WANTED

Circuits for Sansui stereo amps AU9500 and AU777. Also require 4 PNP transistors type 2SA679. Alan Mackway-Jones, 10 Crewe St., Dunedin. 03/4535176.

Buy or borrow a copy of the 1962 CV Valve Register and any pre-1960 lists of the British Service Valves. Graeme Lea, 73 Wallace Place, New Plymouth. . 06/7585344 after 5.30 pm.

Would appreciate loan for copying purposes of manuals or circuit diagrams for Muirhead-Wigan Decade Oscillator type D-690-A, General Radio type 1650A Impedance Bridge and Wayne Kerr type B500 Logarithmic LCR Bridge: Also operating instructions for Leeds and Northrupp model 8686 Potentiometer.
All care taken and reasonable expenses paid. R Motion, 2A Hazel Terrace, Tauranga. 07/5768733

Atwater Kent cabinet models 82, 735, 286, 648. Atwater Kent chassis models 84, 206. Atwater Kent complete sets models 447, 448, 735. Atwater Kent speakers for model E2, J.B.metal cathedral?. Atwater Kent horn speaker model H. Also any Atwater Kent name labels, model emblems or monograms. I still have radios for swapping. Bob Cook, Unit 3/475 Blockhouse Bay Rd, Blockhouse Bay, Auckland. 09/6266241.

Copy of a manual for a Labgear model CM 6307 Pal TV pattern generator. Also copy of a service manual for a J.I.L. SX400 scanning receiver. Dennis Seymour. Home 09/2779480, Work 025/747664.

Speaker for Majestic 130B console radio. Can swap a Majestic G-3 (suitable for 90, 90B, 100, or 100B models). Ian Greaves, 8 Bassett Place, Taradale, Napier. 06/8449913.

Hammarlund SP-600 communications receiver. Also audio output transformer for AR88D communication receiver. Ralph Boshier, 30 Ayton Drive, Auckland 1310. 09/4445735. Email: Rboshier@ihug.co.nz

Old 1930/40s medium wave and shortwave QSL cards and verification letters, any call books, log books, DX magazines or other early DX material. Am writing history of Dxing in NZ. Please phone Barry Willaims, 09/6279070.

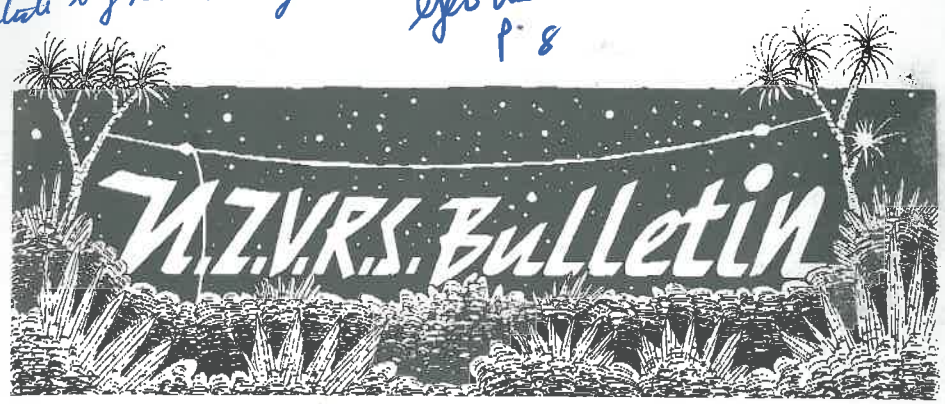
National Panasonic S.W. Radio model RF-2800BA-DR28.in any condition going or not and/or circuit diagram of same. Clemens Van Der Wee, 10 Balance St, Kihikihi. 07/8718336..

I have just finished my Majestic 461 (p107, G.A.R.). looks great but woe is me it's only got one knob. Can someone help me with two more please. Chris Hollis 13A Princes St, Cambridge. 07/8276046.
chris.hollis@clear.net.NZ

One only light brown bakelite knob for CQ radio model 72 ca 1934 (octagonal outline with radial ribs on face - max diam 28mm). Also one only dark brown bakelite knob for Ultimate model CJU ca 1937 (octagonal outline with raised circular dome on face - max diam 25mm.). Jack Riddle, East Takaka RD1, Nelson 7172.

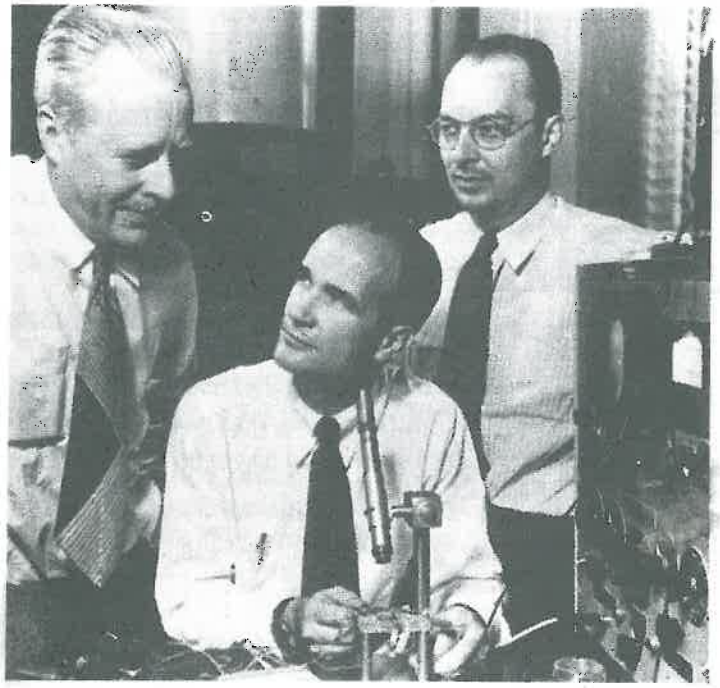
I am setting up a small area to resemble an early radio shop and would like to buy any early display or advertising material, show cards etc also any appliances or radios in their original boxes. Rod Osborne, PO Box 2098, Tauranga. 07/5442887.

Ribbon for Electrovoice V2 microphone. Also diaphragm for Western Electric 555 "loudspeaking telephone" (compression driver). Mike Diack 09/6301014.



NEW ZEALAND VINTAGE RADIO SOCIETY INC.

Vol. 19 No.2 August 1998



50 YEARS AGO

Walter Brattain, William Shockley and John Bardeen announced the development of the point contact transistor.

Photo with acknowledgement to the Old Timers Bulletin and Lucent Technologies

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 Rural Delivery, New Lynn, 1250. Ph 09-8149597.

SECRETARY: Grahame Lindsey, 110 Sylvan Ave, Northcote, Auckland. Ph 09-4192033. General correspondence as well as 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. 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.

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. Bulletin distribution is arranged by Chris Hollis, 13A Princes St, Cambridge. Back numbers of most issues are still available from the **FOUNDING EDITOR**, John Stokes, 281C Hillsborough Rd, Mt Roskill, Auckland. Price is $1.50 each for numbers up to volume 10 and $2 for issues from Volume 10 onwards. Cheques to be made out to NZVRS.

NZVRS LIBRARY Requests for circuit diagrams, books and magazines from our library should be made to the **LIBRARIAN**, Ernie Hakanson, 17 Williamson Ave, Grey Lynn, Auckland. A small charge will be made for copies of items supplied.

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, 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 will be held on Sunday 6th of December at Tauranga. See page 3 for further details.

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

CHRISTCHURCH AREA. Contact Russ McKee, 39 Halliwell Ave, Christchurch for details. Ph 03-3525778.

CONTENTS

FROM THE EDITOR

Our cover page this issue features three scientists who were instrumental in developing a practical semiconductor amplifier - the point contact transistor. This development took place **50 years** ago and resulted in a major change in direction for the electronics industry. 50 years places early transistor radio equipment in the "vintage" class but I cannot recall any article in our bulletin on transistor equipment although our sister journals overseas have featured the subject. There are some eminently collectable early NZ transistor designs, eg Perce Collier's oak cased Pacemaker Transportable (Radio Inspectors found this set to be very convenient for location of electrical interference). Such sets still appear in secondhand shops and at swapmeets at very modest prices and are eminently collectable. Articles on the early designs would be very welcome.

A particularly pleasing event is the number of articles this time which have been contributed by new authors. Clemens Van Der Wee has translated for us an interesting Dutch article on NSF and Philips, Ian Greaves has some wry comments on his restoration work, Dick Stevenson gives us the first part of an article on the changes over the years in power feeds for radio sets, David Crozier has some pertinent paragraphs on PCBs (PolyChlorinated Biphenyls not Printed Circuit Boards) and Harold Ault has a handy hint for us. Long may this trend continue.

Auckland members should appreciate the change in their meeting venue (see note below and the map on the back of the Treasurers summary of accounts, separately inserted in the envelope with this bulletin). The old venue was getting rather crowded and parking was a serious problem.

AUCKLAND MEETING CALENDAR

Aug 17th; Bring and tell crystal sets.
Sept 21st; Auction sale.
Oct 19th; Bring and tell military sets.

NOTE!!! We have a new meeting room! The Horticultural Society Hall upstairs in what was the old Chamberlain Park Golf Club house on Gt. North Rd, opposite Motions Rd. Use Western Springs exit from motorway 16.

WAIKATO MEETING Sunday 6th December at Tauranga starting at Rod Osborne's home address at 10am, later visiting Reg Motion, Gordon Baker, and possibly other collectors.

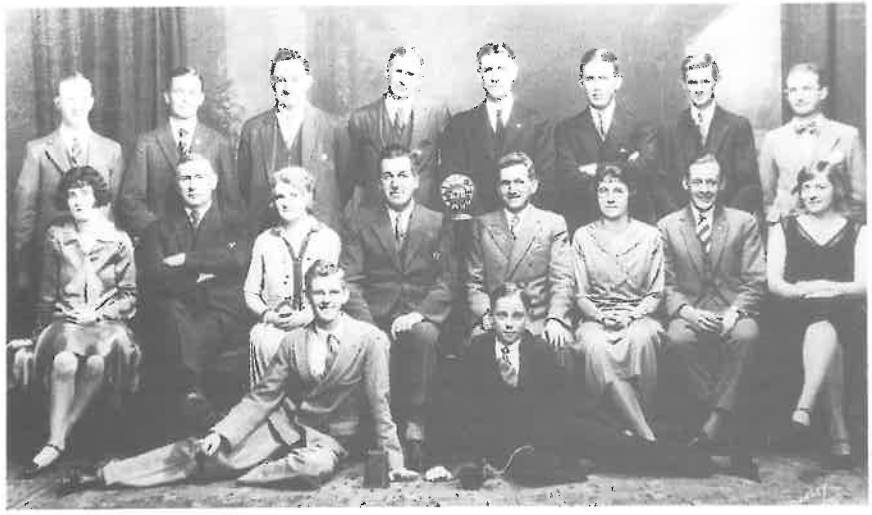
A warm welcome is extended to NZVRS members in neighbouring areas; make a weekend of it and enjoy Tauranga's other attractions. A dinner get-together at $15 each will be held on Saturday evening - if interested in attending ring Rod Osborne at 07/5442887 for reservation

---

NEW MEMBERS

Gordon Cooper	Omokoroa	Don Legg	Auckland
Jim Monks	Auckland	Max Clifford	Auckland
David Carey	Hutt Valley	Bill Edwards	Papamoa
Jimmy Chen	Auckland		

2YB Broadcasting Studio in 1929 - photo courtesy of Taranaki Museum



2YB Staff in 1929 - photo courtesy of Taranaki Museum

Standing - F Huggard, H A Lee, L F Binns, W H Quickfall, W R Johns, G Corney, S A Pruden, H Morey...
Seated - Miss Crawshaw, F T Davis, Mrs Larkin "Aunt Rene", A B MacDonald, E Payne, Mrs A B MacDonald "Aunt Gretchen", J A Pigott, Mrs W E Trott
Front - G Fairbrother, N Clark.

SOME RECOLLECTIONS OF EARLY BROADCASTING IN NEW PLYMOUTH.

By Peter Lankshear.

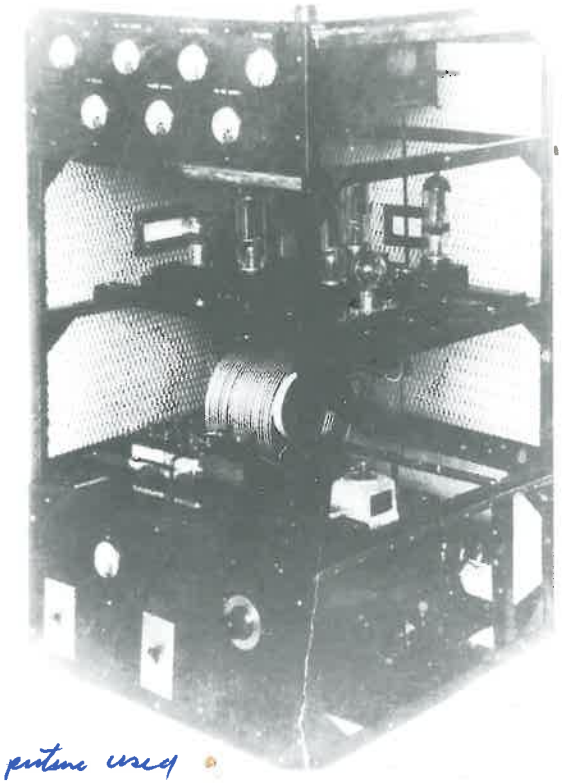
Your editor has asked me to make a contribution to his series on early radio in New Zealand. He had visions of my writing about Invercargill where I have lived for the past 25 years, but instead, as one of the very few surviving people involved with the station, I will note down some facets of the story of New Plymouth's pioneer 2YB.

In the late 1920's, with rigid control by the Government and the Post Office, there were two classes of broadcasting station. There was no networking of course, but there were the National Radio Broadcasting Company's "YA" stations in the main centres, supported by the radio licence and then throughout the country and especially in provincial towns there were privately owned stations, . Known generally as the "B" stations, they had Z call signs, and were frequently owned or sponsored by radio and music stores and public subscription. Local artists and gramophone records from the local record shop were heavily relied on. Paid advertising was strictly forbidden. Generally their broadcasts were restricted to only a few hours a day and often not every day of the week. Invercargill, for instance had two stations that took turns to broadcast on separate days. Even small communities such as Balclutha and Cromwell had at one time their own broadcasters. The "B" station transmitters were generally amateur built, radiating from small aerials, and few had powers in excess of 100 watts.

With the limitations of low powered transmissions, the properties of receiver owning households were dominated by impressive receiving aerials. Although after dark reception of stations New Zealand wide and even Australia and America, was possible, selective fading and static limited their entertainment value.

New Plymouth is situated right in the selective fading zone of the Wellington and Auckland stations, and by 1928, listeners were frustrated enough to form the North Taranaki Radio Society (NTRS) in order to agitate for their own station. A leading activist was Ted Payne and they managed to persuade the Government and the Radio Broadcasting Company to provide assistance in setting up a station, with a small financial subsidy, and for a short time, a resident announcer. All other services were to be supplied by Society members. This was to be a "temporary" arrangement pending the installation of a full service. In fact, it was more than 23 years before a permanent station was to be opened.

The studio used very simple Western Electric equipment consisting of a battery powered amplifier, a couple of turntables, double button microphones, and the WE 560-AW cone speaker for monitoring. Incidentally, this speaker, which can be seen in the photograph opposite, is in my own collection and still works well - a tribute to WE quality.



2YB Transmitter in 1929
photo courtesy of Taranaki Museum

On 27th April 1929, 2YB had its opening transmission, from premises in the fourth floor of Colliers Music House in Devon Street. The transmitter had been built by a young Radio Broadcasting Company engineer, W.(Bill) Huggins. (Bill went on to have a distinguished career with NBS/NZBS/NZBC/BCNZ and from my recollection he finally retired in the 1970's). As can be seen from the photograph, the transmitter was a nicely built but simple unit and was in service until the late 1930's. It generated a nominal 100 watts from a pair of 211 valves with two more as modulators and was powered by a motor/generator unit.

The Radio Society had some good technical talent, with several employed by the New Plymouth Borough Council Electricity Department and the team led by Jack Pigott included Fred Huggard, L.F. Binns, Bert Lee, George Corney and Syd Pruden. Syd was my uncle, although it was many years before I discovered his association with 2YB. Concert Programme enthusiasts will recognise the surname of another of Syd's nephews, the composer Larry Pruden. In later years, Bert Lee took over the responsibility for the technical side, and along with the Society's President, Ted Payne, remained in active work with the NTRS throughout the whole of its lifetime.

By 1932, Herbert Collier had had enough of playing host to the NTRS, and the station was moved to the Empire Building, now known as the Victoria Building, in King street. The new station had the luxury of a studio about the size of a large living room, and in the fashion of the time, draped floor to ceiling with brown monks cloth, a particularly depressing decor and a great dust and spider source! There was a cramped record library and a control room fairly well filled by a transmitter, a workbench (always untidy), a turntable desk fitted with "Green Flyer" turntables and a locally built amplifier rack replacing the original W.E. audio equipment . This was based somewhat on early de Forest theatre amplifiers, using 24A and 45 type valves.. This equipment served until 1950.

On the roof was a wooden lattice mast supporting an L aerial which ran to a straight mast mounted on the rear of the N.Z.Insurance building. The earth lead was a heavy cable (no

doubt courtesy of the NPBC Electricity Dept.) running to a copper plate in the bed of the adjacent Mangaotuku Stream at the point where it used to run under the town. Current wisdom was that this was an ideal earth, but measurements taken by the writer many years later proved that the relatively pure water of the stream would have provided a very poor earth. In fact the earth lead would have acted more as a counterpoise. Today, the stream has been diverted away from the town, and the bed filled in for a car park.

In the late 1930's the technical staff built a replacement for the old transmitter. This was a relatively massive affair consisting of a rack frame and black composition switchboard panels. The ZB120 final valves were favourites of both hams and high power P.A. operators, and at 2YB worked in push pull for both R.F. and Class B modulator. The modulators were driven by a pair of 6A3's, while the R.F. drivers were a pair of the classic type 10 valves. These in turn were driven by a crystal oscillator built around a couple of 6L6's. The transmitter was licensed for a nominal 100 watts, but in reality, the input to the final was nearer 250 watts and the troublesome motor generator unit had given way to transformers and mercury vapour rectifiers.

The monitor speaker was a 12" mains energised Magnavox hanging on the control room wall in a soft pinex baffle about 2ft square! The studio monitor speaker was the trusty W.E. previously mentioned. Microphones over the years comprised double button carbon, piezo electric crystal and a classic condenser unit complete with tubular head amplifier.

Programmes were broadcast during evenings only, opening at 6.30 pm Wednesdays and Saturdays, 7.00pm Tuesdays, Thursdays and Sundays. Friday's transmissions did not open until 8.00 pm and close down every night was at 10.00pm. There was a roster of people prepared to do announcing and operating duties, the latter, naturally, often having an interest in ham radio.

By 1941, the country had a full commitment to World War II and of course, as they came of age, young fellows with radio knowledge were snapped up by the armed forces, generally the RNZAF. This meant that Bert Lee, who by now was running the 2YB technical department, frequently had to find suitable replacements. Not surprisingly, some of his proteges were recruited from the ranks of the electrical apprentices at the NPBC Electricity Department.

At the beginning of 1945, I was about to enter the 6th Form at High School and already was very involved in my hobby of radio. An electrician friend of mine told me that Bert Lee was going to be needing an operator soon, so with all the brashness of a 16 year old, I phoned him and asked if I could have the job. Bert was clearly taken aback at the idea of a schoolboy running a radio station, but, in his usual gruff manner said "I'll let you know". I hung up expecting to hear no more but about a fortnight later he told me that he would give me a trial.

Well, I must have measured up because I was kept on until the middle of 1946 when I commenced my career with the NZBS in Napier. One highlight at 2YB was playing the first episode of "Dad and Dave" on 16 inch 33 1/3 RPM disks with an inside start! These huge disks were a hangover from the early "Talkies" and played for 15 minutes each side.

In 1948, in line with a nation wide reorganisation, and as part of the plan for setting up of the X class community stations nationally, the station's name was changed to 2XP although

operations continued much as before. In 1950, New Plymouth was given some relief in the form of some much needed studio equipment and a new transmitter, tended by a resident NZBS technician, Ken Frank.. I believe that the studio equipment was basically that used by the mobile unit that had travelled with the 2nd NZEF . The NTRS still provided announcing staff though, and Bert provided relief so that Ken could have a weekly day off.

The new transmitter, one of the excellent AWA "Black Two" 2 kilowatt units, was installed at the present site at Bell Block. These transmitters provided splendid service in the X class stations all round the country for many years, and were revolutionary in that they were designed for unattended operation.

At the beginning of 1952, I was transferred to New Plymouth to take over from Ken Frank. Within a few months, work started on installing equipment in new studios and late that year 2XP became a fully fledged NZBS station. Fittingly, before the handing over ceremony, Bert and the NTRS announcers did have a couple of weeks operating from the new studio, using the new AWA equipment.

I retained close contact with Bert and it was with pleasure that I was able to keep him in touch with the equipment as it was installed in 1966 in the new purpose built Broadcasting House in Brougham Street. There were two control rooms and announcer's studios as well as a state of the art main studio. No more monks cloth drapes! At the time the beautifully made Toshiba equipment was very advanced and New Plymouth was the first fully solid state equipped radio station in the country. What a difference from the equipment of 30 years earlier. The superbly made and finished amplifier and mixer modules were all plug in, with all contact areas gold plated.

Today even this equipment has been superseded by a later generation of technology, the three AM transmissions are largely networked. There are more than a dozen FM. stations serving New Plymouth, and the "YA" National Programme has its own A.M. transmitter. I am sure that the pioneers, who have now all passed on, would be impressed by what happened to their project, just as I am sure that those same resourceful people would today have mastered digital electronics with the same facility as they tackled the emerging technology of 70 years ago.

OBITUARY

George Albert Weston on June 1st 1998

George Weston, ZL1BLX, was one of the first radio collectors/restorers in this country and was a founding member of the NZVRS. At the time I first met George, back in 1967, he and I were working in isolation and got to know each other quite by chance, but discovered we had a common interest in early radio valve collecting and research. Anyone who saw George's extensive and well presented collection will know how meticulous his work was, not only with valves but also with his other interest, early battery sets. Our sympathies are extended to his wife Mary and his family.

J.W.S.

SOME NON-EXPERT FEEDBACK ON FEEDBACK

Ian Greaves

While restoring to service a Courier 5CA chassis, several unexpected problems were encountered. Most of these were related to the AGC line. Considering the state of the chassis and the potential for many other problems to manifest themselves, it seems I got off lightly.

The chassis in question was obtained from a deceased estate and was in a fairly dismal state. No valves, much corrosion, just a rusty old chassis. Good to leave on the parts shelf for spare parts just in case someone wanted some bits or something. As luck would have it someone did want such an item; an ad in the bulletin recalled an unfortunate incident where, during a household shift, a radio chassis had been thrown out by a well intentioned but misguided 'tidy-person'. Consequently a refurbished and resplendent cabinet was without its refurbished and resplendent chassis. The rusty old chassis in my possession seemed to fit the bill as a likely replacement so we got to work to make something of it.

The topside was stripped down so as to remove the corrosion. Being a painted chassis meant that it was relatively easy to get some semblance of visual acceptability about it (a metallic bronze of the automotive variety seemed to do the trick).

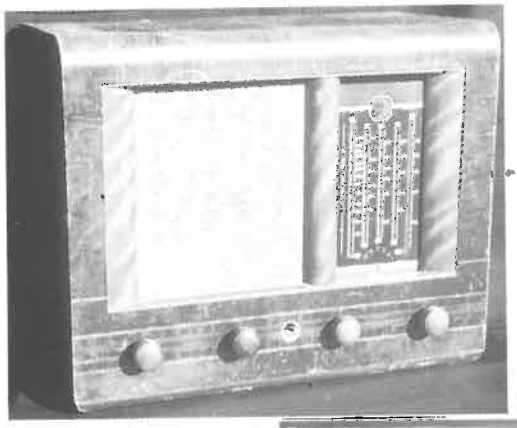
The underside was seen to be relatively intact and original so once some fundamental checks were carried out and a suitable EM speaker connected, power was applied. Voltages from the power transformer appeared to be OK so appropriate valves were rustled up and installed. Power up again and some encouraging DC voltages appeared and noises emanated from the speaker in the form of the Sports Round-up on the local Hawkes Bay frequency. All very good except for a niggling heterodyne and the sensation that the set was not as stable as it should be.

The solution was quite obvious, no valve shields, a fundamental oversight. Appropriate shields were obtained and fitted with no appreciable change to the sets performance, still an annoying whistle verging on instability. For some reason it was decided to measure the resistance to earth of the newly fitted shields. Presto, the IF shield was not at earth potential, hidden corrosion around the valve base was the cause. This was remedied and guess what, yes the heterodyne remained.

After fathoming out the AGC circuit it was established that no AGC voltage was present. This led to the replacement of the bypass capacitors, something which should have been done anyway. An open circuit 1 Meg resistor was not helping the cause, this was also replaced. After all this work on the AGC line it was with some confidence that the set was fired up again for a final test. Alas the heterodyne persisted. By now dear reader you are probably becoming bored with the antics of what reads as a fairly hit and hope process of trying to make the 5CA work.

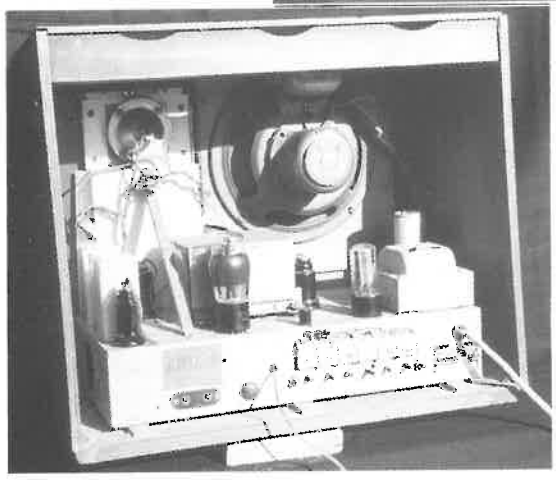
To cut a long story short, the problem was tracked down to decoupling (or lack of it) on the screens of the mixer and IF valves. As in similar sets of the era, the screens are 'commoned' and bypassed by a single .25 microfarad capacitor. A recalcitrant bypass capacitor here was the root cause of the heterodyne, although the other work done to the chassis would have been necessary anyway. The set now performs satisfactorily and awaits delivery to the empty but restored and resplendent cabinet. Altogether a very satisfactory outcome.

Your feedback on any moral to this story is welcomed!



Golden Knight FA

Skyscraper EA
Pushbutton Model

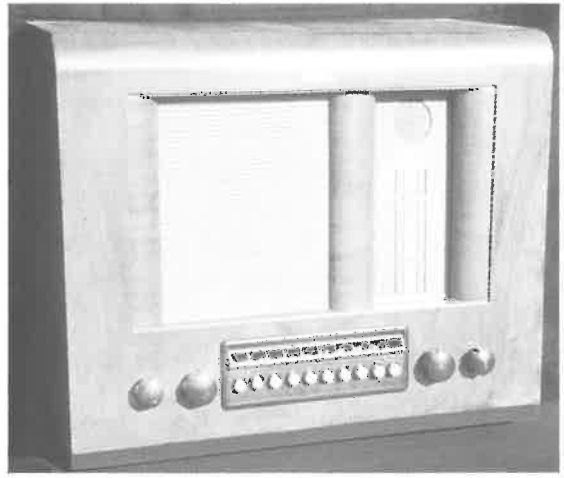


Rear View of Skyscraper EA showing trimmer capacitors for station selection

RADIO (1936) LTD'S EA AND FA MODELS

by Ian Sangster

As the war clouds were drawing in on the European front, the people at Radio (1936) Ltd produced the first in a long lived series of capable durable modern looking radios.



Bush PB63 branded as a "Goldentone"
Shown for comparison with Radio Ltd sets opposite

At this time radios manufactured by Bush in England were sold in New Zealand. The styling and features of the Radio Ltd sets bore a remarkably close resemblance to that of the Bush PB63. Radio Ltd's 1938 sets had a large round aero dial, 1939 followed with a long horizontal slide rule dial, both years featuring magic eye tuning indicators. Yet in 1940 the dial became vertical slide rule and the magic eye was rejected in favour of a "Teleflick" illuminated mechanical rotating vernier. "Teleflick" has a rotating wheel driven from the tuning drive with fine slots cut through like spokes in a wheel, this rotates against a fixed slotted mask and projects a thin line on to the dial glass which is screen printed with a clock face numbered radially from 1 to 15. The rotating wheel is lit from the rear by a dial lamp in a flashlight sized reflector.

The earliest sets in the range were the EA's with a valve line up as follows, 6K7 radio frequency amplifier, 6K8 oscillator mixer, 6K7 intermediate frequency amplifier, 6B8 detector and first audio amplifier, 6F6 audio output with an 80 rectifier. The interesting aspect of the circuit is that the radio frequency stage is only used on the short wave band. A single short wave band covers from 6 to 18 MHz. A Skyscraper EA serial number 65808 has push button tuning fitted but I have not seen any other EA's fitted with this feature.

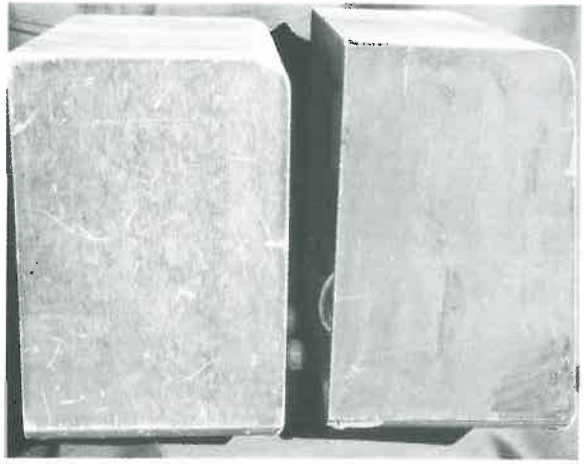
Some time ago the idea for this article germinated when I began looking more closely at these radios which are not uncommon in radio collections in this part of the country. Since both FA's and EA's look similar most people don't turn them around to look at their chassis. Some variants do exist, other than the push button EA. I have one EH which is an AC-DC variant originally having an 18 output and a 25Y5 rectifier. The EA comes with metal valves and no facilities for valve shields with a flat mount power transformer covered by a end bell with diamond shaped cooling slots.

The next model to be released was the FA with a circuit date of December 1940, it looks at a passing glance like an EA but differs in having one broadcast and four bandspread short wave bands plus a magic eye tuning indicator returning to replace the "Teleflick". EA's and FA's are interchangeable in cabinets. I do have one cabinet which has a vertical front panel but cannot say categorically say which chassis was supplied in it as I acquired it as an empty cabinet.

The FA chassis was supplied with glass valves 6K7G's and 6Q7G's thus the chassis has shield bases fitted around the valve sockets. The power transformer has a taller lamination stack of smaller laminations with no end bell fitted. I have seen a variant called an FJ which looks similar to an FA but has no radio frequency stage fitted.

In this part of the country EA's and FA's are quite common. They seem to be more reliable than Radio Corporation Columbus and similar sets, not having the same degree of IF coil and power transformer problems. Conversely the Radio Ltd sets have poorer corrosion resistance, having only a painted chassis rather than Radio Corp's plated finish.

The EA and FA both perform well and have pleasing tonal qualities. The sets I have gathered are branded as Ultimate, National, Skyscraper and Golden Knight. I have referred to my experience in working on these sets in a previous Bulletin article. Bill Collerton has written an article on the FA in the May 1998 Wellington Area Newsletter which I recommend reading.



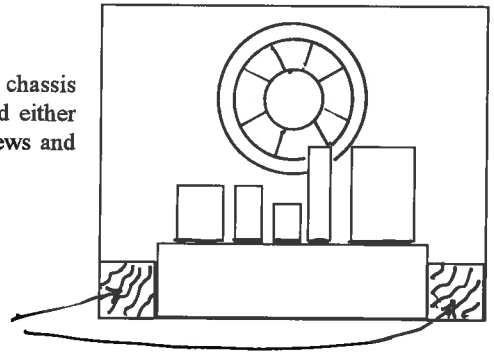
Side view of the standard cabinet next to the vertical fronted variant.

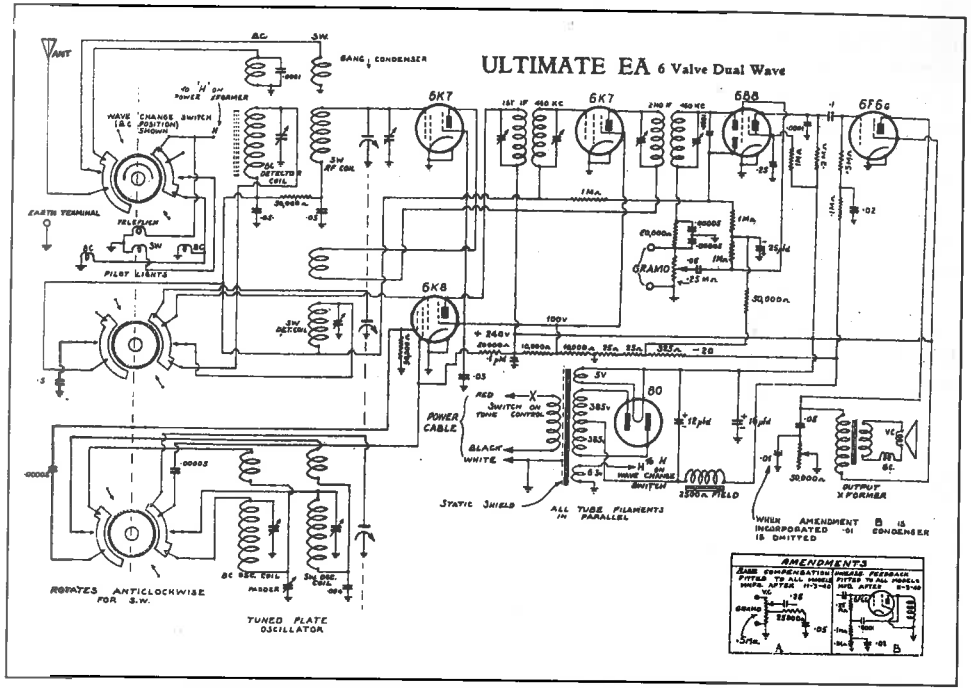
(See also circuits on next page)

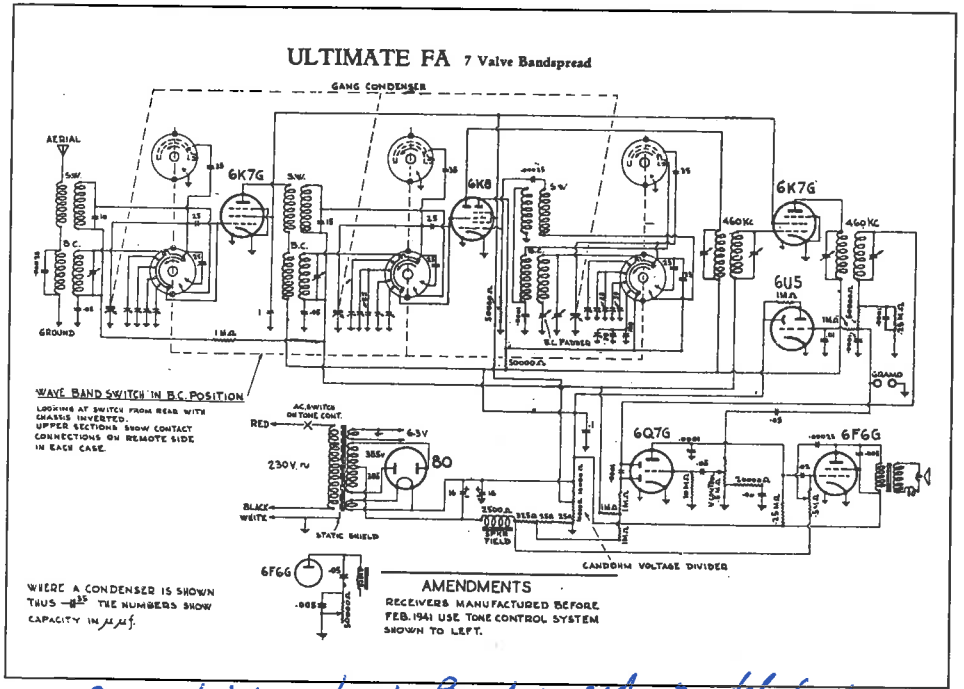
HANDY HINT

To protect the glass dial etc. when removing chassis from the cabinet place a small block of wood either end. Tip cabinet on end before removing screws and remove chassis with care.

Harold Ault

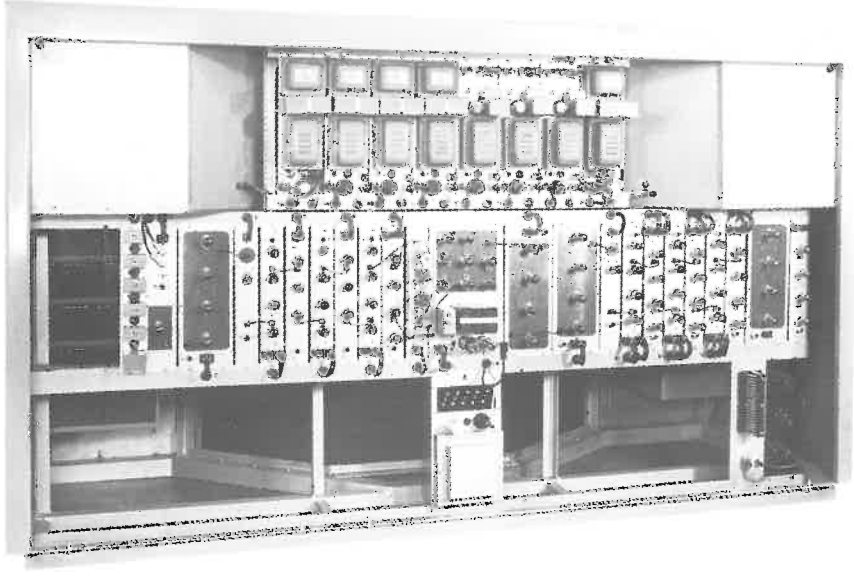






Radio Ltd's first Bandspread model (late 1940)

Front of Frequency Measuring Console - George King at the controls



Rear View of Frequency measuring Console with covers removed
Powers supplies above - Frequency dividers, gating unit and counting units below

FREQUENCY MEASUREMENT
The Second New Zealand Facility

Reg Motion

Seven years after WW2 the requirements for frequency measurement were tightening considerably; radio transmissions were on the increase, especially in the HF range, and the ITU was recommending closer frequency tolerances to allow for this increase without mutual interference. The initial New Zealand frequency measuring facility (NZVRS journal-Vol 18/2, Aug 97) was being stretched beyond its capability so planning started for an upgrade.

A first need was for a more stable source of standard frequency and at this point in time the British Post Office was among the leaders in developing and manufacturing highly stable standards of frequency with their pride and joy the Essen ring vibrator - a quartz toroid about 50mm diameter with a cross-section 10mm square which vibrated at 100kHz. Unfortunately this extremely stable vibrator was mounted by suspending it on threads, which was fine in the UK but would have been prone to earthquake disturbance in Wellington so a decision was made to supply the more robust wire mounted GT cut quartz plate vibrators. Even then no chances were taken and the three accurately finished quartz units were delivered by hand to the Captain of the ship bringing them to New Zealand who was entrusted with their care during the journey. At this end they were personally uplifted by Post Office staff.

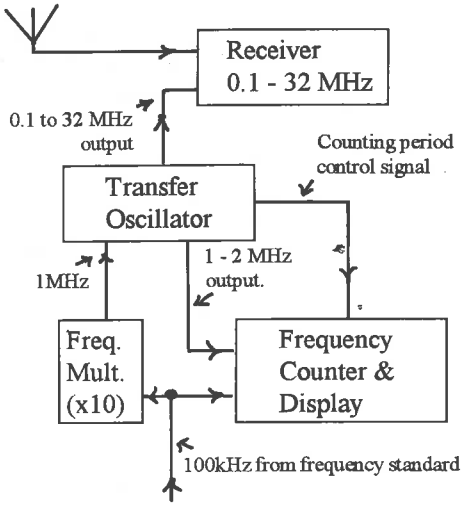
Three 100kHz GT cut vibrators were supplied to enable intercomparison of the frequencies thus showing up any abnormal change in one of them. Each vibrator was separately mounted and maintained in oscillation within its own enclosure which was very accurately temperature controlled. The whole, comprising three separate racks (one per vibrator) was mounted in a room in the concrete walled basement at Makara Radio station to further insulate it from the outside environment. Thus the NZ Post Office attained a frequency standard which compared well with the best in the world at that point in time.

It was one thing to have a first class frequency standard but a means of rapidly and accurately comparing the frequency of radio transmissions with this standard was also required.. The older method of interpolating between harmonics of an accurately controlled low frequency was too slow to deal with the increasing number of measurements needed but what could be used in its place?

An attractive alternative was to measure the frequency by counting cycles but in those far off days valves had to be used in the counting stages and they were notoriously slow in changing state. The state of the art was around a top speed of two megahertz which pales into insignificance alongside the hundreds of megahertz of todays computing wizardry. However, the need existed and it was decided that the PO Radio Section Development Workshop would attempt to develop a full digital system.

The limitation of counting speed using valves was a poser in measuring up to 30 MHz as required

Eventually a scheme was devised in which signals up to two megahertz were counted in a one second interval while those above this frequency were dealt with by harmonic means. A block diagram of the system is shown.



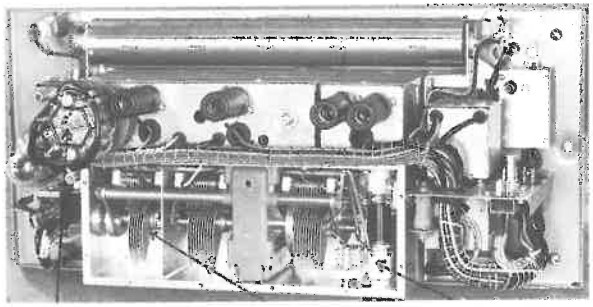
As is normal in frequency measurement of "off air" transmissions a transfer oscillator was zero beat with the received signal then the frequency of that oscillator was determined by counting before display.

To accommodate the limitation of 2 Mhz upper counting rate the basic transfer oscillator covered a range of 1 to 2 Mhz only and its output was fed directly to the counter.

When the frequency of the received signal was above 2 MHz the 1-2 MHz basic oscillator was frequency multiplied in a series of frequency doublers to give ranges of 2-4 MHz, 4-8 Mhz, 8-16 Mhz and 16-32 MHz. Each range was tuned to eliminate unwanted harmonics and was switch selected as required by the operator before being passed to the receiver for zero beating with the signal being measured. To give a direct frequency readout of suitable accuracy when a range was selected the gate time of the counter was automatically adjusted in step with the range change as follows;

1-2 MHz range was counted for 1 second
2-4 Mhz range was counted for 2 second.
4-8 Mhz range was counted for 4 seconds,
8-16 Mhz range was counted for 0.8 seconds and
16-32 Mhz range was counted for 1.6 seconds.

Thus a basic frequency measurement accuracy of better than two parts in a million was maintained throughout the 1-32 Mhz coverage.



Range and count period selection switch Harmonic tuning 1-2 MHz oscillator

Rear view of the Transfer Oscillator (covers removed)

Frequencies below 1 MHz were covered by mixing the basic 1-2 Mhz oscillator in the transfer oscillator with a derived standard frequency of one MHz to give a 100kHz to 1 MHz output and the counter display was made direct reading on this range by removing the MHz display.

All units of the frequency measuring set except the receiver were designed and manufactured in the NZPO Radio Section development workshop. Two major problems arose in the development. The first was in achieving reliability using commercially available valves in a counter operating at 2 MHz. This problem was only partially overcome and unpredictable changes of valve parameters continued to give the maintenance personnel occasional headaches until with the advance of time a commercial counter using special valve types became available and was brought into use.

The second problem was in achieving sufficient stability in the transfer oscillator to hold its frequency within 1 part in a million for 3.2 seconds at a time. This problem was substantially conquered by adhering strictly to the well known principles of stable oscillator design; inductance wound with pretensioned turns on ceramic former, high quality ball race mounted tuning capacitor, very stable power supplies, adequate shielding, pre-aged valves and sturdy mechanical design. The fact that coil switching was not required in the basic 1-2 MHz oscillator was a major point in achieving the necessary stability.

Every effort was made in the mounting of individual units to achieve ease of operation and maintenance. Tuning of the harmonic generators in the transfer oscillator was ganged with the basic 1-2MHz oscillator and the dial changed with range selection (as with Marconi practice) to eliminate human error. A micrometer adjustment was fitted to the transfer oscillator to facilitate accurate zero beating which was observed on the field strength meter of the communications receiver (a Redifon type R50M). All units were installed in an operating console, the counters, gate, frequency dividers and power supplies units being mounted in the back of the frequency measuring console to allow ready maintenance access with the counted frequency displayed on meters in front of the operator.

The method developed to extend the frequency counting range was eminently successful and as far as is known remains unique; no record has been found of its use elsewhere in the world.

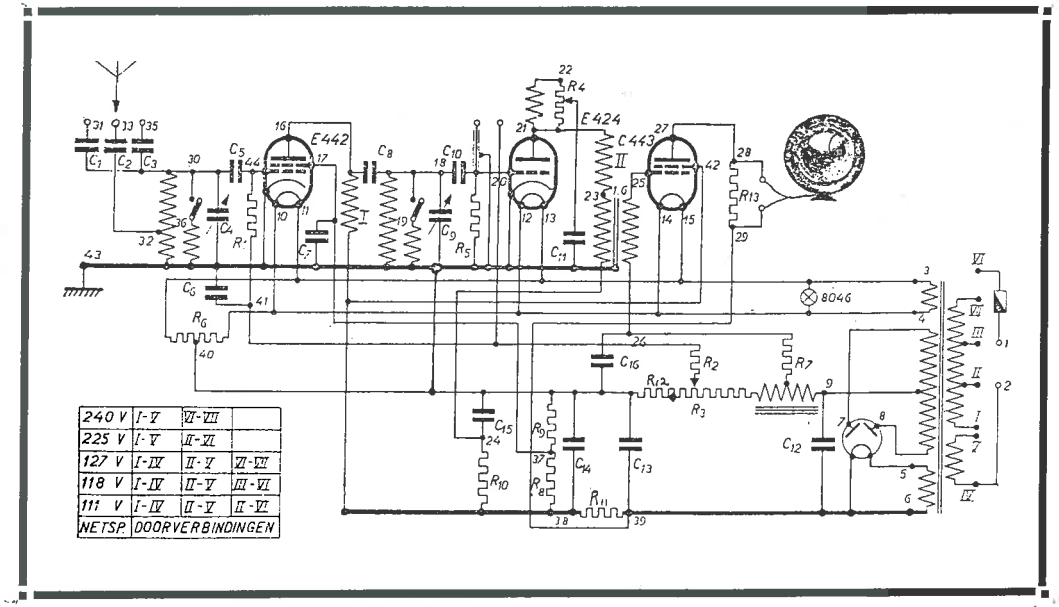
HINTS and KINKS

Interchanging 12SA7 and 12SA7GT

Did you know that a 12SA7 (metal tube) may or may not be directly interchangeable with a 12SA7GT (glass version)? The reason is as follows: In the 12SA7 the metal shield and suppressor grid are connected to pin 1. In the GT version the suppressor is connected to pin 6 along with the cathode. There is no connection to pin 1 in the GT version. Most manufacturers took this into account and wired pin 1 to either common or chassis ground. However if you encounter a set that has no connection to pin 1 or has pin 1 connected to the chassis when the only connection from chassis to common is a capacitor, or worse yet, uses pin 1 for a junction of some other circuit, the 12SA7 will probably not work in place of a 12SA7GT. If the GT version is substituted for the metal version it may be necessary to add a shield to prevent howls and whistles. The same applies to the 6 volt version of this tube.

With acknowledgment to the Michigan Antique Radio Chronicle.

Hilversum 3, The first NSF AC model; it used screen-grid RF stage, regenerative triode detector, pentode output valve and a self contained power supply. (1929). The speaker looks familiar!



NSF Hilversum 3 circuit diagram

HOW PHILIPS GOT INTO RADIO MANUFACTURING

This and the following article have been translated from the Dutch by Clemens Van der Wee of Kihikihi and are published by arrangement with the Nederlandse Vereniging voor de Historie van de Radio.

Something About N.S.F. by J Mostert

Because of the development of radio since the start of this century, shipping companies became convinced that without wireless, sailing would be impossible, thus the importance of communication between land and sea was more and more appreciated. However, during World War 1, the Netherlands became isolated in regard to radio equipment (especially Marconi and Telefunken) prompting a number of Dutch ship owners to join hands in 1916 and establish the trading company, Radio Holland. In order to obtain radio equipment it was of course necessary to set up a factory, thus early in 1918 the Netherlands Signal Equipment Factory (N.S.F.) was established. A suitable location was found in Hilversum and capital was provided by Dutch shipowners and the British Marconi Co.

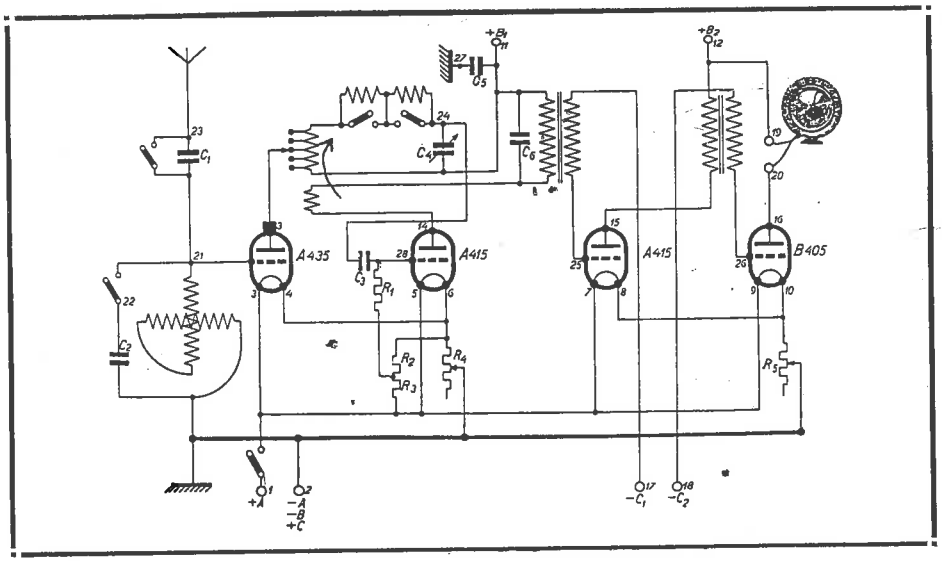
Apart from radio equipment, navigational instruments such as ship's compasses and telegraphs were also manufactured. The government and the armed forces were also regarded as possible customers. However, because of wartime conditions, shipping was falling into a decline and orders were not as plentiful as expected so the N.S.F. looked for other ways of making money. Because of earlier success in producing battery chargers, the company decided after the war to manufacture domestic receivers, but to sell these there had to be something to listen to!

The few and far between transmissions of the Marconi station 2MT at Writtle, and the equally rare transmissions of Idzerda with his station PCGG in the Hague were considered to be insufficient to attract enough listeners and thus enough purchases to enable N.S.F. to realise a satisfactory turnover thus in 1923 it was decided to construct a transmitter from some available odds and ends. The antenna was slung between two 12m poles, originally from a Marconi field station.. The first test transmission took place on 21st July 1923 and soon appeared to be a success.

In spite of the fact that Philips was a light bulb factory and that, according to the board of directors should stay that way, in 1923 Philips entered N.S.F.'s board of directors, possibly with the thought that one day radio valves might be produced. That this thought was correct was shown when by 1935 Philips had manufactured over 100 million radio valves!

Following the success of the original broadcast transmissions, Philips became more and more interested in 'radio'. The ship owners were only too glad to sell their unprofitable N.S.F. shares thus enabling Philips to acquire a majority shareholding in N.S.F. in 1925. At this time Philips provided two 60m antenna poles (which became known as The Singing Towers) and a new "real" transmitter was constructed with considerably higher power than the original one.

From this time on, under the supervision of Philips, NSF commenced production of receivers under the Philips name. Well known are the type 2501, the first AC set, and the type 2502 battery set. At the same time NSF continued to make sets under their own name as well as making components for sale. In 1938 Philips obtained full control of NSF when they took over the remaining 40% of the shares still owned by Marconi and in 1940 receiver production was transferred to Eindhoven.



The final issue of the N.S.F. model M4 (Oct 1926) used a Philips type A435 high-mu triode in the RF stage. This special valve had a top-mounted terminal for the plate connection to reduce internal capacitance. A triode output valve was used for the very good reason that pentodes had not then been invented.

Rural Radio

"How blissfully passes the life of a relaxed country dweller"

That's how the text begins of a brochure named 'Radio in the Lowlands" or 'Rural Radio' put out by the Netherlands Signal Equipment Factory (NSF) in the middle of 1927. In this brochure the newest NSF receiver was advertised in the following words:

" The contact with what happens in the world can no longer be ignored by today's rural dweller as was the case of the countryman living at the time of the good old poet, Poot".

This was a way of saying that the need for a radio receiver out in the country was as great as anywhere else. One could listen to weather reports and market prices as well as the weekly chat about agriculture by the Royal Dutch Agriculture Committee, and even the Church Service!

The NSF model M4 was probably the final creation to be added to the achievements of Engineer White. On 30 August 1926, Anton Philips was appointed President of the Board of Directors of NSF and thus took the helm in his hands. After that, White had first to submit his designs to the Company's laboratory.

Early in 1926 the finances of NSF had clearly reached positive figures, mainly due to the big orders from Philips for battery chargers and HT battery eliminators. At this time, the three valve receiver M3 with its rather out-of-date construction, and the far too complex V4, were demanding a modern successor. The model M4 was shown to the public early in October 1926 and was advertised in Radio World at this time.

By this time the Dutch economy was improving and radio was developing into an accepted medium. Several broadcasting societies provided attractive programmes from a transmitter in Hilversum which stimulated the sales of M4. This success was due not only to the excellent quality of the product but also the bond with Philips.

The influence of Eindhoven at this stage is not to be underestimated: It appears from correspondence between the two companies that Anton Philips has increasingly more influence on the Hilversum factory; things like the establishment of a testing facility or a timber drier for cabinets were mutually agreed upon. Anton also required every employee to keep quiet about the development of a new 5-valve radio as this would otherwise cause the market to become unsettled and could seriously affect the sales of the model A4.

An estimated 2000 of the model M4 were produced between late 1926 and the middle of 1927. On 11 December 1926 the first 500 sets left the factory, but complaints about damage in transit were received by the deputy director of Philips in Eindhoven who responded immediately by ordering an investigation into methods of packing and dispatch. A year later, the directors of NSF were ordered to appoint "a person of authority" as final inspector because factory preventable defects were on the increase.

While the Hilversum factory saw a big jump in staff numbers from 270 at the end of 1926 to 340 in July 1927, at the same time, unnoticed by employees, a total takeover took place by "big brother" at Eindhoven. It had been decided that production of the first Philips radio, type 2501 should start at Hilversum, but, profiting from past experience no mistakes were allowed this time.

In the case of the M4 it is interesting to learn that certain parts (the variometer and the two audio transformers) were imported from England, but with the production of its replacement, the model NSF 4, at the end of 1927 all parts were of Dutch manufacture.

Following the takeover by Philips, each company developed its own designs and produced separate models. The first NSF 4 was on show in September 1927 at Amsterdam and the first advertisement appeared on 21 October. Two versions were produced, a battery set and an AC model using a separate HT supply unit. This latter model was very similar to the first Philips set, type 2501 except for the use of a triode output valve. Approximately 12,000 of this model were produced during 1928.

In seeking to increase production figures the previous and now antiquated method of assembling components on a bakelite base interconnected by brass contact strips was discarded in favour of using an aluminium chassis. The circuitry was basically unchanged except that improved types of valves were used , including a pentode in the output stage. For the 1929-30 period it was optimistically hoped to sell 20,000 sets but largely because of the onset of the worldwide depression only 3000 were sold.

By this time Philips were starting to question the wisdom of operating two separate organisations side by side and a decision was made to eliminate the NSF sales organisation. The model NSF 4 had appeared in many different forms, including a DC mains version but NSF receivers were becoming uncompetitive in the marketplace and in July 1929 production was discontinued. However, this was not the end of the NSF name as a few years later it was reintroduced and remained in use until well into the 1950s. By then receiver model numbers carried the prefix 'H' presumably indicating that they were produced at Hilversum.

How Hi the Fi.

John W Stokes

Nowadays, collectors have come to accept the fact that high prices are being paid for various items of vintage radio equipment, and not just in the USA either. Back in the 1980s we heard with disbelief that US$10,000 was being offered for blue mirror-glass Sparton radios, a figure based on their antique value and rarity. Since then such prices have become mere chicken feed by comparison with the big bucks now being paid for items which are certainly not antiques, nor are they replicas either, but they do have a certain vintage radio connection.

So just what are these items then? They are known in the land of their origin as tube amplifiers for "high-end" audio use and do bear some generic resemblance to the earliest audio amplifiers ever made. An article in a recent issue of the Michigan Antique Radio Chronicle* mentions that one of these "high end" amplifiers in current production has a single ended output stage using a 211 triode valve and sells (wait of it) at US$179,000.

Commenting on the American scene where "tube amps' are the latest craze, the author of the article expresses surprise at the way things are going in the following words:

> *What is driving this frenzy? Mostly, the current interest in tube amps, preamps and tuners is the belief that distortion specifications have little to do with actual audible performance. Distortion is usually measured with sine or square waves which may not tell us much about an amp's performance when music is played. Audio hobbyists who ignore traditional audio specs are referred to as "subjectivists" and are now the majority in the high end audio market. Tube amps and preamps are referred to as being "sweeter" sounding with better placement of instruments and vocalists in the stereo soundfield. Transistor equipment is generally considered to be "steely", "hard" or "edgy" sounding.*

Just what is all this leading to, I wonder? Having presumably 'gone as far as they can go" with solid-state developments, amplifier manufacturers have turned back the clock by reverting to the idea of all-triode equipment as being the only way to experience the ultimate in listening pleasure. But nary a word about transistor-polluted programme sources to spoil the enjoyment! Still, maybe there is something to be said for 'glass-audio' after all; hot glass does have a distinctive smell (no kidding) and as for those fascinating little lights visible in filamentary output triodes, their appeal can only be exceeded by the rarely encountered phenomenon of actinic blue flashes dancing on the inner surface of the bulb in time with the music. Roll on subjectivism.

* Richard Painter, News From the Audio Front, Michigan Antique Radio Chronicle, p.11, March 1998

Publication of Trade Material

At the last committee meeting it was determined that the Society would not publish any "Trade" material, ie any advertisements that were paid for (to keep our non-profit status). This includes items from members eg photographs of items for sale etc. Members have the Available and Wanted columns without fees and 'reviews' of books, CDs etc may be accepted provided they are a 'critique' of the work and only include cost and/or contact details. Acceptance of any item is entirely at the discretion of the Editor.

GETTING CURRENT TO THE VALVES

Part 1.

R.A. Stevenson

When Thomas Edison discovered his "effect", that a current flowed in a vacuum between the filament of his newly developed lamp and another electrode variously called a wing, plate or anode, the only use he put it to was as a means of measuring electric power consumption. One may ask why such a versatile inventor did not foresee a future in wireless communication, but at the end of the nineteenth century, he was busy developing the popular cinematograph whereas wireless was not yet taken seriously. It was left to John Fleming to use this two-electrode construction or diode as a means of detecting wireless signals.

The diode became valued as a stable, but not very sensitive device (the magnetic detector only really responded to spark transmissions while the crystal detector, although sensitive, easily went out of adjustment). Firms such as Marconi made diodes with both carbon and tungsten filament and, as *thermionic* valves, they illustrated the need for a current to heat a filament with the object, as we know , of driving off a cloud of electrons (I do not know of any gas heated valves, but a recent newspaper article featured gas-powered radios using thermocouples).

It was the first triode, the "audion", as invented by Lee DeForest which really launched the science of electronics. After accelerated development during World War 1, various triodes were made available but the tungsten and thoriated tungsten filaments needed high currents and gave out about as much light as heat, hence "bright emitters". Later it was found that much greater emission of electrons at lower temperatures could be obtained by coating the filament with the oxides of metals like barium and strontium.

Reproduced with acknowledgment to the BVWS bulletin

We can see this illustrated by the American type 201 valve which needed a low tension (LT) supply of 5 volts and 1 amp but, as the ubiquitous 201A with a coated filament, it's current had dropped to 0.25 amp.

Along with the 201A several other 5 volt valves were developed and were obviously meant to be powered by a six volt accumulator in series with a rheostat or a fixed "Amperite". Such a supply was hardly portable however, and so, in the USA, after some earlier examples the type 199 and later types using 3.3 volts and low current became commercially available. An LT supply using dry batteries was now feasible.

In Britain and Europe there were so-called portables (really "luggables") that used accumulators with non-spill jellified electrolytes and 2 volt valves. There grew up a whole series of 2,4 or 6 volt filament triodes tetrodes and pentodes to suit the lead-plate accumulators. The ultimate in 2 volt valves was probably the double pentode meant for class B output, like the 1E7G or the QP (quiescent push-pull) series in Europe. But for really compact portability using dry batteries we had to wait for post-WW2 all-glass miniature valves using 1.4 volts and .05 amps.

The supply of High Tension (HT) voltage to the valve anodes was much less of a problem, for although needs might be as high as 150 volts, the current drain was only a few milliamps, even with "power valves" feeding directly into "lo-fi" moving iron speakers with several thousand ohms impedance. Series connected dry cells were soldered up and enclosed in a pitch filled cardboard box, often luridly decorated on the outside. In the late 1930s the "Layerbilt" method of construction saved space and has been used ever since in 9 volt transistor batteries.

If you were well-off you might invest in a rechargeable HT supply made up of a series of test tubes containing sulphuric acid and lead electrodes. If you were *very* well-off then you might have Edison alkaline cells instead. Or you might use a motor generator as shown in the JOHNS Ltd advertisement of 1933. But there was always the hassle of recharging, topping up and reading a hydrometer. Clearly as radio broadcast rapidly spread in the late 1920s a cheaper and easier method of getting current to the valves was needed.

THOSE NASTY PCB's

David Crozier

A recent restoration on a receiver with a leaking capacitor pack raised the dreaded question of whether the oozing liquid contained any PCB ? Some web searching provided the following info:

The main point (apart from the toxic nature) is that PCBs are heavier than water. I simply mopped up some of the liquid on the corner of a thin paper tissue, tore the end off and placed it in a clean small (but tall) glass jar half filled with water. The tissue disintegrated on gently shaking the bottle and an oily bubble appeared floating on the water after the turbulence settled down. For me a good result as it indicated oil rather than PCB!!

SOME GENERAL INFORMATION ON PCB'S

PCB's (polychlorinated biphenyls) comprise a group of 209 possible aromatic chlorinated hydrocarbons. In general, they are thermally and chemically stable, are insoluble in water but can be mixed with oils, and are fire-resistant. These characteristics led to the use of PCB's in a wide range of products.

Unfortunately, the properties which made PCB's so useful meant that they remained intact once their usefulness was over. Concern arose in the 1960s when overseas experience showed that these compounds were widely distributed, persistent and accumulating in the environment. They are easily absorbed by fatty tissues and tend to concentrate up the food chain, particularly in fish-eating birds, animals and humans, ie., they "bio-accumulate".

In recent years their production, importation and use have been banned or tightly controlled in many countries. They were considered suitable for use in capacitors and transformers in fire sensitive locations. However, fires involving equipment containing PCB's can produce toxic by-products such as dioxins.

IDENTIFICATION OF PCB'S

PCB's range in appearance from colourless, oily liquids to more viscous and increasingly darker liquids, to yellow and then black resins, depending on chlorine content. Viscosity varies from highly mobile to very thick and syrupy. The vapour is invisible but there is a characteristic strong odour.

DO NOT SMELL THE VAPOUR IN ORDER TO IDENTIFY PCB'S.
INHALATION SHOULD BE STRICTLY AVOIDED.

PCB's used as dielectric fluids are usually mixed with organic solvents such as chlorinated benzenes which change the chemical and physical properties of the fluids.

SIMPLE TESTS FOR PCB's

PCBs are heavier than water whereas mineral oils are lighter than water. This can be used as a simple test to help identify PCBs.

Density Test - (Please observe all relevant safety precautions)

Place a few drops of the liquid into a clean glass tube and add a small amount of water. If the liquid sinks to the bottom, it is a PCB fluid. If the liquid is mineral oil it will float. If the oil does neither, it may be contaminated mineral oil and will need to be tested by another method.

DISPOSE OF THIS SAMPLE MATERIAL CAREFULLY.

Rather than rely on appearance or density, a test for the presence of chlorine can be made. The following is a simple test for Chlorine :

1) Heat one end of a length of clean un-coated heavy copper wire (preferably 2 to 3 mm diameter) in a pale blue gas flame. If the wire is initially clean there will be no colouration of the flame until the copper reaches red heat when an orange hue will be imparted to it.

2) Allow the wire to cool to somewhat below red heat, then dip it in the unknown chemical and again heat it. There may be an initial bright yellow and smoky flame - but, as the copper nears red heat,. the presence of chlorine will be indicated by a bright green colouration (the yellow should have disappeared at this stage), as it reacts with the copper to produce copper ions in the flame.

NOTE: When PCBs are decomposed at high temperatures, gases are produced which contain a high proportion of hydrogen chloride, a highly irritating and corrosive chemical.

ALWAYS CONDUCT THE ABOVE TEST IN A WELL-VENTILATED PLACE.

The above test for chlorine is not infallible. However, it will usually suffice to distinguish between chlorinated hydrocarbons and non-toxic mineral, vegetable or silicone oils, greases or waxes. If these screening tests are positive the material should be dealt with as if it is a PCB liquid, but the composition of the PCB liquid can only be determined by laboratory analysis.

Some MANUFACTURER'S TRADE NAMES

PCB fluids are often known by the term askarel, the generic name for synthetic electrical insulating material. (Askarels generate only non-explosive gases or gaseous mixtures when decomposed by an electric arc.)

Manufacturer's trade names included: ASBESTOL, AROCLOR, DIACLOR, DICONAL, DK, DUCONAL, DYKANOL, EUCAREL, ELEMEX, FENCLOR, HYVOL, INERTEEN, SOLVOL, NO – FLAMOL, PYRANOL, THERMINOL, KANECHOR, PHENOCLOR, CHLORPHEN, CHLOREXTOL, SAT-T-AMERICA, SAF-T-KUHL, PYROCLOR.

LETTERS TO THE EDITOR

Now that we have become an incorporated society I think that for the future we should consider obtaining an AM frequency here in Auckland while we possibly can. We will, no doubt finally obtain our own premises and will have room to store/operate a small (2kW?) vintage transmitter along with a studio and record storage.
There are changes coming in the State Broadcasting (ie. sale of everything) and there is a growing older section of our population who would like to listen to music from every decade of the past. While, at this time. it is possible to hear this music on National Radio - Jim Sutton etc. it probably will not last! If we had our own transmitter we could fill this gap - vintage music from a vintage transmitter to a vintage radio for a vintage audience.
I am sure there would be no shortage of volunteers to man and maintain such a station which could offer a genuine request session - not dedication!
The Tauranga Historic Society operates such a vintage radio station and does requests from their own large record library.
Murray Stevenson, Glen Eden, Auckland.

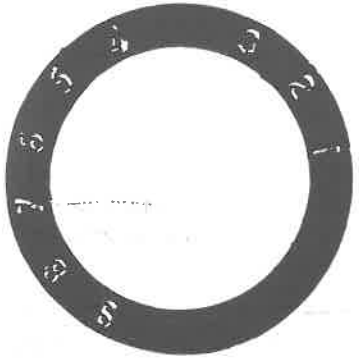
Re repairs to my AVOMETER.
A thank you to the bulletin and the contacts I obtained through the "Can You Help" section. I was put in touch with a serviceman who had worked on Avometers and was able to have my meter restored to A1 condition.

Cliff Dittmer, Levin

Through you I would like to thank those members who went to the trouble of replying to my last advert. for AK parts, with a special thanks to Peter Lankshear.
Visiting members are always welcome.

Bob Cook, Blockhouse Bay, Akld.

Have you ever wondered why there was a gap left between channels 3 and 4 on this Pye TV tuner knob? See Page 6 and 7 of the previous issue (vol 19, No.1) for the answer



Pye Tuner Knob

FREQUENCY BAND WIDTHS OF ALL 9 NZ CHANNELS

	NZ Channel	
Band 1		
	1	44 - 51 Mc/s
	2	54 - 61
	3	61 - 68
Band 111		
	4	174 - 181 Mc/s
	5	181 - 188
	6	188 - 195
	7	195 - 202
	8	202 - 209
	9	209 - 216

CAN YOU HELP?

1. **MYSTERY PHOTOGRAPH**. The photograph below was displayed during the Wellington Branch exhibition at Onslow Historical Centre. It is from the Turnbull Library collection where it is described as an:

"Unidentified group around what was possibly the first radio in Kaitaia"

Photo courtesy of the Alexander Turnbull Library, National Library of New Zealand, Te Puna Matauranga o Aotearoa.

Four questions arise from this photo.
1) What make and model were the radio? 2) Who were the persons in the photo?
3)were they part of a particular group? and 4) where was the photo taken?

None of these questions were answered in spite of the public exhibition although there is a school of thought which considers that the radio is an early Radio Corp effort.

Do you know the answer to any of these queries?

LIBRARY REQUIREMENTS . Ernie Hakanson, our librarian, seeks circuit diagrams and/or information on the following radios to help in satisfying requests from members.

HMV models 506, 516, 519, 526, 455, 457D, 477D, 541I, 476D, 497D, 577.

PHILCO models 145, 145EZ, PT28, FT28, 147, 402, 503, 673, 710B, 761, 768, 773, 807, 845, 748, PT25, 159, 788, M17, 652V, 717B, 752, 656XRG, 546 also Tropic Chassis 35-770 type C2 Code 121.

MAJESTIC models 500AY, 400A, 401, 407, 408, 419, 420, 3PW, 4C10, 5A430, 5BD, 5D, 5E, 5L, 5K, 5H, 5NB, 5P, 5Q, 5R, 5T, 5S, 5U, 5W, 6F, 6N, 7M.

RADIO CORP models Westpoint, Windsor, and Zodiac.

EKCO model Ex402 7V 1939. **BUSH** model Foo 538. **AJS** type F, 7Valve

TEMPLE 25496 {80,47,36,39/44(x2)} **WORLD** 5V (6K8, 6K7G, 6Q7GT, 6V6, 80)

MODERNE 7V 1938. **GRUNDIG** 2066PX and any other valve models

RADIOJOY, WESTCO, SHEFFIELD, STEWART HARDWARE

If you can help by supplying any of these circuits you will be assisting fellow members in their hobby. The Society will pay reasonable copying and postage costs. Send to Ernie Hakanson, Librarian NZVRS, 17 Williamson Ave, Grey Lynn, Auckland 1002. 09/3766059.

PROTECT A LIFE - IT MAY BE YOUR OWN !!

The society has a small number of RCD {Residual Current Detectors} available to members at the price of $25 including postage. These are of the small power point adaptor type (Orange colour) manufactured by PDL Christchurch, and trip out when earth (or otherwise unbalanced current) is returned to the socket. Normal retail price for these units is in the $45 range! Cheques to be made out to the NZVRS, posted to the treasurer.

BACK COPIES OF THE NZVRS BULLETIN

Past issues of this bulletin contain a wealth of information on vintage radio equipment including photos, circuit diagrams, alignment instructions, helpful hints and interesting historical data with particular emphasis on radios which have been distributed in New Zealand over the years. Volume 17 No.1 contains an index of all articles contained in the preceding 64 issues.
Copies of most issues are still available and are worth obtaining as valuable reference material. The price is $1 each for issues up to vol 10 and $2 from vol 10 upwards. Postage is extra. Cheques should be made out to the NZVRS with orders to John Stokes, 281C Hillsborough Rd., Mt Roskill, Auckland 1004.

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

128.Eyes of the World: John Logie Baird and Television. history. The Old Timer's Bulletin, Vol 38 No3, Aug 97, P40.

129. A Nostalgic Look at RU Type Receivers. WWII American Navy sets, RU16, photos, descriptions. The Old Timer's Bulletin, Vol 38 No3, Aug 97, P42.

130.The NEC Model NT61. photo description. The Old Timer's Bulletin, Vol 38 No3, Aug 97, P45.

131."Forgotten Pioneers of Wireless: Part 2 - Dr Martin Loomis. photo, history. The Old Timer's Bulletin, Vol 38 No3, Aug 97, P46

132. The KWR-37 On-line Crypto Receiver. photo, description The Old Timer's Bulletin, Vol 38 No3, Aug 97, P49.

133. The Scott All-wave 15. photos, specification, description, circuit. HRSA Radio Waves, No59, Jan 97, P6.

134. How to Repair Speaker Cones with Silicon Sealant. HRSA Radio Waves, No59, Jan 97, P13.

135. AWA Radiola 461MA Clock Radio. photos, description, circuit, alignment. HRSA Radio Waves, No59, Jan 97, P14.

136. The Hallicrafters S38. includes S19 & S41, photos, circuits, history, descriptions. HRSA Radio Waves, No59, Jan 97, P21.

137.French Valves. Early types, history, descriptions, photos. HRSA Radio Waves, No59, Jan 97, P25.

138. The Best Seat in the House - Airzone 5057A. photo, circuit. HRSA Radio Waves, No59, Jan 97, P33.

139 AWA Radiola model 805G(GZ,GY). Photos, specification, circuit, description, alignment, mechanical details. HRSA Radio Waves, No58, Oct 96, P4.

140. Tuning Capacitor Repair. finding shorts also other restoration hints. HRSA Radio Waves, No58, Oct 96, P13.

141 The Hallicrafters S38. photos, circuits, history. HRSA Radio Waves, No58, Oct 96, P14.

142. The Pye Model MR-1. photos, circuit, alignment, restoration hints. HRSA Radio Waves, No58, Oct 96, P20.

142. A 500 volt Megohm Meter. transistor design, circuit, constructional details. HRSA Radio Waves, No58, Oct 96, P30.

143. Restoring and Replating Small Metal Parts at Home. Part 2. HRSA Radio Waves, No58, Oct 96, P32

144. Development of Radio valves By GEC. history, description, photos. HRSA Radio Waves, No58, Oct 96, P33.

145 The Modernola Delano Sheraton. photos, description - 1920s. Antique Radio Classified, vol 14 No9, Sept 97, P4.

146 The General Electric Model S-22. photos,description. Antique Radio Classified, vol 14 No9, Sept 97, P7.

147 The Fuller Sparta Crystal Set. photos, description. Antique Radio Classified, vol 14 No9, Sept 97, P8.

MARKETPLACE

Advertisements for the next issue must reach the editor by the 18th Oct. 1998. Ads should be either hand printed or typed on a separate page. Note that 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, New Zealand.

AVAILABLE

Marine radios, Lincoln Commodore with amps etc, $75 the lot (ex McCully collection) or will swap for HMV 470 Mantel or Courtenay, Sevenseas, Columbus 75 or W.H.Y. R. Webb, PO Box 59-108 Mangere Bridge Auckland. 09/2756381.

Transceiver KW2000A SSB with microphone, morse key and separate power supply in as new condition. 2 transmitter tubes included. Offers wanted. Harold Ault, Kawhia. 07/8710767.

Selection of radiogram turntables available, several models. Valve cartons, plain unprinted, same old price; per 100, small $10, GT $10, medium $12, Large $18. All plus postage. Paul Burt, 44 Hastings St West, Christchurch 8002. 03/3327157.

Hewlett Packard Vacuum Tube Voltmeter type 410B. Reads to 1000V DC, 300V AC (with RF probe) and 500Mohms. R Motion, 2A Hazel Tce, Tauranga. 07 5768733.

Free: Quantity of unused cathode ray tube (oscilloscope types) including recent rectangular internal graticule models. Also quantity of 866A rectifiers (unused). Mike Diack. 09/6301014.

Drakes Radio Encyclopedia, 1929 $50. Drakes Cyclopedia of radio and electronics, 1937 $50. Harmsworth Wireless Encyclopedia, Vol 1 & 2, 1923, $70. RSGB Handbook, 1968, $30. NZ Radio Times, copies 1/12 bound $50. Book of Electrical Installations vols 1/2/3, $55. Electrical & Wireless Notes for Wireless Operators, $30. Telegraphy by Herbert 1916, $40. Electrical Engineering by Sewell, 1902, $40. Radio Designers Handbook by Langford-Smith 1498 pages, $40. Radio Manual by Sterling, $40. Modern Radio Servicing by Ghirardi 1935 $40, Wireless Telegraphy by Crook $10. Radio Transmitters by Dart & Amy $15. Outline of Wireless by Stranger $40. Radio Handbook by Orr 1972 $20. Radio Troubleshooters by Ghirardia 1939 $40 Radio Engineering Handbook by Henney $40, Hawkins Electrical Guide 10 vols $60. Lamphouse Annuals 1943 to1952 $10 each. Junior Mechanics & Electricity Mags 1913/20 $20.. Postage extra.. Bill Lambie, 12 Foster St, Avalon, Lower Hutt. Phone and fax 04/5678840

Improved Hikers One, identical to the prototype illustrated in the prewar Lamphouse Annuals, $45 including freight. Peter Lankshear, 292 Racecourse Rd., Invercargill. 03/217515.
Email Peemel@clear.net.nz

Columbus model 166 (p118 M.G.A.) Bow front console in good condition $150 or swap for pre1920 valves or other good stuff. Also Radiola 46 (p119 G.A.R.) 1929 console in excellent condition, no borer, original finish and grille cloth, Goes well. $950. Rod Osborne, PO Box 2098 Tauranga. 07/5442887.

1937 Zenith console, 8V, 12 inch speaker, accoustic adaptor, excellent condition. $550. 1931 Philco console, excellent original condition, $550. P.Fleury 9 Council St, Dunedin. 03/4560303