MARKETPLACE

Advertisements for the next issue must reach the editor by the 13th October 1997. 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

Knobs, various types (3000), sets of Columbus/Courtenay. Valves, English side-pin, USA 30's from 50c each. Also various radios. G Lindsey, 110 Sylvan Ave, Northcote, Auckland. Ph 09/4192033.

12 new 6BK4B valves, $10. Service manual for Williamson amplifier, $10. Murphy radio model TA222 - page 80 G.A.R. , not going due open filament of output valve, 10P14 otherwise in excellent order, power trannie OK, $40. Avometer Model 8 Mk5 , Brand new in original wrapping. Leads etc. No leather case. $100. Bill Lambie, 12 Foster St, Avalon, Lower Hutt. Ph 04/5678840.

Receiver, Murphy B40 Admiralty type, 5 bands 0.64 to 30.5 Mhz, very good for SW and MW listening, $100. Receiver Murphy B41 low frequency Admiralty type, 5 bands 15 to 700kHz. Good for LF experimental radio, $100. Transmitter Murphy low wave and receiver HF, MF 60 to 500 kHz and 1.5 to 30 MHz, long wave and shortwave plus power supply, set of three units, $100. Receiver Murphy HF, MF, $50. Valve tester, Stark model 9.55, $40. Megger tester, 250 volts, $40. Brett Palmer, 53 Queenstown Rd, Onehunga, Auckland. Ph 09/6258769.

Wooden cabinet for HMV "Westminister" DW 1948 - Page 144 of G.A.R. (will need restoring and repolishing). AK model 648 8 valve chassis also original 10 inch speaker plus knobs, sorry no console cabinet. Offers. D J Smith, 156 Rangitoto Rd., Papatoetoe 1701. Ph 09/2783541.

Gulbransen 5151 without gramophone under the top. Good condition. $30. Ultimate-Ekco "Stuart". Good condition. $40.
C Van Der Wee, 10 Balance St, Kihikihi.
Ph 078718336.

WANTED

Metal cabinet for Stromberg Carlson Treasure Chest radio - 6 valve battery. Has 5 knob holes but either cabinet as shown on page 73 of M.G.A. would suit. Have early AWA console cabinet available (page 26 M.G.A.). B. Lackie, 60 Yellow Rock Rd., Urunga, NSW 2455, Australia. Ph 066/556135.

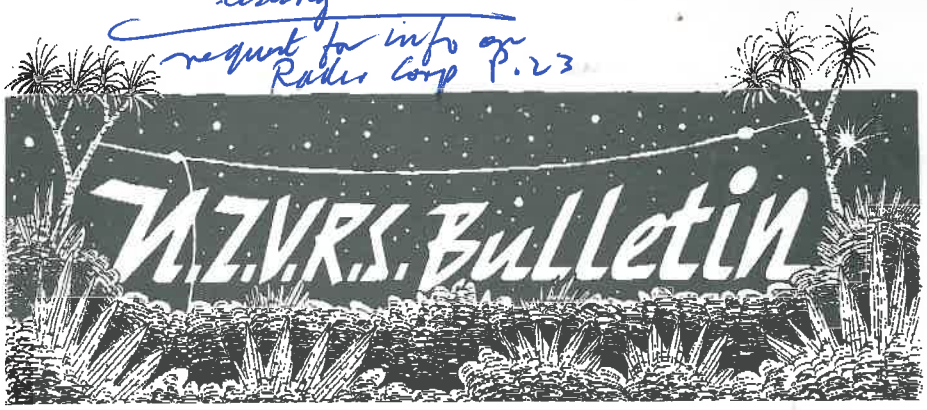
Chassis for Courier 235 1933, M.G.A. page 125 or Ultimate 526 chassis 'C' 1933, M.G.A. page 130. Good price paid to replace unit inadvertently thrown out.
L Glasier, Flat E/49 Disraeli St, Hawera.
Ph 06/2787160.

Dial scale for PZ79RG. Mick Edwards, 47 Martyn St. Waiuku. Ph 09/2356903.

Loudspeaker c/w transformer for Zenith model 6S-129 - page 128 of G.A.R.
T. Riddle. East Takaka Rd, RD1 Takaka.

Dial glass of PYE Cambridge PZ60.
Manual or copy of basic data of BK-Precision Frequency Counter model 1827 by Dynascan Corporation, Chicago. Dial Glass for Mullard type MAS15-34 (bakelite model 15). Clemens Van Der Wee, 10 Balance St., Kihikihi, (Te Awamutu). Ph 07/8718336.

First appearance of "Contents" listing
request for info on Radio Corp P.23
Rcd 5-8-97
$1/5 PA (4 issues)



NEW ZEALAND VINTAGE RADIO SOCIETY

Vol.18 No.2 August 1997

Vic Johns, Director of Johns Ltd and owner of Station 1ZJ.
owned by Johns Ltd

NEW ZEALAND VINTAGE RADIO SOCIETY

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 is handled by the Secretary.

TREASURER: David Crozier, 154 Grey St, Onehunga. Ph 09-6365954. Financial matters as well as membership applications are handled by the Treasurer. A **MEMBERSHIP DATA BASE** is maintained by Graeme Lea, 73 Wallace Ave, New Plymouth.

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 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.

Phone no omitted

AUCKLAND MEETINGS are held on the third Monday of each month at 7.30pm in the meeting room at the rear of the Methodist Church, 426 Dominion Rd, Mt Eden. Sales of vintage items are held at these meetings in the months of March, June, September and December.

WAIKATO AREA. Contact Murray Hall, 19 Tamaki St, Ngongotaha, Rotorua for details. Ph 07-3575903.

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

It is pleasing to note that the proposed auction of Marconi memorabilia at Christies in London has been cancelled. Instead GEC-Marconi have gifted the items to the Science Museum from where they will be loaned to Chelmsford City for permanent display in a new building being set-up to take them. Alls well that ends well. I look forward to visiting the exhibition if I ever manage a further trip to the "Old Country".

John Stokes has provided an article this month on the 'B' class station, 1ZJ Auckland. John's depth of knowledge of radio matters never ceases to amaze me. Long may he continue to share this knowledge with us.

This bulletin exists for you, the reader. From time to time you must have wondered about some radio matter and not been able to find the answer. The questions I am thinking of are those which start 'why should...', 'when did...' , 'what if...' , 'how can I....' etc. If you care to write to me with your query I will endeavour to find an expert to answer it and will publish both the original query and the answer since your problem is bound to be of general interest. If I cannot find an answer I will still publish your query and pose your problem to the membership generally. We have a wide range of expertise in our membership and I would be surprised if your question was not answered in the end.

In concluding I have an apology to make. In my review of the book 'Radios by HALLICRAFTERS' (p15 of the May issue) I wrongly quoted the author's name. It should, of course, have been Chuck Dachis. Sorry Chuck.

FROM THE SECRETARY

Saturday, 24th May, was a real buzz with club members (a caravan comprising four car loads) meeting at Bob Cooks at 9.30am for a chit-chat amongst his magnificent collection.

Then off to Ian Sangster's retreat, high in the hills, on the Anawhata road off the road to Piha. A great morning was had amongst a large garage crammed full of receivers, uprights, floor standers, the odd cathedral plus imports and, there it was, a magnificent primrose finished 1958/59 Chrysler Imperial in great original condition. Thanks to Ian and Elizabeth, a nice morning tea in native bush surroundings.

Back on the road to Gerry Billman's place in Epsom with two more cars joining the caravan. At 1.30pm we arrived at Gerry's. I must comment on Gerry's restoration work - it is tops as is his well laid out and presented collection. He topped it off by treating club members to an excellent buffet lunch. A big thank you, Gerry from all who attended.

There have been many requests for grill cloth and our stocks are exhausted. Please advise me if you know of a source from which the Society could purchase this item. Inquiries are being made overseas at present.

Footnote - The collectors caravan leaves 1st Saturday at 9am after each Auckland meeting and incorporates city and rural members.

STATION 1ZJ - JOHNS LTD

By John W. Stokes

As will be known by anyone interested in the history of broadcasting in New Zealand during the 1930s, the main reason why various radio dealers and music stores established 'B' class broadcasting stations was to obtain some legal, albeit very limited, on-air advertising by mentioning the firm's name and address, but nothing else.

An additional reason for some radio dealers establishing stations was that it enabled them to put something on the air at times when the 'A' stations weren't broadcasting thus allowing radios to be demonstrated at shop premises, particularly during the busy lunchtime period.

Caption: Door sign sent by Alf Bramelt

Although not actually a pioneer, the Auckland firm of Johns Ltd was certainly one of the earliest broadcasters, having established a 'B' class station, 1ZJ, in 1930. Its assigned frequency was 1310 kc/s (later changed to 1320), and its power rating was increased over the years from 35 to 65 watts.

During the years 1ZJ was in operation, the hours of broadcasting were extremely limited. Originally broadcasting was allowed from noon to 2pm on two days a week and from 7.30 to 9pm on one evening a week. Political and controversial matter could not be broadcast and to add to operating difficulties there was a constant threat of legal action over the use of gramophone records.

In spite of these restrictions 'B' station operation continued in the hope that some day these stations would be allowed to gain revenue from advertising, but this was not to be, the Government of the day decided in 1937 that only it's commercial stations would be allowed unrestricted advertising. 1ZJ was sold to the Government at nominal cost and ceased transmission in December 1938.

Reg's error

The following information on 1ZJ's construction and operation was contained in a letter received in 1973 by this writer from one of the technicians involved at the time, Waldo (Wally) Hunter.

'The first transmitter was built by Russ White (ZL1AO) and Norm Edwards (ZL1AA). I wasn't involved, being still the floor sweeper around the establishment of Johns Ltd who were the Licensees. The first transmitter was remarkable because it's high tension supply consisted of 1000 volts of lead-acid cells, which gave great regulation!

Then, in about 1934, it was decided that a bigger and better transmitter be built. Design by Norm Edwards - construction by yours truly. RF output, one 211 valve modulated by another

Reg's error

211. Remarkable, in that it was not only crystal controlled but it had a constant-temperature crystal oven. We'd gone about as far as we could go!

From memory it operated on 1320 kHz. It was supposed (most optimistically) to have a radiated power of 50 watts into a centre-fed aerial system - one leg running across Warspite St to the top of what was then called "Southern Cross Building" (corner of Chancery and Warspite Sts) - other leg ran across Chancery St to the vicinity of Mills Lane and was more of a counterpoise than anything else. How the contraption ever radiated out of such a reinforced concrete canyon would completely confound present-day engineers, I have no doubt - yet radiate it did and pretty well too.

For a few weeks in the life of this transmitter it was set up at the Pukekohe Show Grounds and was quite a feature of the annual shows in those potato lands. At this time we could accept sponsored sessions, the advertising being limited to announcements of the name of the sponsor. I was in charge of the operation, my age at the time being about 17 and my wages around five pounds per week. The operation consisted in (a) Canvassing the local shopkeepers for sponsorships, (b) Running the transmitter, with appropriate announcing, including the broadcasting of opening speeches by local bigwigs, presentation of prizes, etc (c) Setting up the PA system for the show (d) getting a display stand ready for the salesman to come out from Auckland and peddling radio sets. Seems rather good value on five pounds per week, but those were the days when Vic and Clive Johns were keeping the old firm one jump ahead of the Bank anyway, and at least I had a job in those deep depression days!

s/B excerpts

The following two articles from Johns Ltd's annual catalogues add to this story of 1ZJ

1ZJ

The call 1ZJ was heard for the first time last year when we constructed a small power station and, began to operate on a limited but regular schedule as follows:

Tuesday, noon - 2 p.m.
Wednesday, 7.30-9.00p.m.
Thursday, noon - 2p.m.

Our object was to set a high standard for clarity of broadcasting coupled with a quiet dignity in connection with programmes.

We have frequently been told that 1ZJ IS received with remarkable clarity, but our customers can judge this better for themselves.

Shortly after completing our own station we received a contract to instal a similar but more powerful plant for Messrs Lewis Eady Ltd, 1ZR. In three weeks, 1ZR was quite ready to go on the air, and has maintained a very full schedule ever since.

Recently, Messrs Lewis Eady decided to increase their power and, at the time of writing, we are enlarging their station for them, being responsible both for the design and construction.

1ZJ

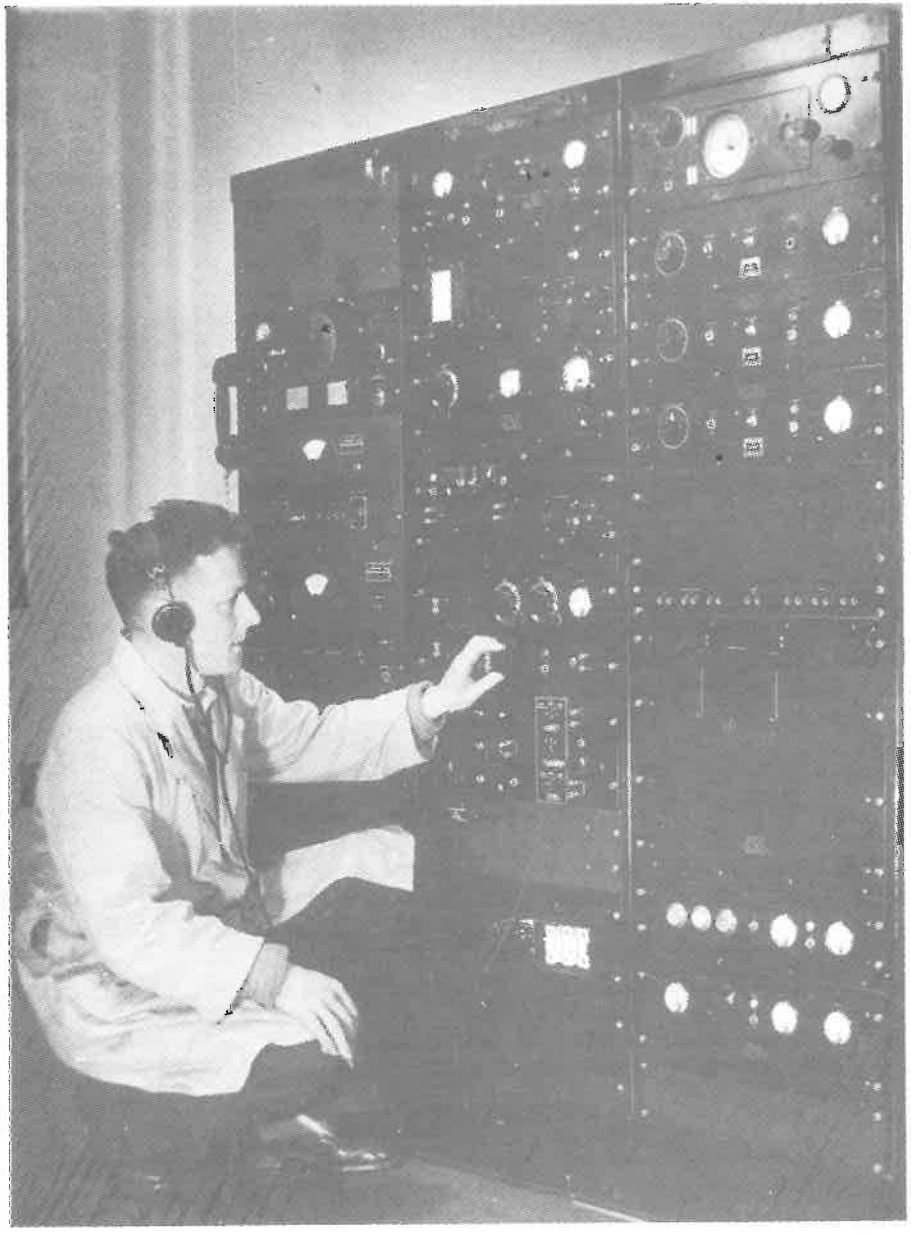
All listeners know that the latest releases of Gramophone Records branded "N.Z. Patent 52657" and "must not be used for Radio Broadcasting" are not allowed to be broadcast here.

The problem of securing a supply of records is not easy for the smaller stations, but we wish to express our very great appreciation to those listeners who, in response to our requests, have loaned us their records for broadcasting.

We trust their generosity will be maintained. If any customer or listener feels disposed to help us further in this direction, he can do so, either by loaning us a number of records for broadcasting, or, better still, by presenting the station with, say, one or more for its permanent collection.

TRADERS SERVICE SHEETS

Our librarian wishes to extend the library supply of "Traders Service Sheets". If you have such items and are prepared to sell them or loan them for copying please contact: Ernie Hakanson, 17 Williamson Ave., Grey Lynn, Auckland 1002. Ph 09/3766059



The Primary Standard as installed at Makara Radio
(Senior Technician, S.M.Thompson operating)

NZ's FIRST PRIMARY STANDARD OF FREQUENCY
Reg Motion

From the outset of radio usage in NZ until public telecommunications were privatised, the Post and Telegraph Department, later the NZ Post Office, was charged with the responsibility for regulating the use of radio frequencies including the monitoring of frequency usage.

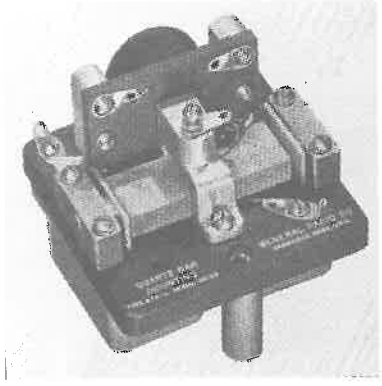
In the early days, with relatively few transmissions, satisfactory measurements could be made with good quality wavemeters but with the rapid increase in stations during the 1930's it became obvious that a more accurate standard was required.

To meet this need the Department, in 1938, purchased a General Radio type C-21-H standard frequency assembly. This assembly supplied reference standards of frequency at 10kHz intervals between 50 and 5000kHz, all of these frequencies being guaranteed accurate to better than 5 parts in 10 million. Interpolation and auxiliary equipment supplied with the standard, measured unknown frequencies by a process of finding the difference between the unknown and the nearest of the standard frequency series and then measuring this difference using a zero beat method against a calibrated 0-5kHz oscillator.

On its arrival this standard was installed at Wellington Radio, atop Tinakori Hills, but early in the war it was transferred to Radio Section headquarters in the Wellington East Post Office Building where it was located on the 7th floor.

After the war a new HF receiving station was commissioned at Makara and the standard was transferred there, where it remained in service until about 1953 when it was superseded by a more up-to-date three oscillator assembly with digital frequency read-out.

Opposite is a photo of the General Radio assembly taken during its sojourn at Makara. The nearest rack contained the equipment for generating and checking the standard frequency harmonic series with the Synchro-Clock at the top, multivibrators below it and the 50 kHz standard crystal unit just below halfway. The middle rack comprised the equipment needed to compare the standard with the unknown frequency and the far rack the three receivers used to receive the transmissions being measured (15kHz to 30MHz). A description of the various units and their use follows.



50 kHz OSCILLATOR. At the heart of the standard was a very stable 50kHz quartz crystal bar mounted as shown. This bar lengthened and contracted as it vibrated under the electrical stress produced by a vacuum tube oscillator coupled to the bar by the two

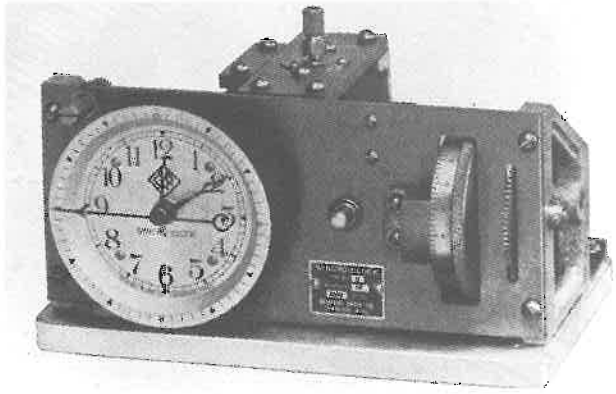
gold electrodes formed on its upper and lower faces. Suitably positioned baffle plates at the ends of the bar eliminated the effects of the 50 kHz sound waves radiated from the bar thus making the frequency practically independent of changes in atmospheric pressure. Damping produced by the mounting was minimised by clamping the bar between points at its centre.

This mounting was fine as long as there was no external vibration but it did not take into account the effects of Wellington earthquakes, one of which jolted the very large piece of quartz (about 55 x 20 x 8mm) off its axis. Luckily its operation came back to normal after careful resetting.

The temperature of the quartz bar was held to very narrow limits by enclosing it in a temperature controlled box which was then enclosed in a larger temperature controlled box that also housed the oscillator valve assembly, the whole being thermally insulated. These precautions kept the inner box temperature within .01^{0}C.

FREQUENCY DIVISION CHAIN. A multivibrator frequency divider reduced the 50kHz output of the standard frequency crystal unit to 10kHz with a waveform rich in harmonics detectable up to above 5MHz. It also drove a further multivibrator to produce an output at 1 kHz with, of course, all the frequency accuracy of the standard crystal.

ASSESSING ACCURACY - THE SYNCHRO-CLOCK. Since frequency is measured in cycles per second (Hz) the accuracy of any Primary standard must be assessed by counting the number of cycles it produces in a standard second of time. To do this the 1kHz output of the frequency division chain was amplified to drive a synchronous motor within a clock assembly which not only turned the usual clock hands but also drove a shaft at one revolution per second. On this shaft was a drum made of an insulating material which at one point in its circumference had a narrow conducting bar set into it. Two contact brushes, one alongside the other, ran on the outside of the wheel in such a manner that they were electrically connected for about 1/100th of a second once in every revolution. By means of a thumb wheel the contact assembly could be rotated around the axis of the drum thus the actual time of the contact could be made to occur at any point within the second. From a calibrated dial on the thumb wheel the timing of the contact could be read out with an accuracy of about 1/100th of a second.

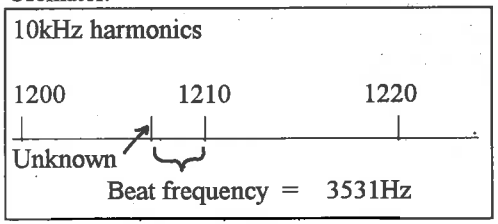


In use time signals were received from WWV every day and the brushes on the Synchro-Clock drum were connected across the headphone leads of the receiver used. Rotation of the brushes relative to the drum caused the second pips from WWV to disappear in the headphone output when the brushes were over the drum contact bar at the exact time the WWV pips took place - the headphone leads being shortcircuited at that instant. The difference in the position of the brushes at one reading and the position after the next test, say 24 hours later, gave the time error of the New Zealand standard which could be easily converted to the equivalent daily frequency error.

General Radio guaranteed a frequency accuracy of 5 parts in 10 million. Ionospheric path variations could cause problems in exact measurement but the guaranteed accuracy was certainly achieved and at most times an accuracy of 1 part in 10 million was obtained. This adequately met the needs of the time.

HETERODYNE FREQUENCY METER. The signals received for measurement were often modulated and/or fading badly making them impossible to measure directly. This difficulty was overcome by zero beating the received signal with the output or a harmonic of a highly stable oscillator which was tunable over the frequency range 100 to 5000kHz. After attaining zero beat the frequency of this oscillator, known as a Heterodyne Frequency Meter could then be measured with confidence - in effect it was a transfer oscillator.

Mixing the output of the Heterodyne Frequency Meter with the 10kHz frequency series derived from the standard assembly produced a beat of less than 5kHz which was then measured by zero beating it with a very accurately calibrated 0-5kHz Interpolation Oscillator.



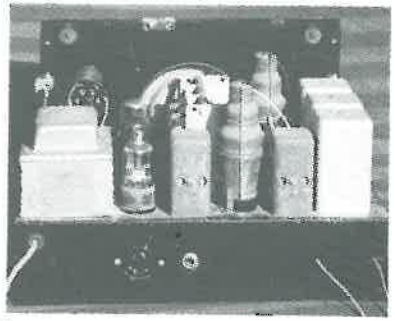
The frequency of the unknown was then accurately determined by addition as per the inserted example where the unknown frequency would be;

1210 - 3.531 = 1206.469kHz.

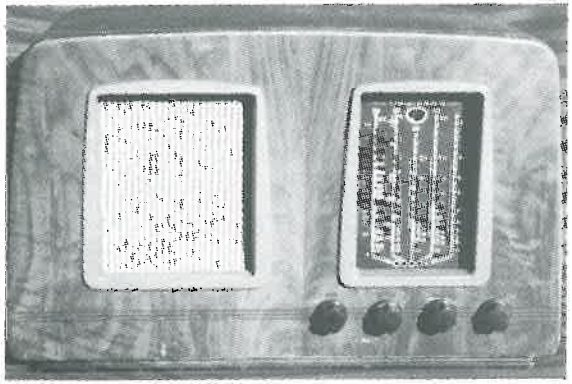
INTERPOLATION OSCILLATOR. This was a direct reading 0-5kHz oscillator accurate to within 1Hz. Interestingly, its output was obtained by beating two similar high frequency oscillators together and varying one of them to give the range required. For this purpose oscillators of exceptional stability were used. The dial reading was directly marked in 1Hz steps which calibration remained accurate over very long periods of time. Means for checking and resetting this calibration were incorporated.

COMMENT. In today's world the frequency of the Transfer Oscillator is counted digitally for a standard second of time and read out directly thus supplanting the complicated measurement procedure described above. However, in the 1940's this was not possible and it is to the credit of the operators concerned that they mastered the process and measured frequencies quite rapidly and with sufficient accuracy.

Moderne dual wave and bandspread receiver.



Moderne chassis.



Gulbransen 756 receiver.

Gulbransen 756 has a compact chassis, note the 6X5 rectifier.

WAR ASSETS WIRELESS

by Ian Sangster

The New Zealand radio industry after WWII was influenced by the massive stockpiles of unused electronic components from the ZC1 manufacturing effort.

In the following paragraphs I describe some of the receivers in my collection which show the efforts of some local manufacturers and the War Assets Realisation Board to use up some of this surplus stockpile. Since this happened before or around about the time of my birth, I am indebted to Alan Stanley, a manufacturer at the time, for alerting me to this practice.

The first receiver is a Moderne, a product of Mac MacDonald of Miramar. Mac was famous for building receivers incorporating cabinets and parts gleaned from discontinued lines of other larger manufacturers. date - 1947 ?

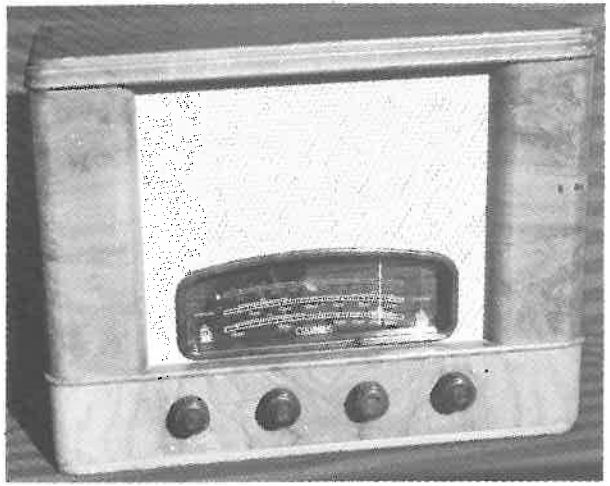
The Moderne receiver described here is a large wooden table model with a multi-coloured slide rule dial bearing the label "Moderne dual wave and bandspread 19, 25, 31 meters". Each band is colour coded. It would have been a competitor for Radio Corporation's model 90. Turning the radio around we see a generously sized power transformer stack, Rola electromagnetic eight inch speaker and Exelrad intermediate frequency transformers. The valve line up in my receiver is 6U7G r.f., 6K8 mixer-oscillator, 6U7G i.f., 6Q7G detector and first audio, 6V6 audio output, 6U5 tuning eye and 5Y3 rectifier. Notable features are clear plastic low loss socket for the 6K8 and Goat brand valve shields on the 6U7G's. Amongst servicemen and collectors these Goat shields and their chassis earthing clips have a poor reputation for shielding as they get older and rust. This can cause instability in i.f. stages.

The 6U7G ,6Q7G and 6V6GT/G were surplus ZC1 items, available in large quantities after WWII. Their use and that of the 6X5 rectifier, also ZC1 surplus, are shown in the next receiver, a product of Collier & Beale Ltd.

≈ 1946

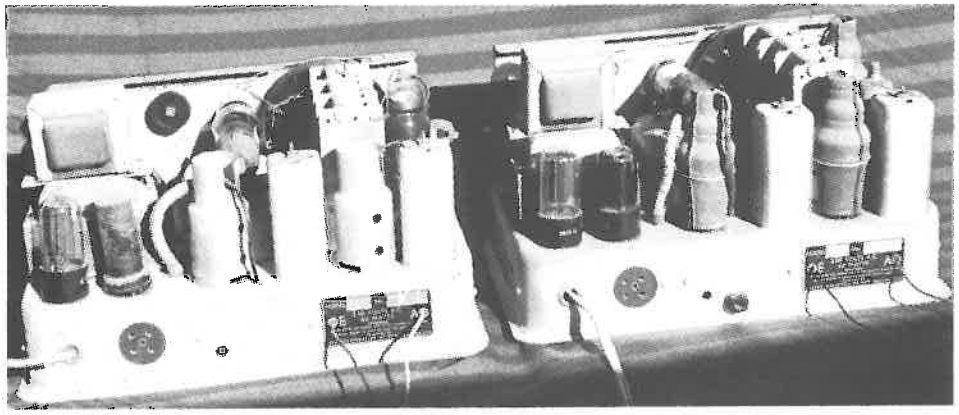
The Gulbransen 756 made by Collier and Beale for H.W. Clarke features a valve line up of 6U7G r.f., 6K8GT mixer-oscillator, 6U7G i.f., 6Q7G 2nd detector and 1st audio, 6V6GT output and 6X5 rectifier. I have available a copy of "Technical Description and Adjustment Procedure for Model 755 & 756". This shows the 756 to have the valve line listed above and a permanent magnet speaker, whilst the 755 has a 6F6G output and an 80 rectifier with an electromagnetic speaker. I have not had a chance to examine a 755 closely but the 756 I own has had an electromagnetic speaker fitted from new. It would seem that the 755 was the more upmarket model and the 756 at the lower priced end of the market.

Collier and Beale have their own sturdy rectangular valve shields so these are fitted to the 756. My example has a bent plywood style cabinet, though I have seen this style of Gulbransen in a cabinet with rounded pillars at either end and a recessed front panel somewhat similar to the Columbus 90 cabinet.



Finally, whilst I was slowly getting this article together another two receivers came my way. They were a pair of Columbus 44's, a model that we do not see frequently in this area. Having been told that Radio Corporation had enough purchasing power to continue with their 5Y3-6F6 valve line up from pre-war days I was surprised to compare both of these 44 chassis. From the 1st digit of their serial numbers I was able to determine that one was made in 1947 and one in 1948.

Columbus 44 receiver which uses an elliptical Radio Corp. permanent magnet speaker.



Two Columbus 44 chassis. The 1947 chassis (at left) features the shorter "bantam" versions of Radio Corp's spun aluminium valve shields fitting on to spigot rings both riveted and spot welded on to the chassis prior to plating. However the 1948 set has no valve shield attaching ring or evidence of them ever being fitted. It has the ubiquitous Goat shields.

OBITUARY It is with regret that we note the death of two members.

John Ashworth (Jack) Catterall, a very new member, trained as a radio technician with the NZPO then left to run a radio service/sales business in Nelson from which he recently retired.

Melbourne Clive Laurie (Dusty) Rhodes has been a member of the NZVRS since 1984. He served in the RNZAF during WWII and for some years ran an electrical/radio repair business in Auckland's Karangahape Rd.

OUR LIBRARY and LIBRARIAN

Thanks to the untiring efforts of one individual, Ernie Hakanson, the NZVRS now has a library to be proud of. But first a little background on the librarian himself.

Ernie can clearly remember the time when an older brother brought home a crystal set and as a result he caught the radio bug there and then. Not long after this he became a hobbyist, graduating on Hiker's Ones and Twos. Over the years he has gathered a fair number of old radios but never became a collector in the usual sense of the word. No, Ernie's main interest has always been books as anyone who has seen his immense personal library will be well aware.

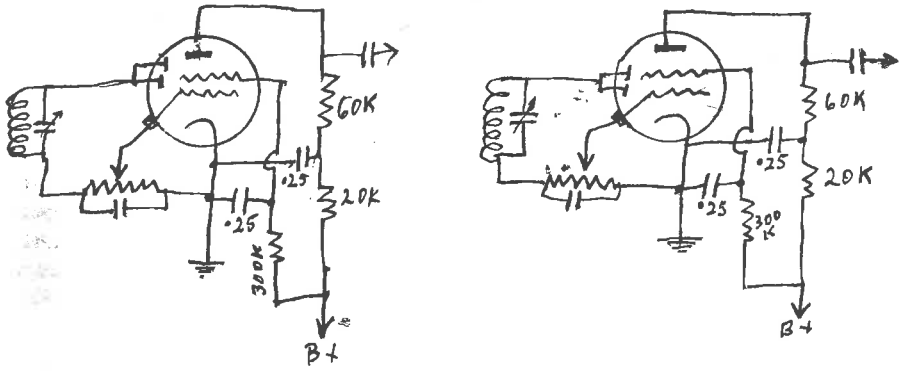
After starting off with books on all aspects of electricity he 'progressed' to books on radio and over the years has built up what surely must be the largest collection in New Zealand.

Although there are other members who have devoted time and energy to furthering the growth of our Society, Ernie has done this and more by making available a small building (located not far from his home) in which he has fitted up the necessary shelving to house a remarkably large quantity of radio books, periodicals and circuit diagrams.

Previously much of this material was in the care of Clarry Schollum who had nowhere else to keep it but under his house where storage conditions were far from ideal and accessibility was limited. But, thanks to Clarrie, we had a good start.

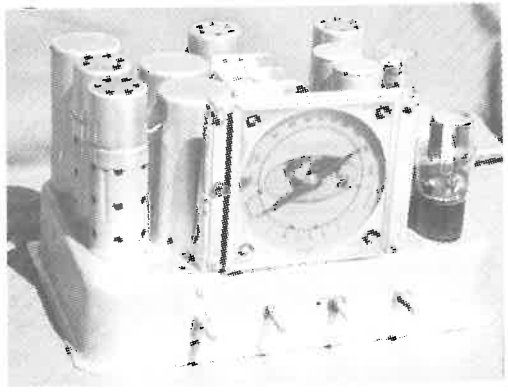
A visit to our new Lending Library could be an eye opener to anyone who has not been there: the range of literature, all available for borrowing, is quite staggering. Go and see for yourself. Ernie is prepared to open up at any time mutually convenient - ring him on 09/ 376 6059.

AUCTION - The contents of Dusty Rhodes' collection of radio parts will be auctioned at the NZVRS quarterly sale on September 15th. There are 87 lots including 12 cartons of valves (no exotic radio). A list may be obtained from Bryan Marsh. 20 Rimu Rd, Mangere Bridge, Auckland 1701.



Wells Gardner or Radio Ltd - which is which?

Courtenay model 108 (1934)



Model 108 Chassis.

TWO EARLY DUAL-WAVE SUPERHETS

By John W. Stokes

Although Radio Corp was not the first NZ manufacturer to produce a receiver having shortwave coverage this firm did, by a narrow margin, release what may be called the first "modern" dual-wave set. The term modern is here defined as indicating a receiver having a bandswitch in place of plug-in coils and a dial scale calibrated in megacycles.

It is known that Radio Corp's first two dual-wave models, the 5 valve 109 and the 6 valve 108 were available early in 1935, though it has not been possible to pinpoint the exact release dates. However, for what it is worth, it may be mentioned that a schematic diagram for the 108 bearing the date 9-9-34 has been sighted, a fact which indicates that this model could have been in production by the end of that year.

And what of the competition? Unlike Radio Corp, Radio Ltd had a head start in that they had designed and manufactured this country's first shortwave receiver, the famous Ultimate "Screen Grid 4", back in 1928. By 1929 an AC version was available and in 1933 the first all-wave superhet was marketed. But, in spite of their longer experience, Radio Ltd were not the first in the field when it came to the production of a modern dual-wave set, although both firms had similar models on the market by 1935.

Because of their basic similarity, it is interesting to compare each firm's design and to discover that there are similarities in detail which make it difficult to believe that one was not copied from the other. For example, both made use of a 2B7 valve with the pentode section arranged in the so called 'diode biased' fashion whereby the grid of the 2B7 was directly connected to the diode load resistor. This form of obtaining grid bias had several drawbacks which soon led to its abandonment and barely three months had passed before Radio Corp had come up with an improved model using conventional self biasing.

By comparison, Radio Ltd appeared to be much slower in recognising the shortcomings of diode biasing for they carried on using it until well into 1936.

Whilst still on the subject of circuitry, this writer has always been of the opinion that because Radio Ltd's circuit arrangements were identical to those used in a well known American receiver of the period, the Wells Gardner model 7D, they were copied directly from it. As to the reason for this slavish copying, one can only imagine that Radio Ltd were endeavouring to achieve the elusive something that gave the Gulbransen 7D its justly deserved reputation for having a good tone. Whether Radio Ltd knew it or not, it was the use of an Operadio speaker that gave the Gulbransen a decided edge over the Ultimate when it came to the matter of tone quality.

A final comment, by coincidence or otherwise both the New Zealand sets mentioned made use of 'home-made' wave-change switches and 'home made' aero dials and escutcheons (the last named now more correctly referred to as "bezels").

A LOOK AT AUTOMATIC TUNING
The Philips 660A

Arthur R Williams

Towards the later 1930's, Radio Manufacturers were looking for new ideas which would give them a competitive advantage over their rivals. Making the art of radio tuning more user friendly was an approach which had been taken by some top of the line sets of the time (eg Zenith) and this idea was adopted for the popular lower priced sets.

By 1937 several models were appearing with a form of auto tuning, usually copying a telephone dial where a button or fingerhole for the station you wanted was pulled around to a stop. Most collectors will be familiar with the Gulbransen (Wells-Gardner) A1 telephone dial model. Others were by Midwest, Grunow and Emerson. A much simpler example was used on the little Airline 62-455 also by Wells-Gardner.

New ideas were sought for the 1938 season and different styles appeared from both sides of the Atlantic. Many simply used a system of pretuned coils and capacitors which were switched into circuit. Others opted for motor drives to rotate the gang to the required station or a system of cams and levers to translate the linear motion of a push button to the rotary movement of a conventional gang capacitor. It is intended to review some of these ideas in more detail in future articles.

Philips came up with their own unique idea. Instead of trying to convert linear motion to rotary motion they developed a special gang with a linear motion. The plates consisted of spirals of thin brass strip that would interleave (somewhat after the fashion of the familiar Philips beehive trimmer). This was acted on directly by the pushbuttons containing screwed rods which were adjustable from the front panel when the button cover was removed. A worm drive enabled manual tuning to be carried out though this was disabled when the push buttons were actuated. The following diagram is from Radio Engineering by R.C.Norris.

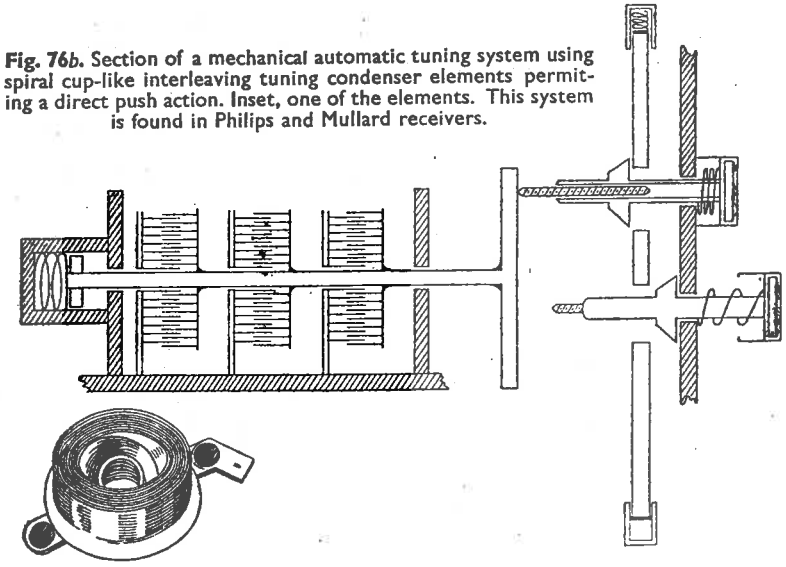
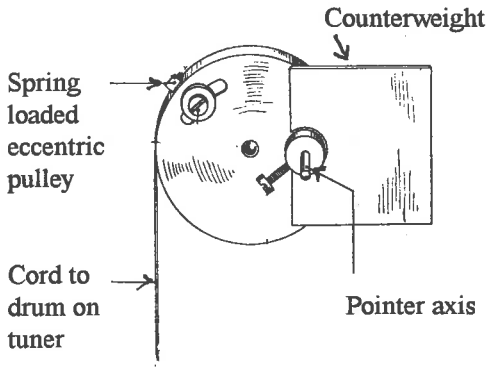


Fig. 76b. Section of a mechanical automatic tuning system using spiral cup-like interleaving tuning condenser elements permitting a direct push action. Inset, one of the elements. This system is found in Philips and Mullard receivers.

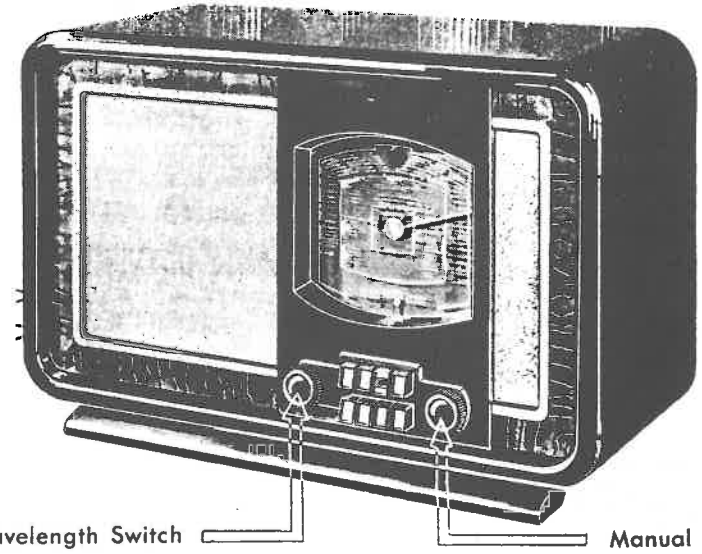
Now, this particular capacitor has a straight line capacity (SLC) action which would normally tend to crowd the stations towards the high frequency end of the dial (HF end). Philips might have overcome this by using tapered plates in the gang but they solved it in another unique way - with an eccentric dial drive. This increased the speed of pointer rotation towards the HF end of the dial which had the effect of spreading the stations out more evenly.



One drawback with the tuning system as used on their model 660A was the disabling of the pointer and manual tuning when the push buttons were used. Also, for the push button system to work effectively across the dial this had first to be tuned to the top end (keyboard tuning) which meant that minor tuning corrections could not be carried out with the manual knob once a station had been selected by pushbutton.

The 660A is a five valve receiver of otherwise conventional design using an EF8 as RF, EK2 as mixer, EF9 as IF, EBL1 as second detector and output and AZ1 as rectifier. An EM1 is fitted as a tuning aid. The cabinet is of veneered wood in a pleasing modernistic design that was somewhat ahead of its contemporaries.

660 A-34



BOOK REVIEW - BAKELITE RADIOS,

Robert Hawes with Gad Sassower, London,1996.

Reviewed by John W. Stokes.

Robert Hawes' new book, Bakelite Radios follows along much the same lines as his earlier Radio Art(1991), both in subject matter and presentation, but differs in being concerned more with cabinets than with complete receivers. Although the title suggest that only radios having bakelite cabinets are dealt with, this is not the case as evidenced by the many coloured sets illustrated, as well as by the title of Chapter Three - A Short History of Bakelite and other Plastics. After all, what would this book be without all those brightly coloured non-bakelite cabinets?

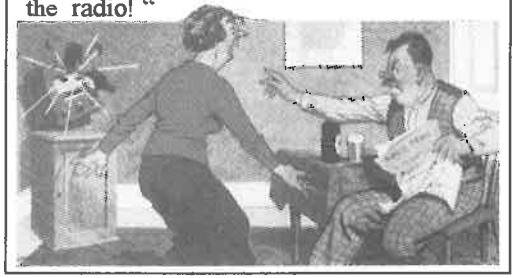
Apart from a few historical pictures, the remainder are in colour and should provide a visual feast for any plastic-cabinet enthusiast. A small amount of duplication of material is noticeable, chiefly of 'round' Ekcos where the full range of models is depicted in both books.

The book is divided into five chapters and is by no means entirely a picture book, the illustrations being supported by a considerable amount of text. Receivers from several different countries are illustrated, the majority being of American and British origin, but there is a sprinkling from France, Italy, Germany, Spain and Czechoslovakia. Antipodean readers will doubtless be interested to see depicted several Australian sets, including three pre-war Radiolettes, one of which carries a seldom seen G E badge. Incidentally, the author eulogises the ".....ornate Art Nouveau cabinet and spiralling knobs." of the G E set, but is obviously unaware that these same knobs are not original. Still, they do look the part and may even have been fitted deliberately at a later date for their effect. At least it is a change from Art Deco!

A personal gripe of this reviewer is an over use of the words "Golden Age"; a count reveals them to have been used at least a dozen times throughout the book, leaving the reader with no doubt that, to the author, the era of bakelite cabinets was radio's Golden Age.

Like its predecessor, this book is intended to cater for the rapidly growing numbers of collectors whose interests centre around plastic cased radios, and although there are some people who tend to disparage this area of collecting, who knows how it will be viewed in the years to come?

"I don't care if you do disagree with the referee's decision, you're not going to throw bottles at the radio! "



Electrical Wiremen's Registration Board
of New Zealand.

CERTIFICATE OF LIMITED REGISTRATION.

This is to certify that Reginald Henry Boreham of Auckland was granted LIMITED REGISTRATION as an Electrical Wireman on the 6th day of November 1941, under section 2 of the Electrical Wiremen's Registration Amendment Act 1928, for Work on the secondary side of the power-transformer of radio-sets.

Registered No. C 930

[redacted], Chairman.

P. H. Guyon, Registrar.

NOTE.—THIS CERTIFICATE REMAINS THE PROPERTY OF THE BOARD AND MUST BE SURRENDERED ON DEMAND.

Fascimile (reduced size) of certificate issued during World WarII to allow unregistered and, in some cases unqualified persons, to carry out radio repair work. Note the impractical limitation allowing work to be done oly on the secondary side of the power transformer. How was a volume control having a power switch to be replaced?

should have had the word attached here

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

30 The 1934 Gulbransen Console. description, photo & circuit. HRSA Radio Waves No 52,p3.

31 The Ekco model CR61 car radio. Circuit & description. HRSA Radio Waves No 52, p10.

32 The Oscilaudion Tube. History with photos. HRSA Radio Waves No 52, p14.

33 The RCA Field Intensity Meter BW7A. Description with photo and circuit. HRSA Radio Waves No 52, p22

34 BVWS celebration of centenary of Marconi, extensive photos, description. BVWS Bulletin, vol 21 no 3, p4 ,winter 1996.

35 The First Bakelite Radios. 1932 Kadette, Emerson model 19, Standard B, 1924, 1933 Kadette junior, CR1917 of 1919? Photos, some description. BVWS vol 21 no 3 winter 1996.

36 RCA Radiola II (model AR-800) Portable photos, description, BVWS vol 21 no 3 p13 winter 1996.

37 Some Consequences of the 1922 Reaction Ban. BVWS vol 21 no 3 p 14. winter 1996

38 The World of Cathedrals, photos of 15 different sets. BVWS vol 21 no 3 p 22. winter 1996.

39 The Pam 710, Britains first all-transistor portable. photos, description. BVWS vol 21 no 3 p24. winter 1996.

40 Charlton Higgs and his Radios. Photos, some history. BVWS vol 21 no 3 p 26. winter 1996.

41 The Single Span: or Smurthwaites Mistake. Circuit, description. BVWS vol 21 no 3 p 31. winter 1996.

42 Early Cossor Oscilloscopes. Photos, circuits, descriptions, history. Radio Bygones no.42 p4 Aug/Sept 1996.

43 The GEC BC 403 VHF/FM Receiver. photos, circuit, description. Radio Bygones no.42 p10 Aug/Sept 1996.

44 How the Dutch International Broadcasting System Began. History, photos. Radio Bygones no.42 p14 Aug/Sept 1996.

45 The Heathkit SB301 Receiver. Specification, photo, description block diagram,. Radio Bygones no.42 p22 Aug/Sept 1996.

46 AWA's First Monster Radiola; Model 262, 1937. Photos, service notes, circuit. HRSA no 57 p6 July 1996.

47 The Fisk Radiola Model 262. Circuit, service notes. HRSA no 57 p9 July 1996.

48 Restoring an Airmaster 1932 Superhet. Photos, circuit, description. HRSA no 57 p12 July 1996.

49 The Tin Toy Radio. German 3V c1930. photos, description. HRSA no 57 p15 July 1996.

50 Restoring Plastic Cases. extensive notes on methods. HRSA no 57 p16 July 1996.

51 Vintage Radio Design. Considerations. HRSA no 57 p19 July 1996.

52 Kriesler Beehive model 11-4. Photo, circuit description. HRSA no 57 p24 July 1996.

53 Restoring and Replating Small Metal Parts at Home. Part 1. Stripping, pickling repair, grinding. polishing, cleaning. HRSA no 57 p28 July 1996.

54 Western Electric Valves. Photos, description of early types. HRSA no 57 p30 July 1996.

55 The Defiant M900. Photos, description, circuit. BVWS Vol 21 No 1 P10 Spring 1996

56 List of GPO Registration Numbers. Extensive but incomplete. Photos of some items. BVWS Vol 21 No 1 P12 Spring 1996

57 Personal Portables. Their development with photos. BVWS Vol 21 No 1 P20 Spring 1996

58 Seeing by Wireless. The story of Baird television. photos, history. Supplement to BVWS, 1996

59. Another AD65 Story. Circuit, description , photos and restoration info on EKCO AD65. BVWS vol 22 No1 P4 Spring 1997.

60. Delightfully 'Personal'. Marconiphone P20B & P17B Portables. Circuit, photos, description, alignment info. BVWS vol 22 No 1 P12 Spring 1997.

61 Communication with Wires. Photos and descriptions of early telegraph equipment. BVWS vol 22 No 1 P22. Spring 1997.

62. The First 60 Years of Wireless Communication in Switzerland. BVWS vol 22 No 1 P26. Spring 1997.

63 The Federal 110.(1923). Photo, description, circuit. BVWS vol 22 No1 P39 Spring 1997.

64. Shortwave Radio Communications after 1945. BPO services. Photos, technology descriptions . Radio Bygones No 46 P7 April/May 1997

65. The Pye T18T Television Receiver. Photo, circuit, restoration info. Radio Bygones No 46 P 13, April/May 1997.

66. The Early Cossor Tin Hat Valves (1922-25). Photos, characteristics, history. Radio Bygones No46 p16 April/May 1997.

67. RAF Transmitter T.77. Photos, circuits, description, tuning info. Radio Bygones No46 p21. April/May 1997.

68. Wax Capacitor Rebuilding. Radio Waves, vol 5/2 p8. March/April 1997.

69. The Marconi Model 55. Description, photos. Radio Waves vol 5/2 p9. March/April 1997.

70. Atwater Kent Restoration. CHRS Journal, vol 21/1 p16. March 1997.

71. Recreating a 1930's Finish. Material, solvents, techniques. CHRS Journal, vol 21/1 p17, March 1997.

72. Early De Forest Detectors and Tuners. photos, descriptions of types RJ4, RJ5, RJ7, RJ8 & RJ9. 1913 onwards. Antique Radio Classified, vol 14/5, p4, May 97.

73. Repairing Bakelite Cabinets. Techniques for using fibreglass and auto Bondo Repair. Antique Radio Classified, vol 14/5, p18, May 97.

LETTER FROM AUSTRALIA

Things in Australia are getting a bit hard to find now. The latest fad in this country is to import ship container loads of old radios from the States, where, of course, they are rather common. A lot of vintage car collectors have got into this act. They usually import old car and bike parts having realised they can make a fast dollar doing this. Quite a few antique dealers are also doing it - recently I heard of a dealer in Sydney doing so and making a fortune for the stuff.

Unfortunately this has made worthless a lot of early USA radios imported into this country before 1927 (in 1927 the Govt. of this country was lobbied by local radio manufacturers to place a very large import tariff on imported radios etc. to protect the local market).

Recently I found a nice Flying Doctor transceiver C, early to mid thirties made by Alf Traiger, serial No. 95, a rare piece of Australian radio history. Also was lucky to find a nice Australian made cathedral, an Airzone "Cub", 3 valve regenerative set all complete and in good condition.

Cathedrals are rather hard to find in Australia as not many American sets were imported, unlike NZ. I also found a nice Australian Stromberg Carlson chassis but no cabinet. It is all complete less the metal cabinet. A 6 valve battery model as shown at the bottom of page 73 of "More Golden Age of Radio" (see ad in this issue - Ed.)

Brian Lackie,60 Yellow Rock Rd.
Uranga, NSW , 2455.Australia.

HELP WANTED

I am hoping to compile a history of Radio Corporation of New Zealand Ltd and would appreciate contact with anyone who may be able to help with information, photos, etc.
Jack Tait, 101A Nayland St., Sumner, Christchurch 8008.

wrote 13-8-97

WANTED (continued)

2 x brown knobs for Philco model 203A - page 48 of G.A.R. D J Smith, 156 Rangitoto Rd, Papatoetoe 1701. Ph 09/2783541

Leak valve amplifier, prefer series 20 or 50 and preamp but anything considered. Have radios to trade. L B Hartley, 814 Rangiora St., Hastings. Ph 06/8763643

Chassis for Gulbransen 235 or model 23 - page 178 of M.G.A. Knobs for Pilot model 403B. Dial glass for Columbus model 39 - page 66 of G.A.R. Turntable for Columbus Flotilla or any information of type, make or use in Flotilla. Columbus Model 36 - page 116 M.G.A. possible swap or buy. Kevin Horn, 26 Roycroft St., Waihi. Ph 07/8636865.

Atwater Kent model 70 - 12" speaker, type N also power transformer, chokes, interstage transformers, OK if transformers or speaker not working provided they are original parts. P Robb, 1275 Dominion Rd, Mt Roskill, Auckland. Ph 09/6207347.

1945 R.A. 4 knob Ultimate or Skyscraper, metal cabinet. 1938 Ultimate round dial console, B.C.U. or BXU. 8 valve or any Pacific 1933-1936 model 461. Majestic model 20/22 consolette, 1935 500A mantel. Have for trade; Zenith 6s 228 upright, Champion (Gilfillan) upright (mint), Gulbransen (rosewood) A1 teledial (mint), Atwater Kent 206 cathedral. G Lindsey, 110 Sylvan Ave, Northcote, Auckland. Ph 09/4192033.

Zenith radio with shutter dial. see page 128 of G.A.R. bottom righthand side. Also coloured Bell Colt radios. S Treadaway. Wyuna Bay Motel, Coromandel. Ph/Fax 07/8668507.