from Greymouth, Westland, initially for a trial prior to taking over the Columbus Radio Centre shop in Greymouth. The staff there being seriously depleted by the wartime call up.

My father, a plumber by trade, dabbled in radio from the early 1920s and went on to sell and service Atwater Kent and Rogers radios from his father's plumbing shop in Mackay Street Greymouth in the 1920s and 30s. Later he operated a small sales and service shop in Albert Street and as domestic electrical appliances became popular sold the American 'Fairbanks Morse' brand items.

His temporary transfer to Wellington soon became permanent as he became involved in wartime essential industry. His plumbing skills became just as important as his radio skills and his duties in the company alternated between radio servicing, hydraulics and other work associated, even in the merest way, with pipes and the ducting of anything (he installed many bakelite presses) Because of this versatility he became quite valuable to the company.

The company held contracts from the Ministry of Supply and were manufacturing steel helmets, Sten guns, ZC1 Transreceivers and other items for the Armed Services.

His main claim to fame during this time was to save the ZC1 production both at RCNZ and Collier and Beale from collapsing due to the shortage of mica capacitors. As most of our members have been informed in previous articles RCNZ made many of their own radio components and for the ZC1 production their mica capacitors were also supplied to Collier and Beale. At that time Muscovy mica from Russia or Indian mica was being used for this production but these sources dried up.

Being a man of many talents my father had been a tramper and a mountaineer of note in the Westland mountains of the Southern Alps. He also was an amateur geologist and had found and mined antimony (a war commodity) and gold bearing quartz reefs in the North Westland's Paparoa Range. He new that, in the high coastal foothills of the South Westland section of the Southern Alps, outcrops of mica existed in the Igneous pegmatite sills and dykes that thrust out of the hillsides.

Attention was given to this information and he carried out field work in the area. Subsequently, as well as being a radio serviceman, a plumber and fitter for RCNZ he became a geologist, a mineralogist and a mine manager for the company. The mine operated from around 1943/44 until the end of the war and supplied large sheets of mica (called books) in an abundance that enabled the manufacture of mica capacitor to continue. The cost of this mining venture was too high for peacetime exploitation and the mine closed down after the war.

During 1945 as a 3rd form college student I, Bill Heinz jnr. worked school holidays at RCNZ. For many holiday periods I was the only schoolboy holiday employee although on occasions the grandson of the "Old Man" , William Marks, kept me company. I enjoyed working there amongst the adults, I showed them that I was not green when they tried to get me to go to the store for another box of electrons. I had been into crystal sets, the "Hikers One" and the Lamphouse "Popular Skysweeper". Anyway for this work they paid me the handsome sum of 32 shillings and 6 pence for a 40 hour week and evening overtime, which I thought was quite pleasant, was extra payment and of course, then I did not have to pay any tax for this small yearly sum.

The work conditions at that time I did not think were too bad. There was 5 minutes morning and afternoon tea break, stay at your work station and hold your cup out to be filled by the tea lady with the teapot. I do not remember seeing any clean cups or mugs. The only work diversion during the day were the two pleasant half hour 2YA broadcasts of "Music While you Work". During overtime music was played for the entire period. I remember those days vividly when, today, I hear the same tunes by the same artists.

My first work experience was in the technical purchasing section where I assembled kits for the production lines, learned all about the different heads of screws and because of wartime shortages scoured the local hardware shops for badly needed supplies. On one occasion it was to find 25 cans of caustic soda for the factory. Then there were two weeks stacking laminations into wound bobbins, I called them lamentations and was constantly reminded of the error. Another period dunking capacitors into cerise wax and resin in the oil impregnation room. This was an individual hand dunking job by an open window in the heat of January. The Kamikaze wild bees would fly in and power dive into my hot wax mixture ending up with much bubbling. One thing I did which the Columbus set restorers may appreciate was to place the paper capacitors in their cans and solder the pigtails. Moving on to the big time I assembled various parts of the ZC1 keying and antenna change over relays even to the swaging of the silver contacts into their spring supports.

The company must have decided that there was some potential in having a school boy or two in during the holidays and started advertising for them in 1946. They set up a wire termination department run by college students and then an assembly line for a small mantel model receiver. I don't know its model number but it is easily recognisable, it has a vertically mounted 3 (?) gang tuning capacitor. Our best production figure was 50 sets in one week. Unfortunately, I understand they were full of "rackets" as dry joints were referred to by the supervisor. All component pigtails and wires had to have a good mechanical bond with the lugs and as the sets passed along the assembly line they came to soldering stations. I think that they did not chose their solderers carefully enough. I can still remember the part of the circuit that I wired up for any one who wants to blame me now for any problems, it was most of the mixer tube circuitry.

At the end of 1946 the family departed from Wellington and my association with RCNZ ceased. However in 1948 I again entered the world of communications and some time later had the doubtful privilege of working on a RCNZ VHF transmitter receiver unit designated "The Type 49 set", another story.

Book Review

THE ATWATER KENT RADIOS, by Ralph O.Williams.

AWA review No.12 - Published by the Antique Wireless Association.

Is there an antique radio enthusiast anywhere who is not aware of the significance of the name of Atwater Kent? A very special brand of high quality radios, A-K is either represented in many collections, or the owner would like it to be, and examples command a premium price. Indeed, A-K breadboards change hands at astronomic prices.

The background story is well known. Arthur Kent, over a period of 15 years, founded and operated an organisation that became the world's largest radio factory and manufacturer. He had that rare combination of considerable engineering ability, innovative good business sense and organising genius. Quality of the product was not compromised for quantity. Uniquely the organisation was Kent's alone, with no answerability to shareholders, and when the time to retire came, some 65 years ago, he simply closed the doors, sold the plant and walked away a multi-millionaire!

Much has been written about various aspects of Atwater Kent radios, but often only at a general interest level. This is understandable, as A-K technology was often unique and the subtleties of design not always apparent to anyone without an extensive knowledge of valve and receiver technologies. We have long been ready, therefore, for an extensive and authoritative treatise on all aspects of Atwater Kent technology and history. At last it has arrived with no half measures!

Ralph O. Williams has long been a contributor to the American Antique Wireless Association's Old Timer's Bulletin on A-K topics and has previously provided more detailed articles in AWA Technical Reviews. (Technical Reviews are more or less annual AWA publications in which various topics are dealt with in much greater depth than the usual somewhat superficial Bulletin articles). For their 1999 Review, at 320 pages, AWA have published their largest yet, given over entirely on an extensive analysis of Atwater Kent history and technology development by Mr.Williams. More than that, it describes in detail and analyses every one of the 220 plus models A-K ever created and puts them in context with their predecessors, siblings and successors! These features, together with the many photographs, make the Review an indispensable addition to the serious enthusiast's library. Mr. Williams, an extensive A-K collector himself, as well as having a strong sense of history, has an excellent knowledge of receiver design, and as a holder of a Masters Degree in Engineering Science, and with a lifetime of working in electronic engineering, is well qualified to have created this excellent book. As well, there is a separate large chart listing the various categories, essential details, including the Rider's Manual volume and page, of every model ever produced. Incidentally, and unfortunately with theoretical interest only to New Zealand collectors, there is an appendix chapter on Breadboard restoration!

Now a reviewer, to substantiate his own qualification to comment on a book, is expected to find at least one point of criticism. With difficulty, I found a couple of quite inconsequential details to question. One was the details given of the method of triode connecting of type 46 tetrodes in class B and driver service, another was his reason given for providing I.F. wave traps. Not very world shattering you will agree.

To summarise, this book sets new standards for an in depth and complete history of a brand. It is essential reference material for anyone interested in A-K radios and if necessary, it is well worth taking out a membership with AWA just to obtain a copy!

Peter Lankshear.

G A WOOLLER by Rod Osborne

Mr G.A.Wooller

There are a couple of interesting little stories about Mr G A Wooller, who, as mentioned in my story of AKRAD (page 5), became the chairman and managing director of that company.

George Wooller was one of the first persons in New Zealand to be caught speeding by the new fangled road speed radar detector. The legal world was interested in this test case and expected a spirited defense. They, and the Judge were surprised when George meekly pleaded guilty. "Do you not have any questions regarding the accuracy of this method of detection" asked the Judge. "No, your honour"" replied George "I have complete confidence in the accuracy of the system". He later confided to his friends that he had supplied the radar system the previous month.

George had an excellent art collection and was the anonymous donor of the Barbara Hepworth sculpture "Torso" to Auckland city. His close friend and city councillor, Tom Pierce, described it as looking like the rear leg of a large cow; a description which he found highly amusing

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Waikato/BOP Meeting

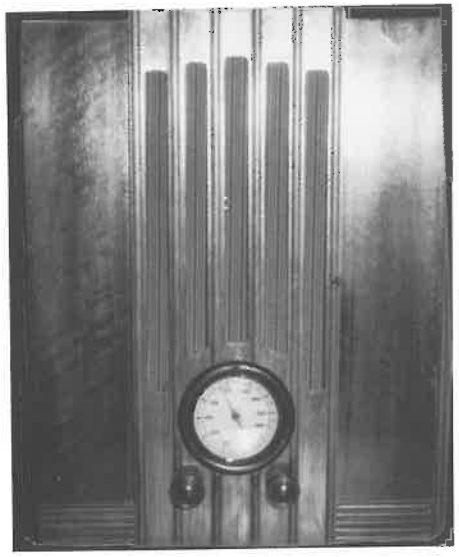
Rod Osborne

A meeting of the Waikato/Bay of Plenty members was held on 19th March. Following a garage sale at Chris Hollis's house in the morning, the afternoon was spent at the home of Christine and Digger Holmes in Hamilton.

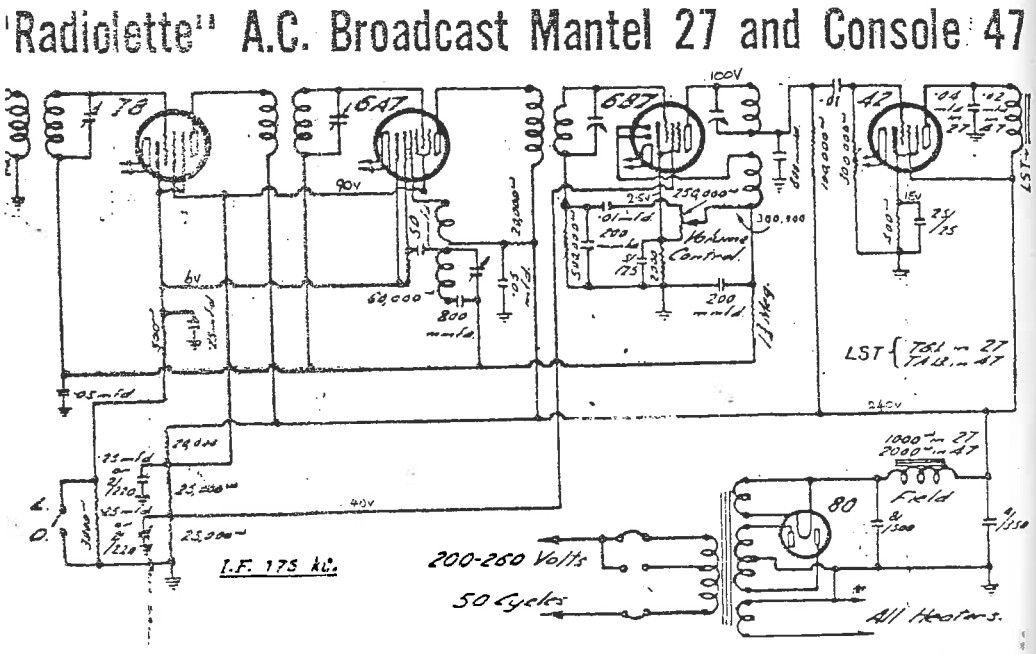
A really good turnout of local and visiting members enjoyed viewing Digger's extensive and varied collection. He had on display not only radios and gramophones, but also an interesting collection of mechanical and other early 1900's items. For many members it was the first time they had seen Digger's collection so that made it especially interesting. He also opened the sheds containing his special cars and some members seemed to spend as much time with the cars as the radios.

Christine and her helpers provided a welcome afternoon tea after a day enjoyed by all.

In the morning, preceding the meeting, Chris Hollis held a garage sale at his Cambridge home. Judging by the number of NZVRS members, and the general public, who left clutching treasures, Chris had a good clean out. One suspects that Chris was suffering from the problem that most of us face, that of continually multiplying radios and contracting rooms. (and perhaps the patience of wives wearing a little thin!)



Front and Rear View of the Restored Radiolette



An (Unsatisfactory) Encounter with a Radiolette 27.

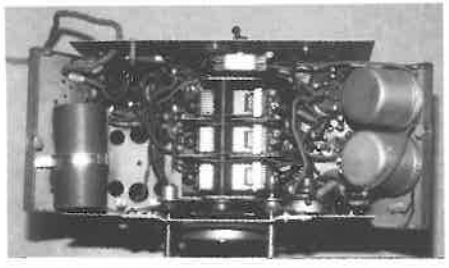
George Newlands

Some considerable time ago, over 30 years in fact, while I was working as a bench technician in the old N.Z.P.O. Transmission Section laboratory, I had a boss who used to refer to AWA as "Awful Wireless Australasia". I was puzzled by this at the time but it was some years later that I questioned him on the origin of what I thought must have been a personal cynicism about the company or a product of it that he had encountered. He told me that he had once worked with an ex AWA marine operator who never described the company any other way. This man had known Sir Ernest Fisk personally and described him as a man who always had "one foot on the ladder of success and the other on somebody's neck". I now have what I consider to be reason enough to use the "Awful Wireless" term myself but it concerns a product rather than a personality.

The set I am to describe here came to me as one of an accumulation of nine, the result of a cleanout of a basement by a man I did not know. The offer came to me about third hand and I never turn such things away, perhaps to my ultimate disadvantage. It turned out to be one of those "Oh my God, what have I done?" situations but I accepted gracefully and arrived home with a station-wagon load of what seemed to be mostly borer riddled wood and rusted metal. After having filled a vacuum cleaner bag with borer dust and cobwebs my acquisitions were subjected to critical scrutiny. Three went straight into a rubbish bin, three more went "free to a good home" at a local meeting, two (a green Bell Colt and an RCA 97T) have since joined my collection and the last of them is the subject of this article.

I had never seen anything like it before. Whatever could this thoroughly unattractive block of a set be? The dial was too small for the cabinet, there was no logo or manufacturer name or type evident, the chassis seemed too small and looked as though it belonged to something else and the cabinet itself had a curiously home-made look about it. Could this thing be a homebuilt? Whatever it was it was intriguing enough to make me want to restore it, even if only as a curio. It was finally recognised by one of our local members and I was referred to Golden Age of Radio, p.152. Gee- a 1934 AWA Radiolette 27 no less. And yes, it does have logo, but you only see it when the dial light's on.

The borer had been and gone in the cabinet and it seemed to be more fresh air than wood but it didn't look so bad after a good clean and a thorough soaking in a 50-50 mixture of turpentine and linseed oil. A decision had to be made on whether to restore it or build another one but filling the borer holes and stripping off the old lacquer produced a presentable cabinet so it was all on the way to a full restoration. It was set aside to let the turps and oil do their thing on any remaining borer larvae and attention was turned to the chassis.



The opened out chassis

I had never seen anything like this before either. I used to think the Philips Theatrette was a difficult construction but this one certainly tops that. The end plates of the chassis have to be removed in order to get at most of the circuitry and, even then, wiring has

to be detached. The H.T. voltage divider network is of wire netting construction, insulated with pieces of cardboard and formed into an egg shaped mass which is rolled in more cardboard and held in place by a metal strap. The tuning capacitor frame supports a bracket on which the dial mechanism and the volume control are mounted and even this is insulated from the chassis by three grommets, being held at the A.V.C. voltage and decoupled by a single capacitor. This assembly has to be removed to gain access to some of the circuitry. One can but wonder at the rationale behind the design of such a system. To make matters worse the set had obviously been serviced, if that is the word for it, by someone who had been rather less than tidy. What a rat's nest! All that and a reflex circuit as well. A power safety check proved good and power-up brought the valve heaters on but the set was dead. The audio stage showed some signs of life but a full service was obviously in order and the challenge was becoming more formidable. I screwed up my courage and began to dismantle the chassis.

As with anything of this kind it all begins to make sense if you study it for long enough. One needs to apply the old proverb "Go as far as you can see: then you will see further". Making copious notes helps with reassembly as well. First I rebuilt the voltage divider section which had two open circuit wirewound resistors in it. Whoever had serviced it last had been very liberal with extra decoupling capacitors so they all came out. One should not have to put extra components into a set in order to clear a fault. Such action only masks the fault rather than clearing it. A check of the valves showed the 80 and the 42 down a bit but the other three were 100% so they were all left in place.

Once the rather unusual mechanical layout had been mastered the servicing was quite routine. The electrolytic capacitors had been replaced and tested satisfactorily but all paper capacitors were replaced as a matter of course. The oscillator decoupling capacitor was fully shorted. 1934 construction cannot be expected to be good after more than 60 years regardless of who made it. What resistors were left after the rebuild of the H.T. voltage divider were within a satisfactory tolerance and it was only when the wound components were checked for continuity that things got really difficult.

Fortunately the R.F. and oscillator coils were intact but the primary of the 1st I.F. transformer was open circuit and it wasn't a case of repairing it or simply replacing the unit with something else. The construction is unique and the space the unit occupies means that you fix it or go without. The primary is a high inductance untuned winding and there was no way anything in my workshop was capable of repairing it so a bandpass filter had to be made up using the intact tuned winding. Although not really a satisfactory solution to such a problem this is not usually difficult but in this case the reflex circuitry had to be catered for. With the tuned winding transferred to the 6A7 anode and capacitive coupling from the top of that to the 6B7 grid the I.F. signal was taken care of but a d.c. return for the grid was quite another matter. A high resistance here would be good for the I.F. signal but it is also in series with the audio coming back around from the detector so it would not need to be too high. A compromise was indicated and 100k was used as a starting point. The unique style of the I.F.T. can forbade anything more involved.

With all that taken care of, attention was turned to the speaker which needed no more than a good clean and replacement of some perished insulation. A new power cord then brought the set to the power-up stage and mains was applied.

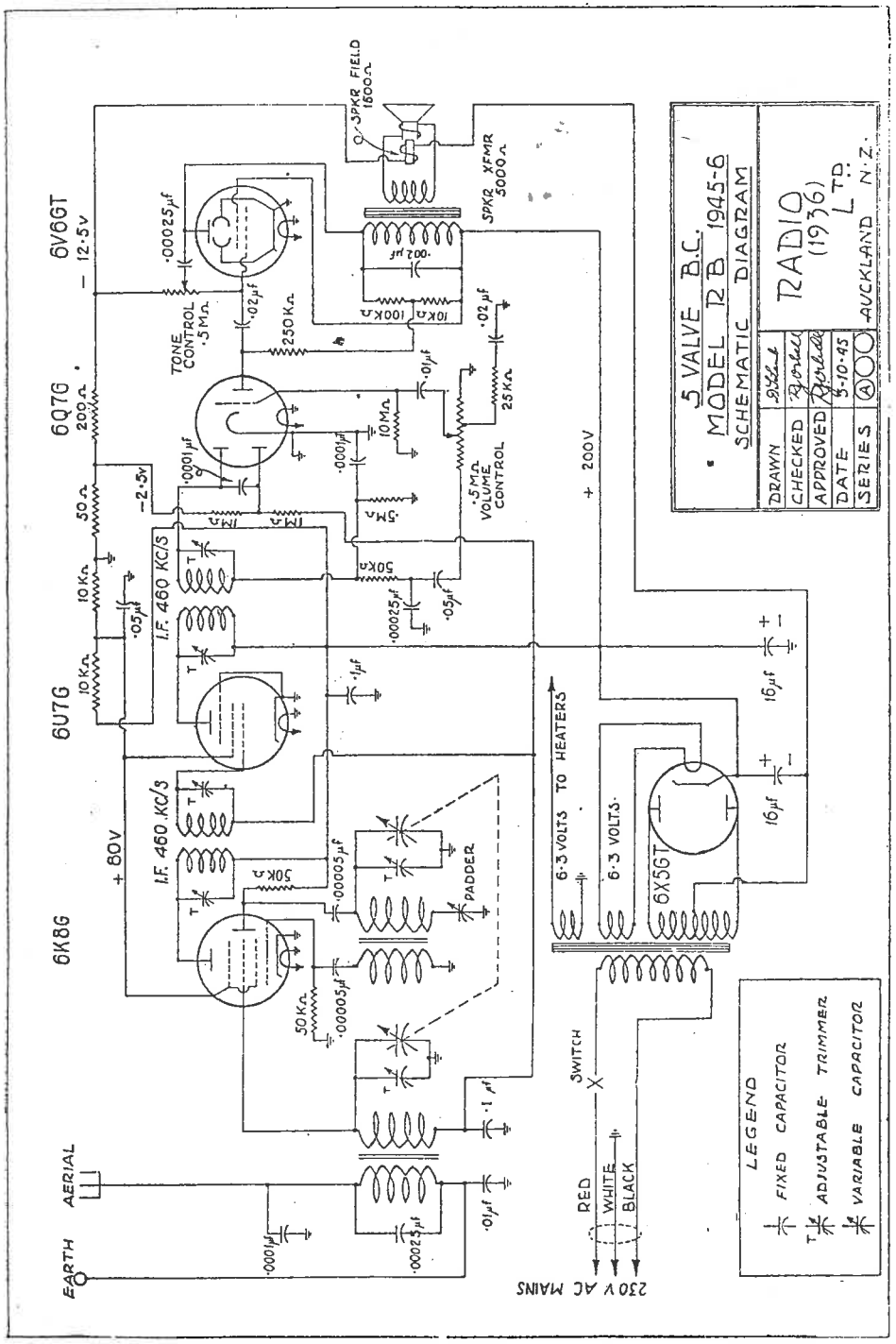
It roared into life; with roared being the operative word. With a reflex circuit one can always expect some "playthrough", that is the condition where the volume cannot be turned right down, but this was ridiculous. I had more than adequate room volume with the control right back. It didn't sound too bad when tuned to a station but between stations the set produced a raucous howl. Reflex sets can be tricky at the best of times. Circuitry layout and earthing in particular can be critical and I began to think that whoever had put all the extra decoupling capacitors into the thing might have been facing the same problem. It was time to get serious.

A careful check of everything showed nothing that could be made to improve the situation. I've always believed that if something worked once it can always be made to work again but I don't know how this ever did. Circuit voltages were all within expected tolerances of what my meagre information stated but the R.F. and mixer cathodes voltage was a surprise. With the Local/Distant switch closed the stated 6 volts is there but with the switch open and the extra 3k in circuit the voltage is no less than 30, effectively silencing the receiver. It would take a powerful station to get past that much bias. Anyway, that wasn't causing the playthrough problem and I suspect that I will have to find another 1st I.F. transformer before any success is likely. In the meantime the set has been made to work with a bit of temporary(?) circuit rearrangement. The audio gain control has been moved to the grid circuit of the 42 to make a conventional volume control and the cathode of the 6B7 earthed. The 300k resistor is earthed to become the diode load. This leaves the 6B7 as a grid detector with the diode detector supplying the A.V.C. voltage. All rather unconventional and I wouldn't like to have to explain the technicalities of exactly what is happening but it makes the set work. Audio volume is more than adequate on local stations with only a metre of wire for an aerial.

The dial of this set consists of a shallow circular metal dish, 80mm in diameter, with a single dial light illuminating it. This is covered by two circular sheets of an opaque substance, probably one of the celluloids, the rear one bearing the A.W.A. logo and the front one marked with the actual dial scale. Thus the logo becomes visible when the light is on. Both scale pieces had the usual dial light burn hole and no replacements are available for them either. A repair was made to the front one using a small piece of ordinary painter's masking tape, applied to the back of the scale so that the adhesive side of the tape faces through the hole. This was then carefully painted over, so as to fill the hole, with a single coat of transformer varnish and the tape left in place. Once dry the missing scale markings were applied with a mapping pen and Indian Ink, affecting a passable repair. It's not perfect but it's not noticeable at a glance either.

As collector's items, or museum pieces if you like, these things should ideally be in original working order, but how and if this one ever was I won't know until I can get an I.F. transformer from somewhere. With the chassis working, albeit in less than satisfactory condition, attention was returned to the cabinet. It has responded well to a good rubbing with brown woodstain and a coat of polyurethane gloss and now looks most presentable.

So there it is. A Radiolette brought back to life, even if not as original. If something worked once it can always be made to work again but it may not be practical or economical. It is very tempting to rewire the set as a conventional superhet and replace the 42 with a higher gain type such as an EL33 but it would be a shame not to have the thing in its original condition. I'll cast a net for an I.F. transformer first. Has anybody got one?



RADIO(1936) Ltd - Models RA & RB

Murray Stevenson

These radios are often overlooked by collectors yet they have some small significance in the history of radio in New Zealand and Radio(1936) Ltd in particular. The circuit diagram for the RA dual wave is dated 12-9-45 and the RB, broadcast only is dated 3-10-45.

These are the first models designed and built by Radio(1936) Ltd after world war two. and using the new model designations (page 132 of ref. 1) They were marketed under the brand names Ultimate, Rolls, Golden Knight, Courier, and Skyscraper. There was no brand name printed on the dial scale, the naming being done with "badge engineering" ie. small name badges fastened to the front of each radio..

The chassis were available in a console cabinet (page 132 of ref 1) a wooden mantel cabinet (page 127 of ref. 1) and a cream art-deco style metal cabinet which was chosen as just after the war suitable timber and veneer were in short supply (see note 1).

Technical Details

The valve line-up is a 6K8G, 6U7G, 6Q7G, 6V6G and 6X5GT. These valves were very plentiful after the war (note 1).

The RA and RB were the first Radio Ltd chassis to use a 6X5 rectifier and a clamp for the mains cord instead of a knot. The aerial coil primary has DC continuity between the aerial and earth fly leads but the earth end of the primary is connected to the chassis through a .01 mfd capacitor: Radio(1936) Ltd did this on the later models RL and RO and on the earlier AC/DC chassis. The metal cabinet used with the RA and RD chassis is electrically isolated from that chassis. The aerial and oscillator coils in the RA have all the short wave windings in series with the broadcast windings. Switching to short wave is very simple and effective - the broadcast coils are just shorted out. Radio Ltd had used this system in earlier chassis.

The local oscillator is plate tuned and shunt fed; the RF valve screen supply is from a voltage divider; both these help stability with varying AVC voltage. The tone control is a feedback type. Back bias is used to obtain grid 1 voltage for the 6V6 output valve and the minimum negative voltage for the RF valve control grids.

The chassis were plated rather than painted as was the previous practice of Radio(1936) Ltd

Changes made over the production years (see note 2)

1. Very early on the original electromagnetic speakers were replaced with a filter choke and a Rola permanent magnet speaker with a diamond shape magnet. The later models had the PM speaker with a round magnet.

2 The early chassis had bakelite valve sockets.

3 The valve and component layout was changed.

4. In place of the "canned" screen and bias resistor some chassis were fitted with discrete wire-wound resistors.

5. The 6U7G was replaced with a 6K7/6K7GT.

6. The last chassis had a 7S7 in place of the 6K8G and/or a 7C6 in place of the 6Q7G.

7. Changes in types of tuning capacitors meant that some chassis had 2YA at the top of the dial and others had it at the bottom.

8. On some later chassis the 6X5 rectifier winding on the mains transformer was a "dummy" to hold the terminal board in place. The 6X5 heater was fed from the same 6.3 volt winding as all the other valves.

9. Some RB chassis had four controls instead of the usual three; the extra control was a mains on/off switch which was separate from the usual switch on the volume control.

Al in all a radio that deserves a place in your collection.

Notes.

1. Bill Farmer supplied this information; he started work at Radio (1936) Ltd in March 1945 when ZC1s were still being made.

2. Model RA, first serial number 84018 dated 24-8-45. Last serial number 105913 dated 9-7-48. Total chassis made 3,391. In the first year of manufacture 2,615 were made.
Model RB, first serial number 84646 dated 28-11-45. Last chassis serial number 108097. Total chassis made 8,499. In the first year of manufacture 6,151 were made.
These figures taken from Radio(1936) Ltd's serial record book.

Reference 1 More Golden Age of Radio by John Stokes.

The writer has sighted all the models and makes quoted and would appreciate further information. Write into the bulletin with it.

SOLDERING TINSEL WIRE.

(Reproduced with acknowledgment to the Wellington Vintage Radio Notes)

Old style headphones and loudspeaker cords which terminate in tips that are soldered to tinsel are notoriously difficult to solder. Here is how it is done. Wrap a piece of fine fuse wire around the tinsel to be soldered: place a little flux on the outside and allow solder to run through. This will make a good permanent connection.

LETTERS TO THE EDITOR

Mrs E.H.Scott

I am frequently asked what happened to Mrs Scott after the death of her husband , E.H.Scott in 1951. At that time they had been resident in Victoria for some four years, starting in 1947.
Mrs Scott remained in Victoria until about January-February of 1952 attending to the disposition of household effects, the sale of the house and adjacent property as well as matters concerning the probate of Scott's will and the final sale of most of his personal assets. Contrary to other reports, Scott was not a wealthy man even by 1951 standards.
The net worth of his estate was valued at $45,279.86. About 25% of this was his half-interest in the matrimonial home and adjacent property; $20,000 in government bonds; a couple of thousand dollars in a bank account and $1,295 in travellers cheques; his half-interest in the household furniture amounting to $3,200; $6,900 in photographic equipment and the value, some $1,500, of a 1947 Oldsmobile car. Still it was more than Lee deForest reportedly left behind.
Scott's brother-in-law, Charles Tucker and his wife Dorothy as well as Mrs Scott's sister Alison came from New Zealand to help
Early in 1952, Mrs Scott returned to New Zealand and resided with her sister Alison in Nelson on the South Island. We visited Miss Tucker at her home many times during the six weeks we spent in Nelson many years later. In fact, I repaired the 1933 Scott radio which Scott had given her and which hadn't been working for nine years. She was very pleased to "hear it's voice again".
However Mrs Scott couldn't get settled in New Zealand after so many years in Chicago and Victoria and she returned to Victoria in March of 1953. She took up residence in an apartment block where she remained until her death.
Mrs Scott died suddenly at her home on August 22nd 1953. I feel sure that she died of a broken heart (although no medical people will give you a description of that term) following the death of her husband. She was 64 years old, the same age as her late husband at the time of his death. Her funeral was held on Tuesday, August 25th 1953 in Victoria. However for some reason her remains were not cremated until September 11th 1953. Her ashes are in a garden plot A-308 in the Royal Oak Burial Park which is located about 5 miles North of Victoria.
She tried to buy back her former home but was not successful. She also wanted to edit Mr Scott's films but obtained little help or success.
Both Mr and Mrs Scott were held in high esteem by hundreds of New Zealand servicemen who trained in Canada during the war. They organised clubs for their fellow countrymen and wrote letters to the relatives of every man they met.
Mrs Scott had a lovely singing voice and she was admired by all who knew her for her quiet, sincere personality and exemplary Christian principles. This was the external appearance but her mental and bodily health suffered; she gave up and died.

Jack Rhodes, Victoria, BC, Canada.

C&B model 5155

(Martin Kimble contacted Bob Blyth who was one of the original designers of the 5155 and he produced the following information. - ED)

I don't remember a great deal about this model after 45 years but can add a little more to what you have found. A lot of effort and thought went into this set to reduce assembly costs and time, the run of 5000 sets was more than we would normally make (1000 to 2000) for a new model but was necessary to spread the plastic tooling costs. The relatively

expensive HT transformer was done away with in favour of direct on mains rectification (as you have found) and only a simple filament transformer was used. A fixed padding capacitor was used in the oscillator circuit thus eliminating the low frequency alignment of the RF circuits.
The use of tinned copper wire for most of the wiring was another cost saving. The bakelite chassis was wired with continuous tinned copper wire then soldered and finally the unwanted connections were cut out : working out the sequence of this wiring was like finding your way through a maze. Buying 5000 sets of components also resulted in better prices than 2000 lots. The complete list of stations-frequencies printed on the back was to placate customers whose local station was not printed on the small dial. In those days customers would complain if their favourite station was not on the dial, ironically there were no complaints when the Japanese sets arrived with no station callsigns at all!

Bob Blyth

Attached is a photo of the Pacemaker 5155 on its first showing here in the US. I mounted the chassis on a clear plastic stand and mounted the knobs on dummy shafts...it looked great. I'll show it at the AWA conference in Rochester, NY.

Robert Lozier, Monroe, USA

TV Servicing

Once upon a time in a certain North Island township in whose locality it is said that the ducks fly backwards to keep the dust out of their eyes, there dwelt a particular ham who, although somewhat rough in his ways, was really a nice guy..
One Friday evening whilst I was "on the job" in that area, he invited me to accompany him on his round of TV servicing. So we went over to his Ford Thames van, which looked rather beat-up - cracked side windows and roof squashed down like an old felt hat ("I was teaching the wife to drive and she rolled it") - and got in. There being presumably no real need for an ignition switch in any place where ducks fly backwards, he then proceed to stroke together the bare ends of a couple of stranded wires behind the dash to the accompaniment of all sort of crackles and flash until they stuck together, then a pull on the starter button and we were away.
I don't remember much about the actual round except for one TV set which suffered from silent sound. Diagnosis: dis primary of output transformer. Remedy: install a new one, hanging by its leads in midair (All happy , on to the next job).

Don Sutherland, Wanganui.

Skipper 10 (re inquiry, p14 of last bulletin)

Whilst on holiday recently in Coromandel I went into an antique shop and there was on of these sets for sale. The condition wasn't too bad but it may have an extension speaker as there was an odd speaker sitting on top of it. The item was up on a high shelf so I didn't get it down as I had already knocked an item over in getting in there.
The set looks as though it was an AM transceiver when they used 2182, 2045 etc. Hope this helps as when I saw the set it rang bells about the enquiry.

Eric Carter, Te Kuiti

Nostalgia of Radio

I enjoyed the above article by George Newlands in the February bulletin as it mirrors my early experiences. I was obsessed by radio as a boy but, like George, had very little money. Instead I read everything I could find, including the "Lamphouse Annuals" and soon had memorised the main features of every American valve between type 00 and type 99.
It was with some surprise that I read George's first valve was an RCA 221, a type I cannot recall or find in early reference books. The first valve I bought from an odd little shop in Upper Queen St was a type 226 which with a filament running on 1.5 volts sounded ideal. Little did I realise that it was designed to work on AC taking a current of 1.05 amps!
Jumping forward a number of years to when I was at Teachers Training College and earning 32 pounds a month, I decided to build an amplifier to play the new LP records. I found a British circuit which featured separate amplifiers for treble and bass and bought two new but cheap war surplus transmitting tetrodes. Connected as push-pull triodes they worked well except for brightly glowing screen grids. I decided that the HT supply was too high so connected a light bulb in series and this provided added entertainment as its brightness varied with the music.
I found the circuit remarkably easy to wire up and have since realised that it was drawn, British fashion, with the HT+ (B+) along the top and HT- along the bottom so that the (conventional) current flowed naturally downwards. I have often wondered why American circuits mixed up their supplies, A,B and C, both + and - along the bottom of the circuit diagram, but the reason might stem from early "breadboard" circuits where all voltage supplies were connected to a row of terminals along the back. Early circuit diagrams often used drawings of actual components, so the terminals along the back would come out at the bottom of the diagram.

R(Dick) Stevenson

Clipper Colours

Could any of your readers tell me how many cabinet colours were used for the Clipper 5M4 mantel set. The most popular was white but other colours I have are brown, pale blue, green, pastel pink, maroon and my latest find, black, seven colours so far.

Paul Burt, Christchurch

Fountain Colt

Another odd ball radio has turned up. It is a Fountain Model O.A. Colt. Dual wave with a marine band.
Can anyone tell me what year this set was produced? The chassis is very much like a 1950s Bell Colt. A wiring diagram is glued to the inside top of the radio cabinet (I did attempt to take a photo of it but was unsuccessful).
The valve line-up is ECH81, EF89, EBC81, EI84 and EZ80.
Fountain Manufacturing Co.Ltd., 5 Matai Ave, New Lynn, Auckland.

Paul Burt, Christchurch

FROM THE LIBRARY

The following are extracts of articles from vintage radio magazines received by the NZVRS library. Photocopies of these articles are available at $1 each plus postage from the librarian - Ernie Hakanson, 17 Williamson Ave, Grey Lynn, Auckland. Phone 09/3766059

339. The Perdio Town and Country Range of Transistor Portables. photos, circuits. Radio Bygones, April/May Issue 58, April/May 99, p4

340. The Hallicrafters S-20 "Sky Champion". photo, circuit, description. Radio Bygones, Issue 58, April/May 99, p15

341. The Polish BP5...it does exist! photo, description, circuit. Radio Bygones, Issue 58, April/May 99, p19

342. US Military Radio Equipment - database of accessories and components. Radio Bygones, issue 58, April/May 99, p22.

343. The Swedish 2WW transmitter/receiver. photos, history. Radio Bygones, issue 58, April/May 99, p32

344. A little Home-Brew by Peter Lankshear.. photos description, circuit. HRSA Radio Waves, no.68, April 99, p4.

345 Value, Variety and Hope for New Collectors. discussion on what an antique radio is really worth. HRSA Radio Waves, no.68, April 99, p14.

346. Australian Valves, Valve Collecting and Repair. HRSA Radio Waves, no.68, April 99, p24.

347 The Raycophone model 2-20. Circuit, photos, description. HRSA Radio Waves, no.68, April 99, p32..

348. AWA Radiola model 520-MY. Circuit, photo, parts list, dial stringing. HRSA Radio Waves, no.68, April 99, p34

349. Midwest model 20-38 AC. touch tuning, 18-20 tubes, circuit, description. Wellington Vintage Radio Notes, June 99.

350 Early NZ Transmitters - brief notes, photo of 3AL transmitter. Wellington Vintage Radio Notes, May 99.

351. For the Serviceman - Philips Radioplayer model 540. Circuit. Wellington Vintage Radio Notes, May 99.

352. Tube Testers. general description, circuit of Franklin H-33, Weston 981, photo, spec. The Horn of Plenty, June 99.

353. Repairing an RCA 94X2 with an oversized chassis. Photos, description. Antique Radio Classified, Vol 16/5, May 99 p 14

354. Kolster Brandes FB10. Photos, description, circuit, servicing data. BVWS Bulletin Vol 24/2 p4

355. Vintage radio and the Internet. List of websites around the world. BVWS Bulletin Vol 24/2 p13

356. The BTH Mazda Two Stage Valve. photos, description. BVWS Bulletin Vol 24/2 p18

357 Triode Valves in Radio Receivers.- 1922/30. Part 2, Detailed review with good bibliography. BVWS Bulletin Vol 24/2 p26

358. The Philco Corporation. History, some photos. Californian Historical Radio Society.Vol23/2, Summer 1999 p12

359. Rebuilding an R1155. Photos, description, circuitry, service data. Radio Bygones,issue 59 June/July 99. p4.

360. A Soviet SCR 211 Frequency Meter. photos, description, circuit. Radio Bygones,issue 59 June/July 99. p12.

361. The Eddystone All-World Two. Two valve shortwave. photos, description, circuit. Radio Bygones,issue 59 June/July 99. p18.

362. Power Transformer Problems Aren't Always Easily Diagnosed. The Antique Radio Gazette, Vol 21/1 , p10

363. Restoring an RCA model T80. photos, description. Antique Radio Classified, vol 16/7, July 99, p14

364 Defective by Design: Atwater Kent. On common faults in Atwater Kent receivers,. Old Timers Bulletin, vol40/3, August 1999, p16.

365 Jewett Horn Speakers. Descriptions, Photos. Old Timers Bulletin, vol 40/3, August 1999, p27.

366 Restoring an RCA 5Q8. Description, photos. Antique Radio Classified, Vol 16/8, August 99, p14.

367 Radio equipment in the Liberator B-24D Bomber. Extensive description with photos. HRSA Radio Waves no 69, July 99, p7

368 The Astor Model BPJ. Photo, circuit, description. HRSA Radio Waves no 69, July 99, p14

MARKETPLACE

Advertisements for the next issue must reach the editor by the 15th July 2000. Ads must be either hand printed, typed on a separate page or emailed. No verbal or phone ads. Remember to include your name address and phone number. There is no charge for ads but the NZVRS is not responsible for transactions between members. Address ads to Reg Motion, 2A Hazel Terrace, Tauranga, New Zealand or email regmotion@xtra.co.nz

AVAILABLE

20 vintage radios, 1930s to the late 40s. All in excellent order. Murray Stevenson. Ph 09/8133565 or SSAE to 3 Brandon Rd., Glen Eden, Auckland.

National NC183D communications receiver, 17 valve, 1952, double conversion, 2 RF stages, 0.5 to 31 MHz and 6m. rare model $275. Trevor McDonald, 50 Tirimoana Rd, Te Atatu, Auckland. Ph 09/8362023.

Large number of radios, chassis, cabinets etc, 50's B&W TVs, reel to reel tape recorders. S.A.S.E. for list 30's through 50's. Arthur Williams, 26 Centre St, Invercargill. Ph 03/2168985.

Magic eyes. 6U5 Tungsol 6 pin, remote cutoff 6E5 Sylvania, 6 pin sharp cutoff 6U5G Brimar, 8 pin octal, remote. All $25 each plus P&P including free accessories. Dial Lamps 6.5V 0.3A tubular screw base, top grade Stella (Philips) made in England, packet 10 $3 + P&P, box 50 $14.50 + P&P, carton 500 - you offer. Alan Stanley, 71 Ranui Cres, Wellington 6004. Ring 04/9716551 before calling.