MARKETPLACE

Advertisements for the next issue must reach the Editor by the **17th January 1997**. Ads should be either hand printed or typed on a separate page. Note: no verbal or phone ads will be accepted. 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 3001, New Zealand.

AVAILABLE

Mk 11 ZCI Transceivers (2) complete with aerial rods, spike base and mobile base plus manual. Sell as one lot. offers please.
Maurie Challinor, 31 Barron Drive, Green Bay, Auckland. Tel (09) 827-5133

Atwater Kent 447 console (immaculate), black/green AWA Radiolette, 351A Philips upright, Amplion Dragon horn speaker, W.H.Y. or sell. Grahame Lindsey, 025-446292 or A/H 09-4192033.

Valve cartons, unprinted; small & GT 10c each, medium 12c, large 18c; in any quantity; all prices plus postage. Paul Burt, 44 Hastings St West, Christchurch 2. Ph 03-3327157.

WANTED

Cabinet, or picture of, for Pilot G528, 12 valve, slide rule dial, also called Dragon XV. My chassis has six knobs. Pilot speaker for same with five pins on speaker to fit a cable with a 5 pin socket plug Also Columbus or Courtenay 43 or 47. Ian Sangster, 75 Anawhata Rd, Piha, New Lynn 1250, phone 09-8149597

1 type 85 valve. 4 knobs for a Philco model 144 (page 166 More Golden Age of Radio). Circuit and info for Cadillac Auto-radio, 1957 model 7272505 - 7272525, made by Johnson Labs. D J Smith, 156 Rangitoto Rd Papatoetoe, Auckland. Phone 09-2783541.

New valves; 2 of metal 6F6, 4 of 5Y3, 4 of 2A3, 4 of 6A3, 6E5 or 6U5, 26, 27, PX25, 300B. 1937 Gulbransen A1 teledial, small cathedral chassis (2 or 3 knob) to fit Gilfillan Midget cabinet or Lark size. Also Ultimate RA or RB metal case radio any condition, Have several restored radios to sell or swap (see Early Sounds radio display at Mezzanine floor, Queens Arcade, Auckland. Phone Grahame Lindsay, 025-446292 or A/H 09-4192033.

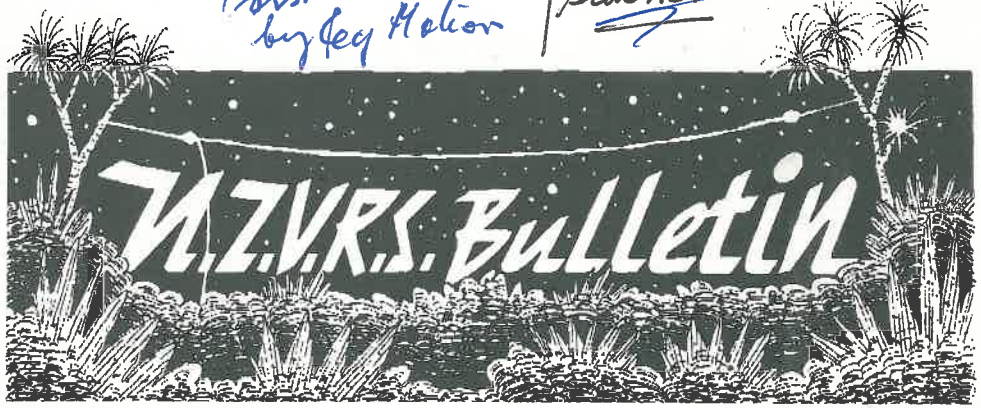
Atwater Kent type E speaker. Radiogram console - complete set or cabinet (Gulbransen, NZ Ultimate, US Majestic or ?). Roy Densley, 19 Miro Rd, Mangere Bridge, Auckland. 09-6342841 .

Columbus Model 14 round top (not one with a 3 gang tuning condenser mounted vertically). Also Atwater Kent 246 or 627. Will swap AK9O and/or Zenith with brass strip in cabinet. Murray Stevenson 09-8280858, 2/2 Plane St Avondale, Auckland.

One dial scale or old chassis with good dial scale, for Westminister 487D, 7V, DW, 1948 p144 of Golden Age of Radio. D J Smith, 156 Rangitoto Rd, Papatoetoe, Auckland. 09-2783541

Any 78 rpm picture records. Rod Osborne, P.O. Box 2098, Tauranga. Phone 07-5442887.

Ribbon microphones - RCA 44 and 77 - STC 4038. Good prices paid. Clarry Schollum, 34 Pentland Ave, Mt Eden, Auckland. Phone 09-6307011



NEW ZEALAND VINTAGE RADIO SOCIETY

Vol.17 No.3 **November 1996**

NEW ZEALAND VINTAGE RADIO SOCIETY

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

PRESIDENT; Alf Veart
25 Kendrick Place.
Blockhouse Bay Auckland 1007.
Phone 09-6279068

SECRETARY; Mark Thomson
7 Danbury Drive
Torbay Auckland 1310
Phone 09-4738388

TREASURER & MEMBERSHIP SECRETARY;
Bryan Marsh 20 Rimu Road
Mangere Bridge Auckland 1701.
Phone 09-6367712

MEETINGS; Regular Auckland meetings of the NZVRS are held on the third Monday of each month at 7.30pm. VENUE; Meeting room of the Dominion Road Methodist Church (at the rear of the Church) 426 Dominion Road Mt Eden.
AUCTION SALES of vintage items are held quarterly in the months of March, June, September and December at that month's club meeting.

AUCKLAND MEETINGS CALENDAR AND SECRETARY'S DIARY
NOVEMBER 18th: To be announced.
DECEMBER 16th: Auction sale.
JANUARY 20th: To be announced.

WELLINGTON AREA MEETINGS
Monthly meeting are held, typically at the Tireti Hall, Te Pene Ave. Titahi Bay from 1pm on the second Sunday of every month. For further details contact Bob Hatton at 40 Rose St. Wadestown. Phone 04-4728788.
CHRISTCHURCH AREA Contact Russ McKee at 39 Halliwell Ave Christchurch for meeting details Ph.03-3525778

THE NZVRS BULLETIN is published quarterly in the months of February, May, August and November. Contributions from members are always welcome and should be sent to the Editor. opinions expressed by writers are not necessarily those of the society.
BULLETIN EDITOR
Reg Motion, 2A Hazel Terrace, Cherrywood, Tauranga 3001.
FOUNDING EDITOR
John Stokes 281C Hillsborough Rd. Mt. Roskill Auckland 1004.

BACK NUMBERS OF THE NZVRS BULLETIN; Most issues are still available, though some of the earlier issues are now out of print. Price is $1 each for numbers up to volume 10 and $2 for issues from volume 10 onwards. Postage is extra. Cheques to be made out to NZVRS. order from John Stokes at the above address.

NZVRS LIBRARY; Members are reminded that our NZVRS library contains a good selection of books magazines and newsletters of several overseas societies. A list of publications is available from our librarian: Ernie Hakanson 17 Williamson Ave Grey Lynn Auckland. Phone 09-3766059.

WAIKATO AREA MEETINGS are held regularly, contact Murray Hall 19 Tamaki St. Ngongotaha. Ph. 07-3575903. Next meeting date and venue will be advised by letter.

CHANGE OF EDITOR

Ian Sangster has served the Society well as editor of the Journal since November 1992 and in that period has produced some excellent innovations in layout and in journal quality, especially in the quality of illustrations. He now retires with our grateful thanks for his sterling efforts and is replaced by yours truly who will be trying to keep up the standard that Ian has set.

My interest in radio goes back to prewar days when constructing your own receiver was a pastime enjoyed by many a non-technical person and I was bitten by the radio bug. A short period of radio servicing at McCracken and Walls in Dunedin was followed by 40 years as radio technician then radio engineer with the New Zealand Post Office Radio Section in Wellington where I developed a keen interest in the techniques of radio and in its history. Following retirement I joined the NZVRS and have followed its progress with great interest.

The success of the Journal is very dependant on reader participation so keep those letters, articles and illustrations moving in my direction. Write of how you came to be interested in vintage radio, what you are doing, your favourite tips and shortcuts for restoration, the solutions you have found to problems, the unsolved problems you have and the results you achieve. our readers have a genuine interest in these subjects. Don't worry about the format or grammar, these can be taken care of at this end, just give the facts in your own words. If you do have access to a word processor then send us a disk and printout if possible, but plain typing and legible handwriting are both quite acceptable.

Reg Motion

This issue is the first for your new editor, Reg Motion. I enjoyed my time as editor and wish to thank those who contributed articles, photos and copy, all of which make the editor's job easier. Please support Reg, as you have done for me, and keep our bulletin up there with the best of Radio Society journals.

Ian Sangster

New Members

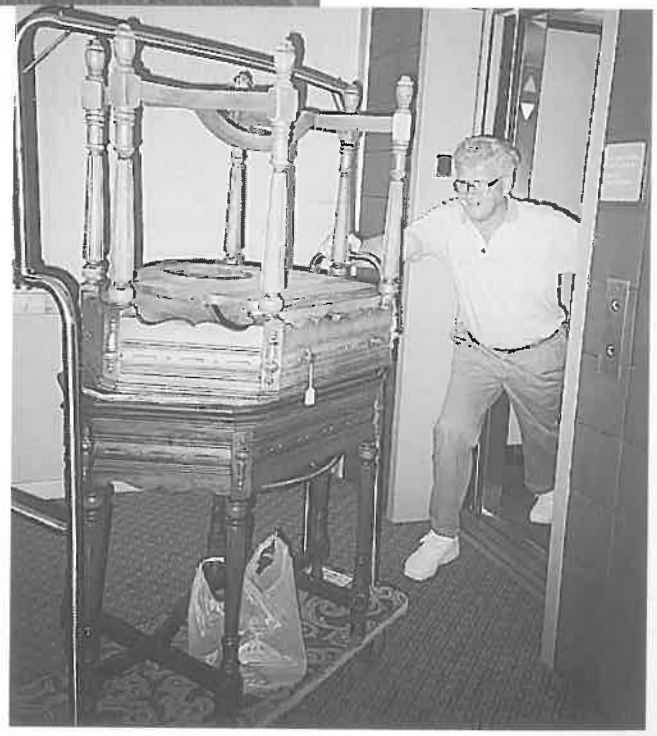
A Boulieris	Wellington
M N Diack	Auckland
K C Waterman	Auckland
D J Jensen	Australia
W V Woods	Australia
H J Downs	Morrinsville
M B Parlane	Palmerston North

Frontispiece

1928 Spanish Model Zenith
Originally priced at $2,500 this splendid console was photographed by Rod Osborne during his tour of Dr Ralph Muchow's Radio Museum.

The author worshipping at Mecca

1932 Atwater Kent "Fountain" model complete with clock.



Gerry returns with some of the loot!

JOURNEY TO MECCA

Rod Osborne

Can you imagine anyone who would fly sixteen hours to Elgin (Chicago) then get up at 4 am in the morning, go in the dark to the carpark and search by torchlight amongst hundreds of stalls showing thousands of vintage radios?

Well Gerry Billman and I did just that at the end of August. It was a once in a lifetime trip for us to see some of the world's largest vintage radio markets. As well as the hotel carpark the adjacent paddock was also lined with stalls.

Everything associated with radio was on display - parts, manuals, advertising material, cables, video tapes, records, telegraphic equipment, phonographs, communications equipment, - you name it we saw it. Various US dealers had stalls but the majority were collectors whose main reason for selling was that they had run out of room - sounds familiar?

Prices naturally varied greatly between stalls and near the end of the meet dropped dramatically, particularly on some of the private stalls where the seller had been under strict instructions "don't come home with the damn things!" The dealers were less negotiable than the collectors.

Individual prices ranged from the very cheap (I purchased an AK55 chassis for $2) to blue Spartons up to US$3,000 and Catalins as high as you wanted to go. We estimated one Catalin dealer had over US$30,000 worth of stock on his stall and all for sale.

Top model Cathedrals and Tombstones were priced much on a par to New Zealand.

This market lasted four days and the organising club arranged other attractions to keep collectors busy and interested. The highlight of these attractions for me was the visit to the Muchow Radio Museum near Elgin. This is the private collection of Dr Ralph Muchow and is housed in seven huge rooms of his early American house. Each room was packed full of radios and associated equipment of a quality I had never seen before. The frontispiece and the picture of the Atwater Kent "Fountain" model show a couple of his treasures.

One radio was made for Rudolph Valentino and another for the great Chicago exhibition. Each exhibit had been carefully restored and was presented as near as possible to original condition.

Dr Muchow greeted us while his two sons acted as guides.

By a fortunate coincidence the Rochester NY meet was held the week after the Elgin so we occupied the weekend touring the sights of Chicago including Al Capone's joint and arrived in Rochester the day before the meet started.

Unlike Elgin where there was a lot of unofficial trading the day before the official start, the Rochester organisers endeavoured to ensure there was no trading until the official start and they were almost successful.
5am the next morning saw us again in a carpark full of stalls and vintage radios with mostly new sellers, but we did see some familiar faces from Elgin.

Rochester is the home of the Antique Wireless Association (AWA) who have their own museum about 25 miles away. Before leaving NZ I had been in contact with Bruce Kelley, the curator, who was a very approachable fellow, and managed to get an invitation to their official dinner. The speaker at the dinner was a US government representative who spoke on his visit to the Moscow Radio Museum and illustrated his talk with slides. Guests at our table included one of the directors of the Smithsonian Institution and also the founder of the Antique Electronic Supply, so it was a very impressive evening for us Kiwis.

Following the dinner we visited the AWA Museum and the famous Annex, a place not normally open to visitors. The museum was an amazing place with a huge collection of equipment which included many working models. They had a valve collection that seemed to go on forever, an early transmitter conservatively valued at US$80,000 and a great collection of radio memorabilia.

The annex is the place where much of the restoration work is done and as well as radios in all states of repair there were floor to ceiling shelves crammed with spare parts. How I would have loved to have been let loose there for a few hours.

As well as the museum visit, the Rochester organisers had arranged several events for each day including auctions, exhibitions and competitions. The theme of this years meet was Atwater Kent with exhibition and competitions of AK equipment and memorabilia.

Ralph Williams, probably the leading authority and collector of AK, gave a very interesting talk and showed some of his equipment as well as other collections. He sprang a surprise during his talk by introducing Peter, the grandson of Atwater Kent who also gave a short talk on his family.

We spent some time with Bill Fizette, the president of AWA who made us most welcome and several times introduced us at meetings and dinners as having come from NZ so we made new friends and contacts. The image of NZ as a clean green country is very much in evidence in the US.

During the course of both meets we met collectors from South Africa, Brazil, Italy, England and Sweden as well as all the Canadian and US collectors.

I guess you would like to know what we bought for our trouble? Well they ranged from mantels to cathedrals to consolettes to radiograms and to chairsides. Because of the size and weight they had to be freighted home and we would like to forget what that cost, but I think we own a ship.

We thought we were fairly venturesome packing our hotel room full of old radios until we met the collector from South Africa. He had called the porter and had all of the furniture removed from his bedroom and stored over 2 tonnes of radios prior to shipping them home. The Italians, who were very evident at the market, must have also sent home several tonnes, so we were just learners.

After the meet we had a Sunday to spare so went from Rochester to Canada and spent the day seeing all the spectacular sights at Niagara Falls, another of the real highlights of our trip.

A 30 hour trip home saw us tired but very satisfied and both Gerry and I are now thinking that this wasn't just a once in a lifetime trip.

One of the many rows of stalls at the Elgin meet,

BOOKS FOR SALE

Zenith Trans-Oceanic	$31
Philco 1928-1942	$36
Radio by Hallicrafters	$36

All plus postage
orders to NZVRS Treasurer
(NZ members only)

Financial Statement

A financial report for the last two years is enclosed with this Bulletin.
Bryan Marsh - NZVRS Treasurer.

6th Annual Sale at "Melody Park"
38 James Laurie St, Henderson, Auckland
9.30 am. on Sat 30th November 1996

Combined vendors, Free radios, cheap radios, expensive radios.
Refreshments provided.

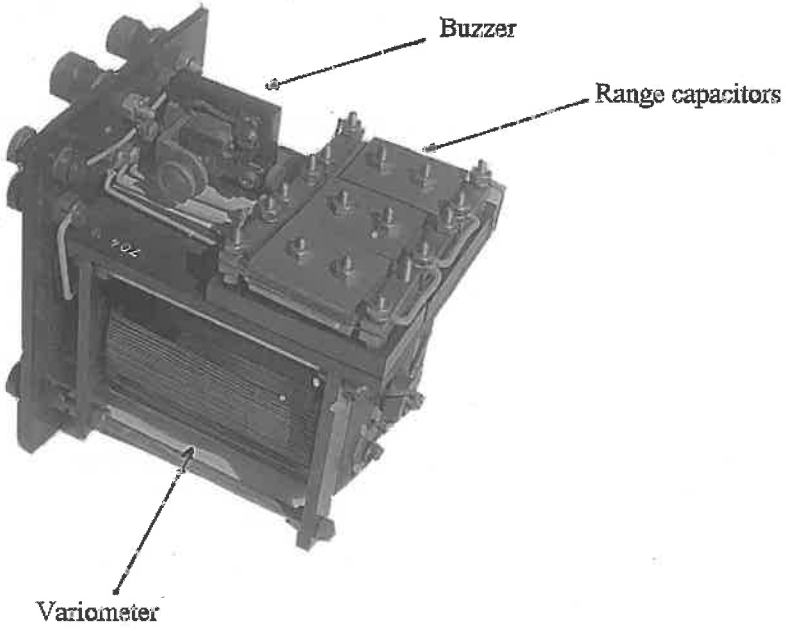
SIGNAL SOURCE - Exterior View

Upper left - On/Off switch

Upper middle - Range switch

Upper right - Battery terminals

Lower two terminals are output.



SIGNAL SOURCE - Internal arrangement.

AN EARLY SIGNAL SOURCE

By Reg Motion

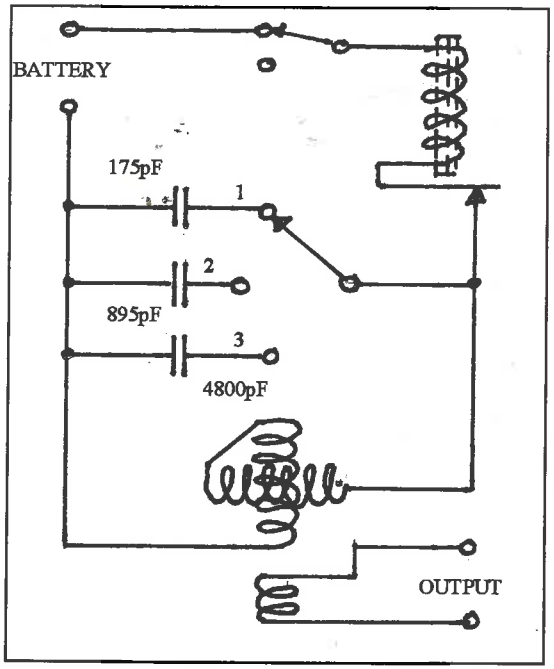
One of the first measuring instruments to appear on the wireless scene consisted of a capacitor and inductor connected to form a tuned circuit the resonant wavelength of which could be calculated from the known values of the components. This device then became a wavelength standard. By making either the capacitor or the inductor variable the unit could be tuned to resonate with an unknown oscillation and the wavelength of that oscillation determined from the scale reading of the variable - the wavemeter was born -well, not quite because some means of detecting resonance was needed and this took various forms from a small lamps in series with the tuned circuit to a crystal detector and phones across the tuned circuit.

This sort of wavemeter was fine for measurement on transmitters but could not be used to set a receiver on frequency. A signal source of known wavelength was required for such a purpose and this was obtained by using a buzzer to excite the wavemeter tuned circuit -thus the first crude signal generator was born. Rupert Stanley describes some fine examples of this type of signal source in volume 1 of his Text-book on Wireless Telegraphy (Sept. 1919). Designs by famous companies such as Marconi, Telefunken and Muirhead are featured there.

Some years ago, I was browsing through Ruperts vintage wireless shop in London and came across a French version of this type of instrument. I could not resist its tiny size and its attractive wooden box so left the store some pounds sterling lighter with the device in hand.

The maker was a firm called "La Precision Eleetrique" of Paris and the instrument is set up as a signal source only, it does not have the absorption wavemeter capability . Tuning is accomplished with a variometer type of variable inductor and the wavelength is directly read off a scale on the front panel. Fixed mica capacitors are switched across the variometer to give three ranges covering 190 to 2600 metres (1580 to 115 kHz). The capacitors are hand made by compressing alternate mica and shim brass between thick brass plates. This construction has stood the test of time because the calibration is within 1% except at one end of the lowest range where it rises to 3%. Probably an adjustment of the pressure screws on the mica capacitor would bring this range also within 1%. Not a bad record for an 80 year old instrument !

From the circuit diagram it will be seen that the variometer field is charged when current flows through the buzzer then, when the buzzer contact breaks a voltage is produced across the variometer to shock excite the tuned circuit. Thus the output is a series of damped radio frequency oscillations with a repetition rate determined by the mechanical design and adjustment of the buzzer, a modulated oscillator in effect. The signal when demodulated has a raucous whine which, as expected, has sidebands energy that spreads out from the carrier in decreasing amplitude for quite a distance. In its heyday telegraphy was the mode of operation and transmitters were spark excited so the signal from this source would have been completely in character.



An interesting little device from the past.

WAIKATO MEET

Sunday 8th September was the occasion for a gathering of vintage radio enthusiasts at the traditional venue, Frits Willemsen's home in Hamilton. one would be hard placed to choose the real reason for the success of these meets. Are they favoured because they offer an opportunity for a good old chinwag, or because of the goodies which various collectors bring along to swap and sell, or is it the fine afternoon tea which Mrs Frits turns on for the occasiion.? More than likely it is all of these combined.

We were interested to learn that Murray Hall is now well established beside Lake Roturua, that Cliff Dittmer is experimenting with various valved circuits of old and that Frits has withdrawn his house from the market in the meantime although a new venue on the outskirts of Cambridge still attracts.

Thanks, once more, Frits for the hospitality.

AUDIO

John W. Stokes

One of the first applications of the triode valve after its original use as a detector of wireless signals was in an entirely different field, that of landline telephonic communication. Until the introduction of valves as audio amplifiers, or repeaters as they were known in telephone parlance, communication was possible over only comparatively short distances due to losses in the landlines themselves. So it was as far back as 1912 that work was being carried out by the Western Electric Company in the US to see if De Forest's new fangled Audion could be adapted to telephone use. History records that it could be and was, with the result that long distance telephony became a reality. But that is another story.

The foregoing has been included to show that although valves, or vacuum tubes, have long been thought of as 'radio' devices, one of their earliest applications was in a very different field. The first use of valves as audio amplifiers in radio apparatus appears to have been in World War I military signalling equipment where some radio receivers incorporated a stage of audio frequency amplification. In Britain these amplifiers became known as 'note magnifiers', the note referring to the sound of morse signals as heard in the headphones.

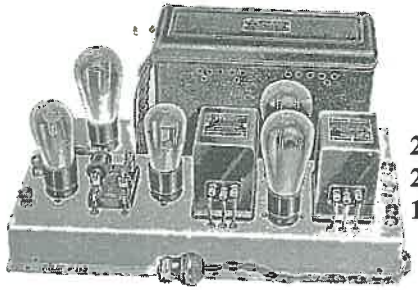
Following the establishment of broadcasting in the US, separate audio amplifiers were produced by several radio manufacturers, sometimes specifically for use in conjunction with crystal sets or 1-tube receivers made by these firms. A well known example was the Radiola 'Balanced Amplifier' designed solely for use with the Radiola 2-tube (detector plus I AF) receiver. This amplifier is of technical interest as its two tubes were arranged as a single stage of push-pull amplification, which explains the use of the word 'Balanced' in its name. Other manufacturers were offering add-on amplifiers for general sale to enable owners of headphone-only sets to move up to loudspeaker reception. Eventually, of course, as larger receivers incorporating one or more stages of post-detector amplification were produced the use of separate amplifiers became obsolete.

As in the US, it was not until after the establishment of broadcasting in the UK in 1922 that separate audio amplifiers were developed for private use and offered for sale as a means of increasing the output or 'volume' of crystal sets or l-valve sets. By 1923 several manufacturers were producing l-valve or 2-valve add-on amplifiers for this purpose, but the increasing number of receivers having built in stages of AF amplification soon rendered such amplifiers obsolete.

It was the coming into use of loudspeakers in the early 192Os to supersede headphone listening that gave a new emphasis to audio amplification. Whereas the amount of driving power needed for headphones was no more than a few milliwatts, it was different when it came to speaker requirements. Receivers were being called upon to provide substantially greater amounts of audio power and this could be done only by the use of a special type of valve in the output stage. Thus was born the 'power' valve.

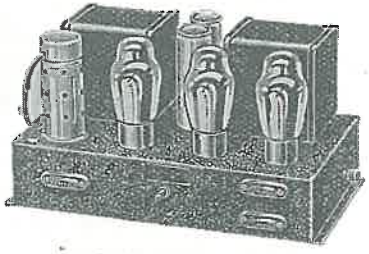
In the US as early as 1922 Magnavox were producing and advertising 1, 2 and 3 tube Power Amplifiers for use with their Magnavox moving-coil horn speakers, but this was before any power output tubes had become available. Similarly, the Sterling Telephone & Electric Company in Britain were advertising Magnavox 2-valve and 3-valve power amplifiers together

Power Amplifier



VALVES USED:

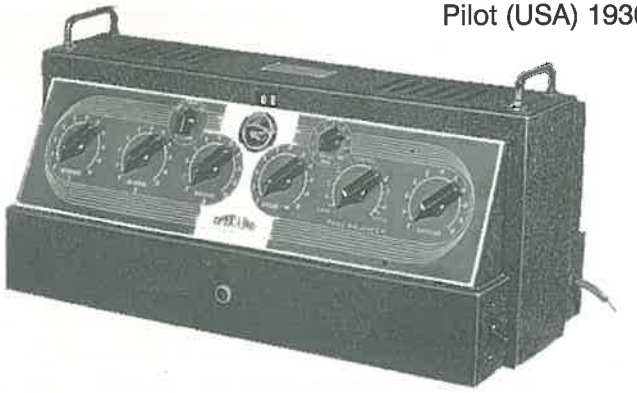
2-227'S
2-245'S
1-280



To satisfy the increasing demand for an audio amplifier powerful enough to be used for radio, phonograph and sound motion-picture reproduction in small halls and theatres, we have developed the K-113, a compact unit. The amplifier may be attached to any speaker or combination of speakers; it will handle two large dynamics or from 3 to 5 magnetic speakers.

Some Early PA Amplifiers
(Closewise from bottom)

Operadio (USA)
55-80 watts (1937)
Electrad (USA) 1937
Well Mayde (NZ) 1937
Magnavox (UK) 1922
Pilot (USA) 1930



with Magnavox speakers at the end of 1922. As in the US, power valves had not yet made their appearance and ordinary receiving valves were used in the amplifiers.

The first American power tubes, type UV-202, UV-203 and UV-204 were announced in March 1921, but these were intended for transmitting use. By 1925, however, the UV-202 had developed into the UX-210 and in this form was first used as an output tube in early electric phonographs. Later, it was used by one or two manufacturers of high class receivers until in 1928 it was eclipsed by the arrival of the UX-250. The '50' was the first high power tube intended specifically for audio work where it was used in some radio-phonograph combinations though its main use was in separate audio amplifiers, a new class of apparatus which may be said to have originated at about this time.

Towards the end of 1928 in the US, the subject of audio frequency amplification was beginning to assume some degree of importance amongst 'radio' men, evidence of which is provided in the wording of an advertisement appearing in the December 1928 issue of Radio News magazine. Here, the American Transformer Co. (Amertran) ad contained these words: "every year the importance of radio reproduction has advanced until now the question among radio enthusiasts has changed from 'How much distance can you get?' to 'How good is your tone quality?. From this time on the pages of radio magazines of the day increasingly carried articles on audio amplifiers, also some radio manufacturers were turning to the production of amplifiers in addition to their normal business. At the same time, a few specialist amplifier manufacturers, who had not previously made radios, were beginning to appear.

So important was this new development considered to be that, in the first (Early) edition of Rider's 'Perpetual Troubleshooters' Manual, a separate section was devoted to Power Amplifiers where the names of no less than a dozen manufacturers could be found. Admittedly there were some radio manufacturers whose names were in this section, but Rider apparently considered that there were enough specialist amplifier manufacturers in existence at the time to warrant a separate section. A sign of the times, surely.

Two things which pushed audio frequency power amplifiers into prominence were: the development of AC mains operated radios and the development of moving (dynamic) loudspeakers. Whereas the output of battery operated amplifiers had been limited to a few hundred milliwatts, now the output of AC amplifiers could be measured in watts. But, quite apart from radio, a new field was opening up - public address (PA). An article in the May 1929 issue of Radio News contained the following words: "The recent development of public address amplification adds still another link in the chain of modern communication.. "

It was the release of the first more efficient and low priced output tube, the UX-245, in March 1929 that caused a minor revolution in AF power amplification. A pair of these new tubes operating in push-pull could provide an output of around four watts yet required no more than 250 volts of HT to do so. The popularity of push-pull 45s became so widespread that during 1929-30 the majority of American consoles model radios were so equipped. In a move to obtain greater power, some set manufacturers during 1933-35 resorted to using four 45s in push-pull parallel and this desire to increase power may have influenced RCA in 1937 to publish details of class AB2 operation of 45s which at a plate voltage of 275 could supply an output of 12 watts with self bias or 18 watts with fixed bias.

Before that had happened, however, there was a short lived move by some radio manufacturers to obtain increased power for their top-of-the-line receivers by resorting to the use of class B amplification using a newly developed "Dual Grid Power Amplifier" tube, the type 46. A pair of 46s when operated under zero bias condition should provide an output of 16 watts at a plate voltage of 300, or 20 watts with 400 volts on their plates, but just how many of the speakers used in radios boasting such large outputs could handle this amount of power was another matter. By 1933 it was all over and the use of class B audio systems in AC radios had gone for good, leaving only the memory of a very short lived and peculiarly American phenomen, though its use in battery sets continued for many years.

To obtain a comparable amount of power from a class A amplifier a new type of tube was required and this need was fulfilled with the introduction of RCA's 2A3 early in 1933. The 2A3 was in its day the ultimate American 'radio' output triode valve even though it was probably used in more amplifiers than in radios. However, it is a matter of record that several large manufacturers, including Atwater Kent, RCA and Silvertone produced top-of-line models using 2A3s during 1933-34. A pair of 2A3s could provide an output of 15 watts when operated with fixed bias and a plate voltage of 300. To obtain more power than this it was necessary to use four 2A3s in push-pull parallel and this was the course chosen by Scott for his 1936 23-tube 'Full Range High Fidelity' model.

It was the advent of the beam power tetrode in mid-1936 that brought about a big change in audio amplifier design leading to the eventual eclipse of output triodes. Although pentodes had for many years been the most commonly used output tubes in receivers there had always been one basic type which had a comparitively limited output of 3 watts. There existed a need for a more powerful tube and this may have been the reason why RCA chose to bring out their first beam power tube in this form. By 1938 the 6L6(G) had become the most commonly used output tube in PA amplifiers and de luxe receivers. A lower power version, type 6V6(G) became available in 1937 and was widely used by many radio manufacturers in place of the 6F6(G) pentode.

British developments

As mentioned earlier, battery operated amplifiers were being marketed in the UK from as early as 1924. British valve makers appeared to have recognised the need to develop special output valves for amplifier use, actually before any receiving-type power tubes had been developed in the US. For example, Mullard produced their first two power valves in 1923 and by 1924, at least three other makers had followed suit.

It is a matter of record that commercially built PA amplifiers were available in Britain from as early as 1924. Marconiphone being one of the first firms to become interested in their construction and application. By 1935 public address systems had become so widely used in the UK that one name, that of Tannoy, became so well known that it was used as a synonym for public address: people would use the word Tannoy in the same way that they used the word 'Hoover' as a synonym for vacuum cleaner. What better free advertisement could anyone ask!

During the 193Os, an interest in the playing of gramophone records through high quality amplifiers was steadily growing which gave rise to the production of specialist components for use in this area. The same thing was happening in the US where it was known as the components system. From that time on, interest in the 'high fidelity' reproduction of records grew apace on both sides of the Atlantic until by the late 1940s it had overtaken radio construction as a hobby interest.

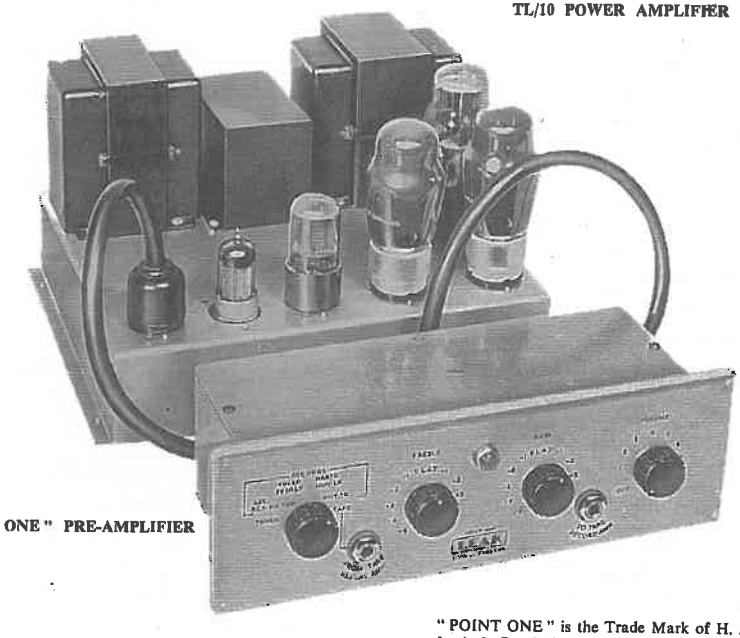
CRAFTSMANSHIP

"I can most certainly say at this stage that the workmanship and finish are of a quality which I have never before encountered in the radio industry, despite the fact that my association with the industry in one capacity or another extends back over 27 years. I think you are to be congratulated all the more on this achievement in view of the increasing tendency nowadays towards inferior workmanship and design."

Part of a letter from a purchaser of the TL/12 amplifier who is a very well-known engineer and whose identity is known to the Editor of "Wireless World."

The TL/10 amplifier maintains, in every respect, the world renowned Leak reputation for precision engineering, fine appearance and fastidious wiring. The triple loop feedback circuit employed is based on the famous TL/12 and the output transformer is the same size as in the TL/12.

TL/10 POWER AMPLIFIER



"POINT ONE" PRE-AMPLIFIER

"POINT ONE" is the Trade Mark of H. J. Leak & Co., Ltd. It was originally applied to the first power amplifiers having a total distortion as low as point one of one per cent., when, in June, 1945, H. J. Leak, M.BRIT.I.R.E., revolutionised the performance standards for audio amplifiers by designing the original "POINT ONE" series.

Photo: WLS

A New Zealand Communications Receiver (The SR-2)

AUDIO (continued) Although American ideas did exert some influence on British amplifier development, valve development was another matter, an example being M-OVs introduction of their PX4 output triode in 1929, some four years before RCAs 2A3 was on the market. An important British contribution to amplifier design was the invention of the beam power tetrode by Marconi-Osram. Although, for commercial reasons, this type of valve was first produced in the US (by RCA in 1936), a British version, the KT66, was issued by M-OV in 1937. As is now generally known, it was this valve which helped to put British hi-fi amplifiers, such as the Leak Point one, to the fore in the early post war period.

High Fidelity

It was during the late 1930s that the phrase 'high fidelity' (soon abbreviated to hi fi) was being increasingly heard in connection with the recording and reproduction of phonograph records, but before commenting on the subject it might be interesting to attempt to find out how and when this phrase originated. Like so many expressions which have become part of the English language, no one knows exactly for sure who first used it. The name of one contender is mentioned in Roland Gelatt's The Fabulous Phonograph (1955) where on page 206 the following words appear: " . . . it was known as 'high fidelity'. Just who coined this magic phrase has never quite been determined. An electrical engineer, Harold H. Hartley, is the strongest contender; he claims to have invented the phrase about the end of 1926. Not until late 1933 or early 1934 did the phrase come into general use, but then it was exploited with a vengeance."

It was not until the early post-war years that the growing interest in hi fi became big business with 'audio' eventually overtaking 'radio' as a new hobby. Existing radio publications gradually disappeared to be replaced by publications devoted to audio. Nowadays audio has long been transistorised but it is interesting to observe that among audiophiles there has been a revival of interest in valve/tube amplifiers during the 1990s which has created a sufficient demand for certain types of tubes to make it worthwhile for a few manufacturers to go into production.

ANOTHER NEW ZEALAND COMMUNICATIONS RECEIVER

by Ian Sangster

During World War II, New Zealand's radio manufacturers were called upon to assist the war effort, primarily with the ZC I project in later years but also with transmitters, receivers, radar and voice scramblers.

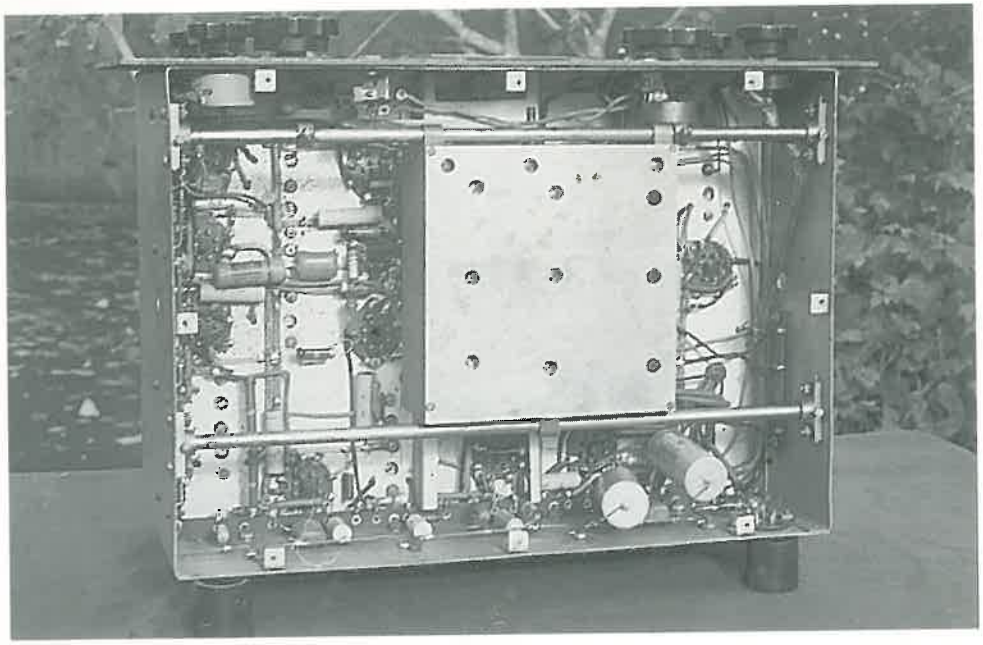
Recently a communications receiver has entered my radio orphanage, which I believe to be a WWII product of the Auckland radio manufacturer Sheffield Radio.

The receiver is a 19" rack mounted unit with a separate power supply. The front panel is dominated by a 7" brass dial. Switch functions are labelled on metal plates screwed above each switch, in the case of the wavechange switch the colour of each plate matches the painted waveband on the dial. It has three bands 550 to 1500 kHz, 3 to 6 mHz and 6 to 13 mHz. The chassis sits midway down inside the unit allowing enough depth underneath for the installation of the wavechange mechanism. A wonderful mechanism it is too! A cast aluminium coil box slides to any one of three position on two sturdy steel rods spanning the width of the cabinet. Invisible on top of the box are contacts which connect the tuning gang to the selected set of coils.

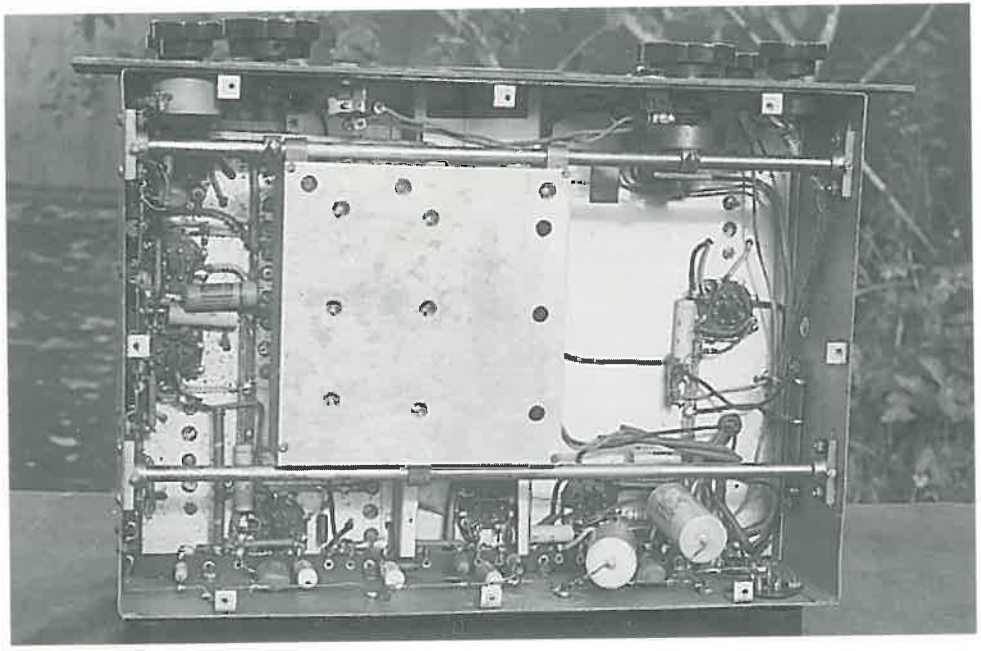
The National Radio Co. used this band change system in their NCIOO receiver in 1936. I have not had the opportunity to compare the NZ receiver with a NCIOO so cannot report on any mechanical differences in the band switching arrangement. I did see, and bid on a National sliding coil box receiver at a Wanganui junk sale recently but I was not successful.

The Sheffield receiver uses six-volt metal octal tubes throughout. Its line up is a single 6SK7 r.f. stage, 6SA7 mixer, separate 6J5 oscillator, first i.f. 6SK7, second i.f. 6L7, second detector first audio 6SQ7, audio output 6V6, B.F.O. 6SK7 plus a 6SK7 and a 6H6 as an a.v.c. amplifier and detector fed from between first and second i.f. stages. The tuning gang is a split-stator type allowing for dial scale expansion on the high frequency bands. After replacing all the waxed paper capacitors in my receiver and ascertaining that it ran I sent it off to Alf Veart for any alignment necessary and a technical assessment.

Alf was very impressed with the performance of the receiver. "Its performance was outstanding, due to the smooth action of the amplified a.v.c. and the low losses due to the nature of the bandchanging mechanism".



Under chassis view of Sheffield receiver with coil box at right hand stop



Under chassis view of Sheffield Receiver with coil box at left hand stop

WANTED (cont)

Valves - Audio output and transmitting including STC/WE 300A, 300B, 4300, 9300, VT4C etc. 800 family i.e. 845, 200 family i.e. 212E. Anything usable in amplifiers, i.e. KT66, 77, 88, EL34, 6L6, 2A3, 6A3, 6B4, 50, 250, 45, PX25, DA30. Military types VR, VT, CV series i.e. CV527, 563, 620, 621, 625, 730, 735, 834, 1040, 1075, 1076, 1080, 1178, 1206, 1452, 1831, 2533, 2608, 2609, 2657, 3623, 5220. Beacon and similar quality output transformers. Mike Diack, 6 George St, Mt Eden, Auckland. 09-6301014.

Restoring a Norden-Hauck Super Ten (1927) for the Radio Preservation Society Ferrymead Museum and require valves type 01A (201A, 301A) 112 or 71A. George Blackwell, 5/82 Lincoln Rd, Christchurch 8002. Ph 03-3384473.

CAN YOU HELP?

I have several radios with 2A7/6A7 convertor valves. There seems to be a common problem with frequency drift in the initial warm-up. Has anyone cured or alleviated this problem? Information to Murray Stevenson, 2/2 Plane St, Avondale Auckland. Phone O9-8280858

In the RC A 62 the potentiometer has two wirewound windings which are both traversed by the one arm. What is the purpose of the second 30 ohm winding?. Would also like any information on the Leader LSG10 Signal Generator and the Wayne Kerr Logarithmic LCR Bridge. Costs involved reimbursed. Keith Langford, 46 East St, Greytown. Phone 06-3049150

Instruction manual required for Windsor model 45B valve tester. Buy or loan. D Burrage, 11 Bannister Place, Avondale, Auckland. Phone 09/6279780.

Desire loan of manual for Marconi type TF2015 signal generator (10-513MHz). All costs paid and quick return assured. R. Motion, 2A Hazel Tce, Tauranga. Phone 07/5768733 .

FROM THE LIBRARY

The following extracts are taken from vintage radio magazines which are available on loan from the NZVRS library.

1. The First Transistor Radio - Enrico Tedeschi. Describes with photo and circuit diagram the Regency TR1 which was manufactured in Indianapolis using Texas Instruments transistors and was first marketed 42 years ago. BVWS Journal, Vol 18 no.5, p58.

2. The AVO Valve Tester type 160 - Principles of Operation - Pat Leggat. Description with photo and some advice on its use. BVWS Journal, Vol 18 no.5, p64.

3. An invention that changed the world - Pat Hawker - describes in detail with copies of original lab notes, the development of the transistor by Bardeen, Brattain and Shockley in the Bell Laboratories in 1947. BVWS Journal, Vol 19 no 1. p3.

5. Filament Power For Dry Battery Receivers -'Anodyne'. Suggests advantages in using Ni-Cad cell for filament power in battery sets using 1.4V filament valves. Radio Bygones, Issue 26, p14.

6. The Eddystone 730/4 general coverage receiver. - Ben Nock - Photographs, parts layout, circuit diagram and alignment details. Radio Bygones, Issue 37, p13.

7. Problems of the early setmakers - Dave Adams - covers the 1922/23 period in Britain: the cost of using Marconi patents, approval by the GPO and BBC royalty payments etc. BVWS Journal, Vol 19 no 3, p37.