WANTED (continued)

Taylor 45C tube tester in good going condition also 6F5 or 6F5G valves. Bill Meiklejohn, Ph 09/4361922

Still looking for Zenith Waltons 7 or 9 valves (willing to pay good dollars), AWA Radiolette model 37B or 38B or 32/38. Steve Treadaway , Ph/Fax 07/8671111.

Dial scale for Akrad model 5M7 (or complete set with good drive scale). It could have the name "Invincible, Everest, etc" on it (direct drive tuning). See top left pictures Everest/Invincible page 98 of MGA. Murray Stevenson, 3 Brandon Rd, Glen Eden, Auckland, Ph 09/8133565.

I am delving into the manufacturing, history, prices etc of all old type valve sockets and mountings for the early (1900-30) breadboard top of chassis components, any style, shape or size. Ceramic, glass, pyrex, bakelite etc, screw-in feed-in, springloaded etc including transmitter types. I am also interested in any old pieces from the early years such as grid leaks, resistors, crystal detectors, carborundum etc plus any information which you can help me with. I don't care if items are damaged in any way. Bob Cook, unit 3/475 Blockhouse Bay Rd, Blockhouse Bay, Auckland, Ph 09/6266241

Leak valve amplifier (any model), Atwater Kent 55 chassis for parts, any old microphones (any condition). L B Hartley, 814 Rangiora St, Hastings, Ph 06/8763643, email lennybh@xtra.co.nz

Car radio for a mid 50s UK car. The original was a Motorola or EKCO but anything (UK style) of the period considered. Condition not important. Stuart Smith, Ph 09/8118990 or email stuar37@attglobal.net

Zenith shutter dial chassis, any conditiion, novelty radios of any kind, EL34 metal base Telefunken valve, any triode audio output valves. Happy to pay cash or have early wooden tombstones and other radios to swap if you wish. Also looking for windup gramophones or parts any condition. Rod Osborne, P.O. Box 2098, Tauranga, Ph 07/5442887 or email rod@ihug.co.nz

Circuit diagrams or bulletins of the following test equipment for copying - Muirhead Decade Oscillator D-890-A, Muirhead Frequency Analyser D-669-A, Siemens Level Meter D2057, Wilcom Level Tracer T-195BE, Hatfield Level Measuring Set 760, HP Telephone Test Oscillator and Cintel Capacitance Bridge 1863. Postage paid and prompt return assured. Reg Motion, 2A Hazel Terrace, Tauranga. Ph 07/5768733. email regmotion@xtra.co.nz

N.Z.V.R.S. Bulletin

NEW ZEALAND VINTAGE RADIO SOCIETY INC.

Vol. 21 No.3 November 2000

TELEGRAPH DISPLAY AT TARANAKI TECHNOLOGY MUSEUM

NEW ZEALAND VINTAGE RADIO SOCIETY INC.

A non-profit organisation devoted to the preservation of early radio equipment and associated historical information.
(Web site - http//www.nzvrs.pl.net email address office@nzvrs.pl.net)

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

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

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

LIBRARIAN, Ernie Hakanson, 17 Williamson Ave, Grey Lynn, Auckland. Ph 09/3766059. Requests for circuit diagrams, books and magazines are handled by the Librarian at a small charge. Back numbers of most NZVRS bulletins are also available from the Librarian at $3.00 each for Vols 1 to 10 and $4.00 for issues from Vol 11 onwards. Cheques to be made out to NZVRS.

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

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

WAIKATO AREA." Next meeting will be the annual social gathering in Tauranga on the 2nd and 3rd of December. See bottom of page 7 for program.

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

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

CONTENTS

FROM THE EDITOR

Once again we have some interesting contributions. Cliff Maxwell has set down details of Westco Products Ltd, a firm which was little known outside of Auckland and Chris Rickard's notes on the communication section of the Taranaki Aviation, Transport and Technology Museum should tempt members visiting New Plymouth to make arrangements to view this little known museum. On my recent visit I was surprised at the extent and quality of the displays there. Dick Stevenson capably reviews the problems in amplifying radio frequency signal using triodes in the early days and Paul Woodcock discusses an interesting restoration of a Golden Knight receiver.

This time there are a few more reprints than usual of selected articles from other magazines and books. Original articles are to be preferred but these are not always available and I believe it is reasonable to reprint an article if its contents are likely to be of interest to members generally and they are unlikely to have read the original. The foreword of E H Scott's "Friendly Chats" (page 19) discloses a little known facet of the character of this famous radio manufacturer who was born in Dunedin, raised in Australia and served in the ANZAC forces in France during WW1 before moving to the USA.

Our Web page is now operational and the "NZVRS Users group" has just begun thanks to the efforts of our Treasurer. We are still somewhat in the experimental stages but results to date have been encouraging. There has been over 1,000 hits on the web site already with 800 in September. The web site is not intended to replace the bulletin but rather to complement it with indexes and other reference material specific to the Society. Any suggestions for content or improvement are always welcomed by the Treasurer.

A gentle reminder: I am short of original articles for future bulletins and will appreciate you putting pen to paper (or fingers to keyboard) to describe or explain that interesting investigation or project.

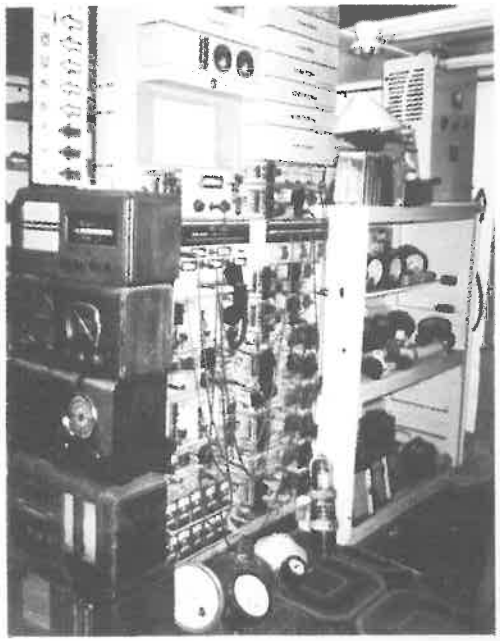
AUCKLAND MEETING CALENDAR	December 18th;	Auction sale.
	January 15th;	Cone Speakers - Moving Armature to High Fidelity
	February 19th;	Valved Audio Equipment

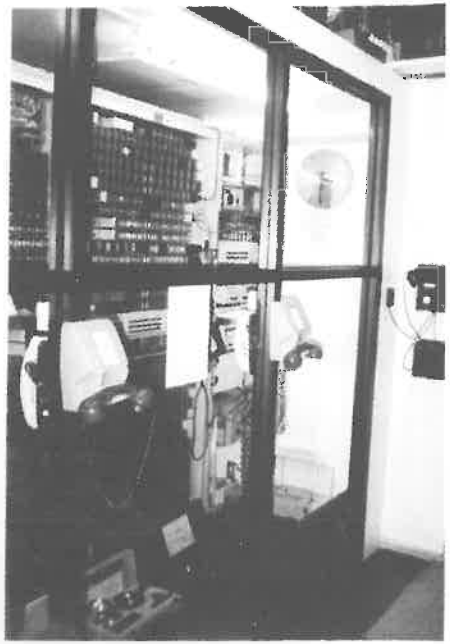
NEW MEMBERS

T Spackman	Hamilton	W Squires	Auckland
T Roberts	Auckland	S Reid	Greymouth

PROTECT YOURSELF - RESIDUAL CURRENT DETECTORS -

Residual Current Detectors are again available to members at $20 each plus $4 post and package. Cheques should be made out to the New Zealand Vintage Radio Society and sent to the Treasurer, David Crozier, 154 Grey St, Onehunga, Auckland. Ph 09/636954 or 0800/187161.





TARANAKI AVIATION TRANSPORT and TECHNOLOGY MUSEUM Inc. (TATATM) - Communications Section.

Chris Rickards

The above museum is situated on the outskirts of New Plymouth at Kent Rd. and is dedicated to the changes in technology rather than what is typical of most museums in New Zealand, a set up of historical displays that cannot be handled, touched or operated by the public.

I "inherited" the above section some 20 years ago not long after the society shifted to the site after rambling around various venues in the city proper, each of which was either too small or only given as a temporary stay until a suitable location was found. This part of the museum covers the range of "communications " including radio, teletype, telephone, audio, transmission, computers, electrical, and much ancillary equipment.

My introduction to the comms section was with mixed feelings as the area given had been stuffed with a variety of "other equipment" and two of the rooms allocated were jammed floor to ceiling with everybody else's "don't know what to do with" material.

Where to start? The first thing that had to be done was to create some space so that items could be set up, cleaned up and made favourable for the public to view. In order to do this a lot of the "other " gear had to go out into the section that it belonged to, or into the main storage area. This created strife amongst some members, but there are none so deaf as those that don't want to hear. The other problem was one of lack of labour as there was little interest in the section in the condition it was in. Slowly with some arm twisting, individuals from outside the museum assisted in sorting out an area, building shelving, setting out items and sorting them into good, bad, and junk, until the core of the section took shape.

The next big upheaval was when the band of four (we had expanded) decided to get into the first of the two rooms full of " everybody's other gear " Oh the growls and groans that were heard, but we pressed on and cleared it out. The real benefit was items were found that had not seen the light of day for a wee while and now could be put into the right place. This included items that belonged in the comms bay.

This expanded area gave us a lot more space, an area 12ft by 17ft was now at our disposal; what to do with it was the next question. In two moves over a period of a couple of years it became first an area with a workbench, a broadcast desk, a Plessey uniselector exchange, and some audio gear. This in turn gave a greater flexibility to the main core area which by now had the first of the hands on " operational " items, for the public to try. This was a "Creed " no.47 printer and reperforator with type N keyboard. What a lot of noise and what fun with the public. There were radios now going as well.

Photos Opposite: top left - Domestic Radios and Telephone Carrier equipment,
top right - Crossbar Telephone Exchange,
bottom - Triple Diversity Radio Receivers and miscellaneous other equipment.

The group now numbering six next attacked the remaining store room. The growlers were by now in silent resignation at the onslaught and not a peep was heard, I think that the results speak for themselves. This has now become a dedicated area for audio; the broadcast desk from the adjoining room has been re-located, computer gear from early days of "Dick Smith", Basic and DOS gear, Commodore and Amigo complete with printers, tape recorders, games and monitors. Much of it in going order. What fun to watch a computer buff of today trying to drive a Basic orientated piece of gear.

With this space now available to ease the pressure in all areas, a decision was made to turn the previously mentioned bay into a dedicated telephone exchange area. This was assisted by an addition made to the building to house the Post and Telegraph displays. Into here we built a dry clean sub room for a "cross-bar" type of exchange fully operational and able to "talk" to the other exchanges we now had obtained. We had installed an Ericson pre 2000 step by step, a UAX 50 line unit and a telephone operator's manual console. All items are able to be used and operated by the public, the exchanges allowing us to have our own phone system throughout the museum.

The final saga to date has been to restructure the original core area. Into here we have installed a comprehensive telegraph display, much of it obtained from the now defunct telegraph museum in Auckland. With this we are able to generate telegrams, punched tapes, messages in simplex and duplex, and the well known "quick brown fox " can be seen and heard.

Over the years the original small group of people has changed but the end result can be seen in the accompanying photos. The museum thanks all these individuals as well as the numerous companies including Bailey Earthworks, Hooker Pacific, Olex Cables, Placemakers, Telecomms Ltd, Staff and Management of Connectel Ltd, Rimu Electrical, Julian Electrical, Clarke and Rogers Ltd, Furze Construction, Inglewood Engineering, Frasers Electrical and Scott Sheetmetal.

We now can entertain you with Quad stereo valve gear, or Ampex tapes from 1970's, very early radio's and radiograms, type you up a telegram in simplex or duplex. You may use a telephone coin box to the operator who will greet you with number please, or hold the line. The children love the prerecorded messages on the cross bar exchange, and visitors drool at some of the hundreds or items on display that they once used. Early radio gear that we have include Warner, Gilfillan, King, Ultimate, Hotpoints, Columbus, Pye, HMV, Murphy, Bell, Phillips, Cossor, RCA, and Admiral.

So if you are at a loose end come over to New Plymouth, and to the museum in particular. We are open on Sundays from 10:00 a.m. till 4:00 p.m. or other days by appointment. A field day will be held on Taranaki Anniversary Day when all the museum will be active.

A final point ....we operate an exchange system whereby excess items are swapped to interested people to the advantage of all. Several NZVRS members have benefited in this way.

ALFRED THOMAS VEART

Alf Veart, President of our Society from 1995 to 1997 passed away suddenly on the 16th September this year. Ned Matich officiated at the funeral service which was well attended by NZVRS members.
Born in 1924 at Mt Eden Auckland, Alf experimented with crystal sets in the 1930s and became interested in radio, an interest which persisted throughout the rest of his life. He was educated in Mt Eden, attended Auckland Grammar School and joined the RNZAF on leaving school at the age of eighteen. He saw service in the Pacific as a radar technician then at the conclusion of the war did a 2 year apprenticeship in electronics following which he worked for SOS Radio and TeeVee Electronics before becoming Engineer in Charge of Design at Fountain Manufacturing.
Alf married in 1947 and had two daughters.. For a number of years he was a member of the Titirangi Volunteer Fire Brigade and was made an Honorary Life Member on his retirement.
Always a very pleasant gentleman to meet, Alf became interested in Vintage Radio when he retired from business. His wide knowledge of valved radios in particular and of the testing associated with them made him a very useful member of the Society and he readily helped others with their technical problems often going to great lengths to do so..
Alf will be sadly missed.

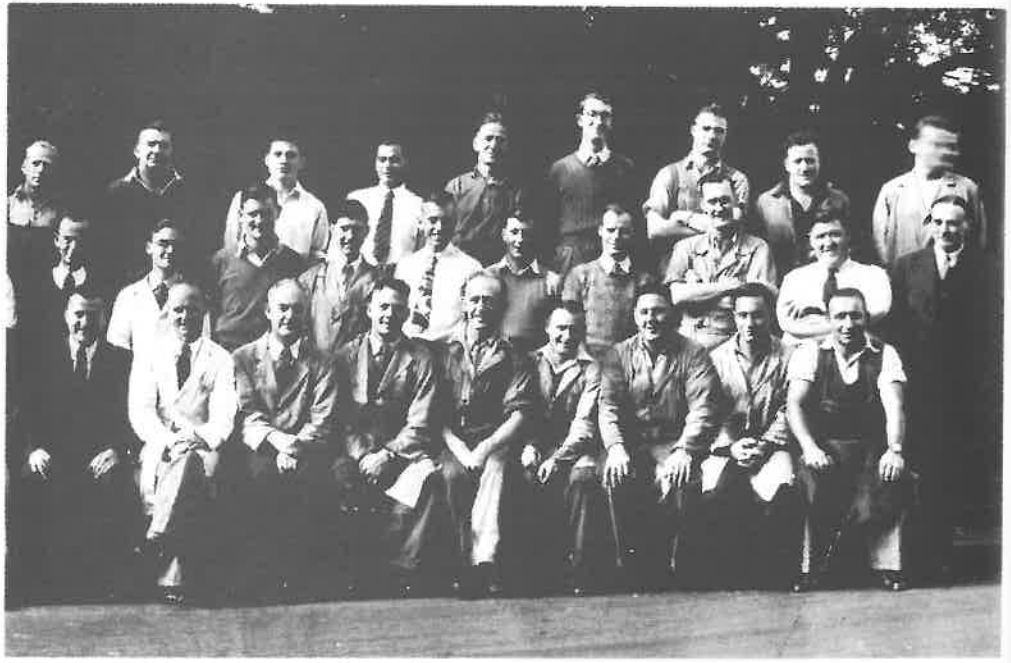
Program for Waikato Branch Xmas Get-to-Gether, (December 2/3).

Sat. 2nd at 1 PM, visit to John and Margaret Collin 65 Paine St, Ph 07-5789213. Then on to Bill Edwards 211 Dickson Rd, Papamoa, Ph 07-5422616 at approx 3 PM. There will be a dinner Sat. night at Buretta Park Motor Inn, Vale St, Ph 07-5762221, starting 6.30 PM. This is a 3-course buffet meal ($15.00). Please advise Rod Osborne Phone 07-5442887 if you wish to attend the dinner.
If you require accommodation for Sat night then Buretta Park advertises Doubles at $70 per night.

Sun. 3rd starts with a visit to Rod and Sue Osborne, 9 Waikite Rd, Happy Valley, Ph 07-5442887 at 9AM for morning tea. Then on to Gordon and Donella Baker, 101 Hinewa Rd , Ph 5767889, for a barbecue lunch (please bring you own food for cooking). After lunch a visit to Reg and Rose Motion, 2A Hazel Tce, Ph 07/5768733 for afternoon tea and an early start home.
Sue and Donella will be organising trips for the ladies visiting gardens, markets etc.

Sales tables at most venues.

STAFF AT WESTONHOUSE RADIO LTD - MAY 1950



WESTCO PRODUCTS LTD.

Cliff Maxwell

I joined the company in 1944 after leaving the SEDDON MEMORIAL TECHNICAL COLLEGE at the age of 16 years. At that time the company was known as WESTONHOUSE RADIO LTD. Prior to this the company was known as the WESTONHOUSE AIR GAS COMPANY LTD. and manufactured Primus type lamps and stoves. The owner was Alf Chadwick. Ted Fort was the factory manager and Stan Fry was the production manager.

The factory was situated at the corner of Rutland and Lorne streets where the Auckland Public Library is now located. They were making counterpoise aerials for ZC1 radio transceivers for the New Zealand army. They then progressed to the assembly of AEWI (army education wireless 1) 110 volt broadcast radios for the American Army and AEW2 (army education wireless 2) broadcast, shortwave bandspread radios for the New Zealand army. All the receivers were checked by an army inspector before being despatched.

There was a press shop and tool room for making chassis and other metalwork as well as a plating shop for cadmium plating and a paint shop for spray painting. Other facilities included a small transformer rewinding and radio service department. The rest of the building was devoted to radio assembly, coil winding and test rooms.

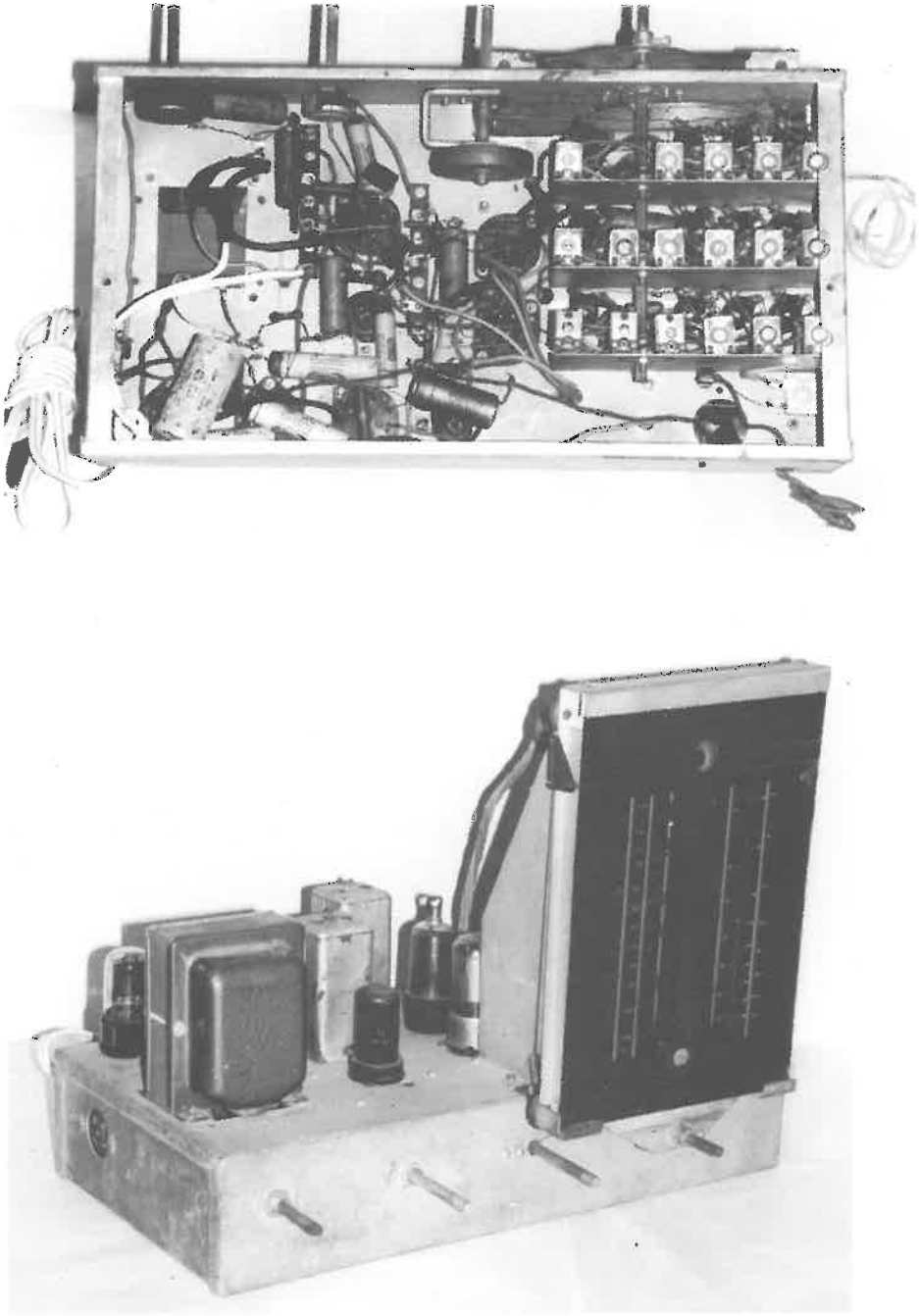
The factory was in a 230 volt DC area of the city, power being supplied from the Kings Wharf coal fired power station. 230 volt AC power was provided by an inhouse 230 volt DC to 230 volt AC rotary convertor for the test gear and products under test. All the rest of the factory was on DC.

At the end of the war in 1945 all war production ceased and the company moved into manufacturing domestic radio receivers once again.

In the late 1940s the Rutland St. premises were becoming too small and the company shifted to a building in Kitchener St. previously occupied by Sharland and Co.

In the early 1950s the name was changed to WESTCO PRODUCTS and a sales and marketing section called WESTCO DISTRIBUTORS was set up in Courthouse Lane. At the same time the company was listed on the New Zealand stock exchange.

The product range was also expanded and included mantel radios, radiograms, consoles, car radios, (together with a car radio installation service for a number of motor vehicle dealers), fluorescent lights, washing machines (both agitator and automatic), three sizes of refrigerators (5 and 7 cubic foot using compressors and a 2.5 cubic foot using an absorption unit) together with Intercom systems.



CHASSIS OF THE 7 VALVE MODEL 116 MANUFACTURED IN 1947

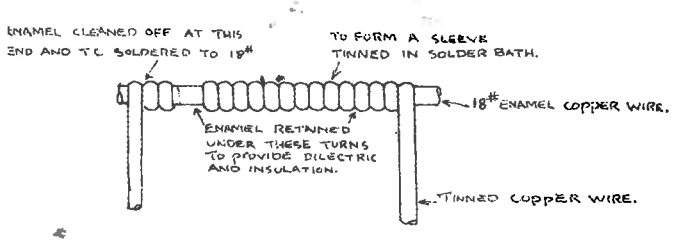
Manufacturing facilities were increased to accommodate all of these new products and included vacuum forming of refrigerator liners, production of refrigerator cabinets, washing machine cabinets, plastic cabinets and fronts for radios, car radios and portable radios, ballasts for fluorescent lights, power transformers, IF cans and flywheels for spin tuning. Chokes for the fluorescent ballasts were also wound inhouse and were varnish impregnated before being fitted into the ballast containers together with power factor correction capacitors then filled with pitch to stop any rattles or buzz. All metalwork, painting and plating was done inhouse and such items as dial pointers would be assembled in a jig before being spray painted.

Coil kits (both dualwave and bandspread varieties as well as IF transformers) were produced for WESTCO sets as well as SOS Rainbow Tuners for SOS Radio. The coil former. came in lengths of approximately 3 feet and was cut to length on a saw bench then slotted and holed on a bench press before having terminals riveted on. Coil former for shortwave coils was grooved on a lathe before cutting and punching. All coils had their inductance checked before assembly into the coil kits to ensure that the receivers would track correctly when aligned. Litz wire and heavy gauge shortwave coil wire was cleaned by heating in a methylated spirits burner and then quenching in a bath of methylated spirits. Fine gauge wire, 38 or 40 gauge was cleaned with fine emery-paper. All coils and transformers were vacuum impregnated with wax before assembly. .

Wooden cabinets for radios were made by a number of cabinet makers around town and were real works of art when it came to the large consoles and radiograms with their piano high gloss finish on walnut veneers. Often these models would have push-pull power output stages to provide ample power for the discerning customer. A typical chassis would use a valve line up such as, 6SK7 RF amplifier, 6K8 mixer/oscillator, 6K8 IF amplifier, 6SQ7 detector, AVC & first audio stage, 6C5 phase inverter, pushpull 6V6 output, 5Y3 Rectifier and 6U5/6G5 magic eye tuning indicator. The set would tune the MF broadcast band, shortwave from 6 to 18 MHz and be bandspread over the 19, 25 and 31 metre bands. New Zealand and Australian broadcast station call signs were also printed on the dial scale and if a call sign was missing there would be a complaint from the retailer which meant that it had to be included on any subsequent production runs.

One radiogram, I recall, used a rotating dial scale made in the form of a cylinder. This was made from a flat sheet of clear perspex onto which the various call signs and scales were printed then the sheet was heated and formed into a cylinder about 3.5 inches In diameter. This rotated when the wavechange switch was operated so that only one scale was visible at a time. The cylinder was edge lit with panel lamps from each end giving the illusion of a scale floating in space against a black background. The date of manufacture was 1951-1952 approximately. Dial scales were produced by companies such as Auckland Photo Engravers and PEN Enterprises.

The service department was enlarged and included outside service of the companies refrigerators, washing machines and intercom installations. The design department included drafting facilities.



As there was a shortage of some items, trimmers and small fixed value capacitors were made inhouse. The small fixed value capacitors were made by cutting a piece of 18 gauge enamelled copper wire to length then cleaning one end back about 3mm and soldering a piece of tinned copper wire to it. Another longer piece of tinned copper wire would then be wound over the enamel wire for sufficient length to give the capacitor value required and soldered to make a sleeve. The enamel acted as the dielectric. Once the value had been established on a capacitor bridge mass production could commence. The soldering was done by dipping in a solder bath. Finally the capacitor was spray painted using a colour to indicate the value.

Rights were secured to manufacture MERCURY records in New Zealand. For this purpose STEBBING RECORDING STUDIOS were purchased and renamed SOUND REPRODUCTIONS Ltd. Master tapes came in from overseas and masters were cut onto vinyl in the recording studios which were in the Pacific Building on the corner of Wellesly St. east and Queen St. These masters were then sent out to the record pressing division which was in the old AUCKLAND LAUNDRY building at Surry Crescent, Grey Lynn where the stampers were produced in an involved plating process. They were then set up on the record presses to mass produce the records. This was in the days of 78rpm disks.

At left - Front and rear of company record cover.

During manufacture the various brand names were attached to the product at the end of the production line. Radio products included names such as NATIONAL, GOLDEN KNIGHT, YALE, MAGNESS, TUDOR, ATOMIC, EMPIRE, SOS, PATHFINDER, ESSEX, ROBERTSON AND ELGAR. Washing machines were marketed as LAUNDEROLL and WESTCO. Fluorescent lights and intercoms were sold under the WESTCO brand.

Company branches were set up in Christchurch and Wellington to provide both sales and service to the various retailers.

In the early 1950s an agreement was reached with MURPHY RADIO of England to manufacture the MURPHY brand of radios in New Zealand. This incidentally coincided with the introduction of the PYE of England brand to the local market by AKRAD RADIO in Waihi.

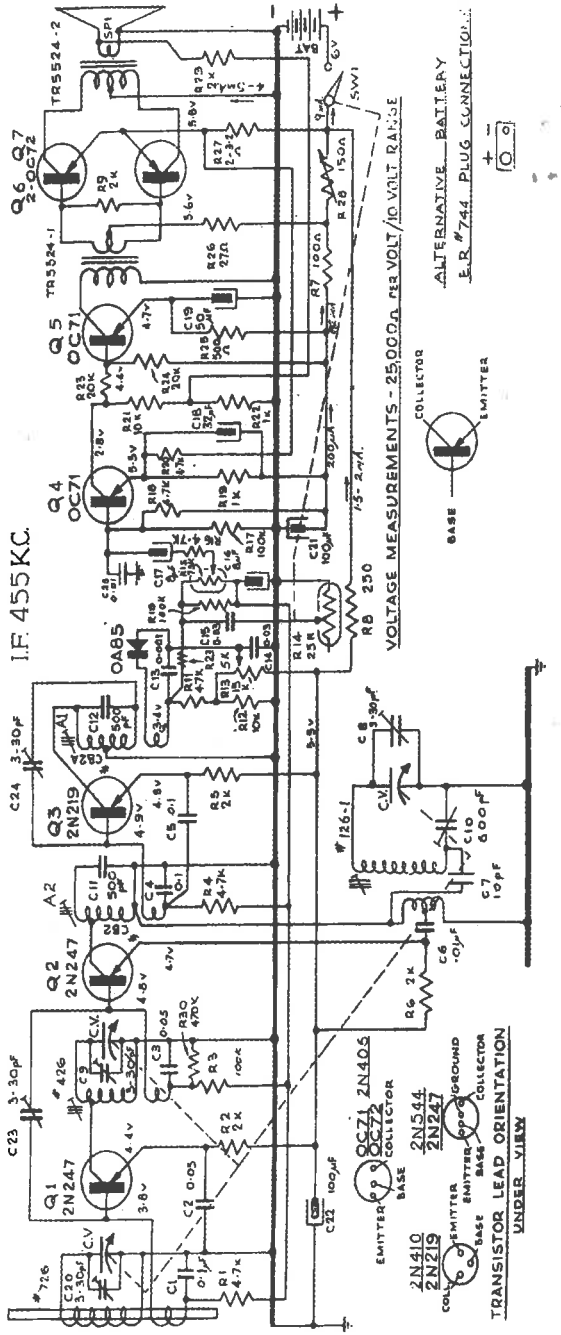
At about this time a problem started to occur with the small 2.5 cubic foot refrigerator which used an absorption unit that failed out in the field. These started coming back to the factory in their hundreds as they wouldn't freeze. The problem was caused by scale coming away from the inside of the steel pipes from which these units were made and blocking a very small diameter pipe in the system. Moreover the problem occurred just inside the warranty period and there was nothing that could be done to repair the units.

This problem continued and eventually WESTCO was forced to stop trading as they could not obtain compensation from the company which had made the refrigeration unit since this company had gone bankrupt.

The MURPHY agency was taken over by FISHER and PAYKEL and ALLIED INDUSTRIES was set up to manufacture the MURPHY brand.

At its peak I would say that WESTCO PRODUCTS and WESTCO DISTRIBUTORS together with the MERCURY RECORD division would have employed up to 150 people. Some of the people who worked at WESTCO who may be known to readers were;
Alf Chadwick, Ted Fort, Charlie Farrow, Stan Fry, Arthur Kay, Bruce Farquarson, Dacre Black, Arthur Allan, Leslie Jones, Wally Keen, Peggy Brian, Dorothy Burke, Fred McNamara, Jim Swindels, Allan Holloway, George Furgerson, Roy Stevenson, Leon Biddle, Rex Churcher, Helen Crabb, Johnny Johnston, Ralph Redfern, Gordon Hamilton, Bruce Barton, Rudy Grant, Naomi Griffin, Les Jones, George Bell, Ross Bluedon, Syd Bizant, Harry Wardell, June Bovaird, Trevor Portman, Dave Noble, Shirley Bailey, Charlie Lippiat, Mac Stead, Russell Stewart, Ken Haycock, Ray Hanham, Frank la Fenei, Ray Poole, Owen Kendall, Ron Purdey, Allan Aldale, Ron Curshaw, Mrs McConnell, Sonya Eccles, Mr Windsor, Mrs Bourke and Betty Smith. I apologise to anyone whose name I may have misspelt or whose first name has not been included in the list but after more than 50 years it is a little difficult to recall some of these details.

Further information is given in John Stokes books "The Golden Age of Radio in the Home", pages 79 to 82 and "More Golden Age of Radio", page 134.



SCHEMATIC DIAGRAM MODEL 'TRANS-PORTABLE 58'

1. All voltage measurements shown are from points to chassis, with a battery terminal voltage of 6 volts.
2. All voltage checks should be made with a voltmeter of 10 V. full scale reading and and having a total resistance of 250,000 ohm (25,000 ohm/V)
3. When making resistance checks, disconnect battery and observe the polarity of electrolytic condenser, where such appear.
4. Nominal tolerance on components makes possible a variation + 10% in voltage and resistance readings.
5. Avoid operations on the receiver with battery connected. Always re-check total battery current before permanently re-connecting battery. Never reverse the battery polarity.

ALIGNMENT INSTRUCTIONS

To Adjust Diode Bias
Clip D.C. Voltmeter (1-3 volts full scale and 10-20,000 ohms per volt) across OA85 and adjust R13 for zero volts.

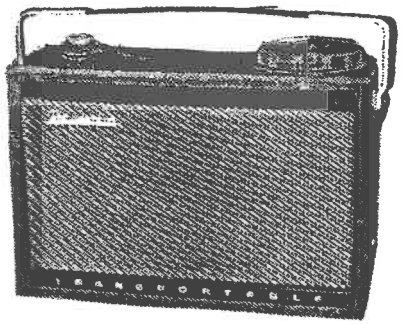
To align I.F. Amplifier
Fully unmesh variable condenser feed 455Kc/s generator through .1 mfd condenser to base of converter (Q2). Adjust A1, A2 and C24 for max. output. As the adjustment of C24 is critical A1 and A2 may need re-adjustment with change of C24.

Adjust RF Trimmers C9 and C20 for max. output at 1400Kc/s and adjust padding condenser (C10) for max. output at 600 Kc/s.

PACEMAKER TRANSISTOR BROADCAST RECEIVER

Bill Collerton

(Reprinted with acknowledgment to the Wellington Vintage Radio Newsletter, March 2000)



The NZVRS Journal for Feb 2000 featured an excellent article on Collier and Beale and among the products mentioned was the Pacemaker transistorised portable radio. I recall selling some of the first of these models in the Wairarapa district where they were popular with Country folk because of their good performance and low battery drain. The later "Transportable 58" was of course the best version.

Radio Inspectors also found the Pacemaker useful for checking reception problems and tracking down "interference".

By coincidence I recently spotted a "Transportable 58" tucked away on a corner shelf in a second-hand shop in the B.O.P. After some discussion a deal was struck with the lady shop-manager who assured me that despite being minus a battery, the radio was in working order. This advice later turned out to be wildly astray as I discovered after returning home.

The on-off switch required some attention to get it operating but the major fault was an unusual one in my experience; the loudspeaker pig-tails to the voice coil were both open circuit due to corrosion. Replacing these got the speaker back to normal operation and the radio burst into life once more.

Next, attention was given to the tuned circuits alignment and I was reminded of just how sensitive this model was in the I.F and R.F. stages. A tweak of the trimmers and stations rolled in from far and wide at excellent strength. Finally, a clean up of the oak cabinet and metal trim completed the job.

For those interested, a schematic diagram is shown, and the following is the text of a letter from H.W.Clarke giving details of how the designers had to deal with a very baffling technical problem.

RE "TRANSPORTABLE 58"

The Mk11 version of the Pacemaker transistorised portable has been in production over the past few weeks. Already its improved performance over its predecessor will be apparent, but doubtless you will be interested to know something of what we have achieved.

Some minor exterior changes such as the blue printing on the lower cabinet trimstrip will simplify the identification of the new model.

We have discontinued the use of the separate oscillator stage and now employ a self-oscillating mixer. This, together with new AVC arrangements, has resulted in an even better weak signal behaviour. For test purposes we wind a turn or two around the antenna rod and feed in a signal from a GR laboratory generator. The old set displayed a signal to noise ratio of 6.3 times whereas the figure is now 9 times - an improvement of 3 decibels What is more impressive, a one microvolt signal produces a speaker output of about 200 mW while in the previous model under the same condition the output would have been 50 milliwatts.

Some of the first production showed low-frequency distortion on strong stations. This occurred because the bass notes did appear on the AVC buss and if the IF transistor was almost at cut-off value (through the strong signal action), the peaks of low notes made the transistor sufficiently non-linear to distort. Thi,s was a fault - very hard to locate - because it depended upon the musical content of the particular recording being played and upon the station's modulation percentage at the time. We have overcome this by better filtration of the AVC line. This means a slight time lag in the response of the volume control whenever it is shifted, but it is not considered to be any problem. Further, the risk of breakdown in one of the electrolytics (C18) has been practically eradicated by a new circuit connection.

Some early receivers displayed a parasitic tendency on the extreme treble notes but alterations to the output transformer loading have cured this also. The negative feedback, which ensures good tonal response, is working over the.whole audio band.

A new physical layout has been adopted and we feel that the access for maintenance is greatly improved. The previous transistor "sockets" have been eliminated and should a transistor ever need to be replaced, the operation should be rather more convenient.

A new cabinet construction has been adopted in the interests of greater strength and we know the disappearance of the end-grain of the cabinet roof has enhanced its appearance.

Trusting this review is of value. H.W.Clarke (NZ) Ltd.

BROWN COTTON COVERED POWER CABLE

The Society has been able to purchase what we believe to be the last reel of this type of cable. It is available to members in two metre lengths with black molded three pin plugs at the old price of $2-00 each or in 10 metre lengths of cable only at $8-00 each (plus packing and postage if required). To order, contact Gerry Billman (Ph 09/6256568). Make cheques payable to NZVRS.

We apologise to those members who missed out on the 10 mfd capacitors as we have been unable to obtain more of these. There is a parts importer in Auckland who has them for $1.35 plus tax. Contact Gerry for details.

AMPLIFYING RF WITH TRIODES

R.A.(Dick) Stevenson

After de Forest had added a grid to the diode to make his famous audion the triodes that followed usually suffered from poor vacuum. Such "soft" valves were, nevertheless, found to be sensitive detectors, although erratic in operation and with a short life. It took about six years before the audion was used as an amplifier but, in the early years of World War I, soft valves were used in receivers and even transmitters, although rather too fragile for front-line conditions. Experiments on both sides of the Atlantic showed that higher vacuum was necessary for reliability and reproducibility.

In France in 1915 an improved version of the audion was patented. The "French valve" had a high vacuum and was built in Britain as the R valve. The usual receiver circuit at that time was a grid leak detector followed by a number of AF stages. (By the way, we must no longer use the older LF and HF abbreviations, but AF and RF instead, as LF now means frequencies of 30-300 kHz, and HF means those of 3-30 MHz).

Increasing the number of AF stages increased the audio output but did not alter the number of signals received as the signal to noise ratio remained the same, so some RF amplification was needed. Soft and hard triodes could achieve this to some extent but it was soon found that uncontrollable oscillation set in as gain was increased. Capacitance between the valve grid and plate electrodes was the culprit, but because of the mode of construction at that time this could not be directly eliminated. A few types of valve offering improved characteristics were built with side connections to the electrodes such as the Marconi Q and V24 or with connections at opposite ends as in the American Meiers tubes, but such layouts were not popular as their horizontal sockets took up considerable room. Nevertheless Marconi produced a successful Type 55 receiver with six RF stages using V24's and a detector using a Q valve.

Some figures published in 1922 concerning American valves available at that time are of interest:

Type	WE "D"	WE "J"	Westing-house	RCA UV201	Meiers	Moor-head	GE "G"
Grid-Plate Capacitance (pF)	10	11	4	6	3	5	5

As a comparison the "R" type French valve gave a value of 2.8 pF.

Clearly a solution had to be found to achieve useful RF amplification. The regenerative detector gave extra gain equivalent to an RF stage but needed careful adjustment and was even banned for a time because of interference to neighbouring receivers. The trouble with triodes for RF amplification was actually too much uncontrollable regeneration.

A number of ingenious circuits were designed (the Neutrodyne was a successful example), but some merely lowered the amplification below the critical level. In this rather brutal category the grid had a resistance of 200 to 800 ohms in series with it, or

was given a positive bias. More subtly, an extra coil winding could provide a degree of negative feedback to cancel out the unwanted positive oscillations. Usually the cancelling feedback was adjusted by a small-value variable capacitor (called at that time a neutralising or balancing condenser).

The procedure for neutralising was similar to the later alignment of superhets and one American step by step method was as follows:

"First, a modulated RF oscillator should be available, a bakelite screwdriver and a special tube, the same as those used in the RF stages of the set but with one filament pin sawn off at the base. Thus the same inter-electrode capacities would be present, but otherwise the tube was inoperative. (I remember using a silk handkerchief to insulate one filament pin when plugging in the valve to be neutralised - Ed)

(1) Always use headphones, not a loudspeaker. Connect antenna and ground leads then switch on.

(2) Set the oscillator at about 1000 kHz and put it near the antenna lead, but at least 20 feet from the receiver to prevent direct pick-up by the coils.

(3) Tune the receiver carefully until the oscillator signal is heard with maximum volume.

(4) Remove the first RF tube and replace it with the special tube. All tubes should light except the special one.

(a) If no signal is heard, then the stage is perfectly neutralized.
(b) If a signal is heard, even at decreased volume, then the balancing condenser for that stage should be adjusted. This is done with the bakelite screwdriver until the signal is zero or at a minimum.

(5) The special tube is removed and replaced with a regular tube. Normal volume will be restored. The procedure is repeated, replacing the second RF tube with the special tube. If a stage has regeneration, it should be adjusted to give minimum feedback during neutralisation.

As each stage would have its individual tuning capacitor and dial, a similar procedure was used to maximise the tracking. The RF valves were removed one by one and the modulated oscillator was coupled to each stage in turn. The dial was then adjusted on its tuning capacitor until they all showed the same reading. The special tube was not needed. Eventually you could say, "Set all the dials to 30" and the way was now clear for the introduction of ganged capacitors. The need for neutralisation disappeared of course with the arrival of tetrodes and then pentodes and the amount of gain available was so great that only one or perhaps two RF stages were needed.

References: 'History of the British Radio Valve to 1940" by K.R.Thrower
"Radio Telephony for Amateurs" by S.Ballantyne (1922)
"Radio Telegraphy and Telephony" by R.Duncan and C.Drew (1931)

FRIENDLY CHATS

In 1933 the owner of Scott Radio Laborarories in USA published a book called "Friendly Chats". A copy of this book was given to John Stokes and was released to me recently by Mrs Stokes. A personally signed photo is pasted in the front of the book

The Foreword and one of the pages of the book are reproduced in full below as I believe they reveal a great deal of the human side of Scott, the New Zealander who made good in the radio game in the USA.

Editor

FOREWORD

LOOKING back over years of intensive research, one fact stands out clearly when I pause to consider the record—the upbuilding of the radio laboratories which bear my name is linked and bonded with worthy friendships. It has never been my ambition to be known as the largest manufacturer in the field of radio, nor has it been my desire, as one of our comic-philosophers puts it, to become "the richest man in the cemetery." One of the deeply satisfying things about my work is that, along with a modest income from the Laboratories, it has brought me into contact with the finer side of human nature.

¶ The inspiration and pleasure that have come to me through the medium of letters and through personal visits to the Laboratories by owners of Scott Receivers, expressing their good will, have meant more to me than any other single factor in sustaining my original purpose of creating fine custom quality rather than turning to volume methods and standards.

¶ Their kindly endorsement and warmth of enthusiasm for the receiver I have built for them continues to be the stimulus which helps me to make the Scott Laboratories stand for something more than an institution of manufacture . . . that is, to give reality to the ideal of building the finest product which the science of radio has developed.

¶ Yet I am mindful of the truism that the things we build with our hands are perishable, while a true friendship goes on through the years. This is well illustrated to me in the letters I receive daily from people I have never had the privilege of meeting personally, who write to me as one of their own circle.

¶ Often months and even years have passed since a business transaction took place between us, yet the contact continues. It is from their letters, and also from the incidents told to me by visitors whom it has been possible for me to meet at the Laboratories, that the little stories in this volume were largely animated.

¶ After the day's work is done, remembering passing fragments of life that held a fleeting interest, and drawing from the inspiration of thoughts expressed by owners of the Scott handicraft in every part of the world, I sit down to jot on paper the outline of these impressions so that I may always feel akin to the human values in my work. Later these jottings are gathered into a little magazine—*Just Friendly Chats*—published monthly and mailed to Scott owners everywhere, as evidence that here at the Laboratories we are constantly thinking of those we have served.

¶ It is my hope that in thumbing over the brief stories and reflections in this book you may catch some of the spirit in which they were conceived; that they may beguile a pleasant hour now and then and, while welcoming you as a new Scott owner remind you that we regard your purchase of a Scott instrument as only the beginning of our obligation to you. It will be my purpose to keep in touch with you regularly to the end that you may enjoy maximum pleasure and entertainment from your Scott Receiver.

4450 Ravenswood Avenue,
Chicago, Ill.

ANTIQUES

AN OLD DESK stood in the window of a well known antique shop. Though much worn, still there was a handsome look about it, like a grizzled grandfather, wrinkled and faded but showing the traces of a former power in his stooped shoulders and calm eyes. Somehow the jutting ends of the old oak desk made one think of wide shoulders, and the old hinges of seeing eyes.

And one half imagined that desk *could* see and might hobble off like an old man. Well, do you know, one day it disappeared and the proprietor told us it had been taken at its price of Four Hundred and Fifty Dollars. Four Hundred and Fifty! "A very fine antique," assured the proprietor. "An old lady bought it; said her father had a desk much like it. Said she could look in the crevices of it and almost hear her mother laughing; could trace on its ledges the letters her father had written to her brother when he wore a soldier's uniform; could tap on its oak panels and watch a march of friends of forty years ago and blot again the overflow of ink when as boys and girls they wrote their wishes on slips of paper and drew lots out of grandfather's black silk hat.

"That's what makes fine original antiques worth more than new wood. Memories, sir; memories, personal and historic, sir. You can't sell them by the pound."

I had often admired that desk in passing, not knowing just why.

The Golden Rule has not been tried and found wanting. It has been found difficult and seldom tried.

GOLDEN KNIGHT model BTR 48466

AN INTERESTING PROJECT

Paul Woodcock

An item in a local neighbourhood newsletter caught my eye a little while ago. The Secretary for Huia Settlers Museum (West Auckland) had been donated a 'Golden Knight' valve radio by S. B. (Sam) Fletcher a life time resident of Huia and former President of the Museum. Is there anyone who could fix it?

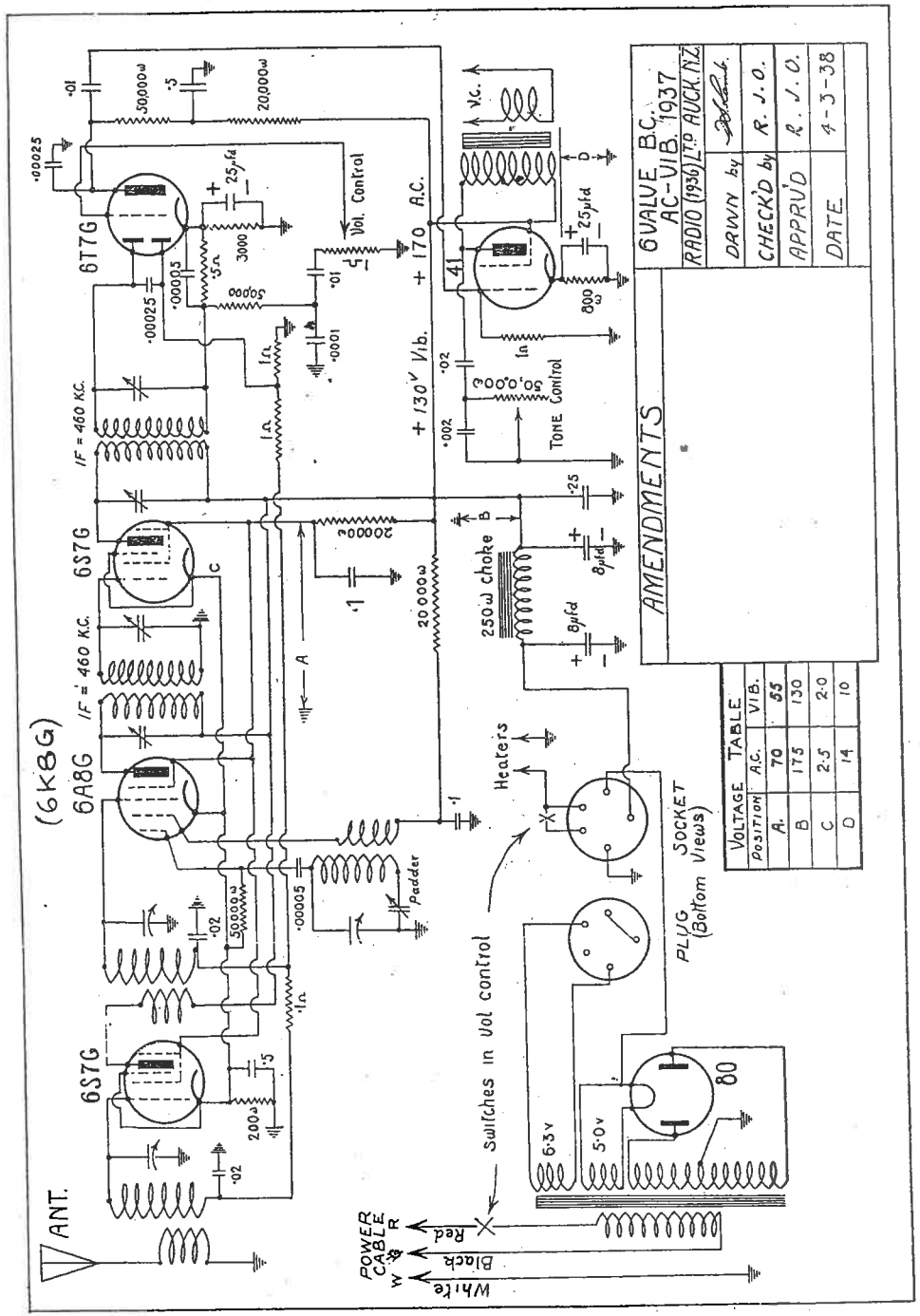
After a few weeks went past I got round to phoning the writer, Norm Laing, about the radio and "no", he hadn't had any other response to his article. Hoping I hadn't let myself into a heap of trouble I offered to take it away and look into getting it running again. Thinking that I might be able to get it going with my limited knowledge if nothing too serious was wrong or, if necessary, get more help from other club members.

The radio turned out to be a handsome tombstone, broadcast only, model BTR 48466 circa 1937. (Radio Limited manufacture). The valve line up, according to the valve sockets, was 6S7G, 6K8G, 6S7G, 6T7G, 41 and 80 rectifier. As can be seen in the photo there is an extra power cord running from the transformer to a socket on the back of the chassis marked 'vib' This would allow a battery/vibrator power supply to be simply plugged in.

The once remote little settlement of Huia (Western side of the Waitakere Ranges on the Manukau Harbour) didn't get a mains power supply until around 1954. A discussion with Sam's brother revealed that the radio was bought in 1939 from the Farmers Trading Co. for a price of 16 pounds, and was used for 15 years or so powered from a battery/vibrator power supply.

There wasn't that much wrong with the radio. I replaced both power cords - the old rubber insulation was hard and brittle. I took the old electrotytic capacitors out of circuit and fitted replacements underneath the chassis. I changed a couple of original wax coated paper capacitors. Previous work on the set had already replaced most of the original paper capacitors.

The power supply transformer seemed to be intact. I ran the set with the rectifier valve only in place for a few hours using a 25W light bulb in the circuit. At this stage I was relieved to find a switch on the back of the set turned on the dial lights. The switch would have given the operator the option of reducing the drain on the battery power supply. With all the original valves back in place a variac was used to slowly liven things up. Two valves remained cold and two others weren't true to the valve socket labels. Ross Paton was able to help out with the correct valves and soon the set was up and running. It performs very well, has low background noise and a nice clean sound. Murray Stevenson was able to supply the circuit diagram.



PHILCO Model 656

MADE IN NEW ZEALAND

SPECIFICATIONS

Type of Circuit and General Description

Six-tube A.C. Superheterodyne circuit with five tuning bands having continuous frequency coverage of 540 K/cs. to 22 MC on the first three bands. The last two bands are spread, frequency coverage being 9.4—12 MC and 14.9—18 MC.

A tuned R.F. stage is used on all bands except band-spread where the R.F. circuit is untuned. A frequency converter followed by a high gain I.F. amplifier and diode detector completes the R.F. section of the receiver. The second diode of the 6Q7G tube is used for A.V.C. and controls R.F. and I.F. tubes. Bias for these tubes and delay voltage is supplied by a voltage divider network across the filter circuit which is in the negative lead of the power supply. Tone control is effected by inverse feedback voltage from the plate of the output tube to the centre tap of the tone control potentiometer which is the grid resistor of the 6V6G.

TUBES:

R.F. Amplifier 6U7G.
Converter 6K8G.
I.F. Amplifier 6U7G.
Detector and 1st Audio 6Q7G.
Output 6V6G.
Rectifier 80.

TUNING BAND FREQUENCIES:

Broadcast	540—1600 KC
Short Wave 1	2.3—7.5 MC
Short Wave 2	7.0—22 MC
Band Spread 1	9.4—12 MC
Band Spread 2	14.9—18 MC

INTERMEDIATE FREQUENCY: 455 KC

Power Supply—230 volt A.C., 50 cycle.
Power consumption—50 watts.

VOLTAGE CHECKS

All the following voltages were measured with a 20,000 O.P.V. meter and if an instrument of lower sensitivity is used, allowance must be made for the fact.

It is pointed out that these voltages are for an average receiver with supply voltage at 230V and departure from these figures does not necessarily indicate a fault; variations will be noted due to differing mains voltage and normal circuit tolerances.

All measurements are taken between point indicated and chassis.

Measuring Point.	Chassis fitted with P.M. Speaker.	Chassis fitted with E.M. Speaker.
Power Transformer Secondary	300-0-300 A.C.	360-0-360 A.C.
H.T. Max. (Rectifier fil.)	260	245
6V6G—Cathode	14	12
6Q7G—Plate	80	75
6U7G—(R.F.) Plate	165	145
6K8G—Osc. Plate	150	140
6K8G—Cathode	3	2
R.F. Osc. and I.F. Screens	90	85
R.F. and I.F. Bias (at junction point of network across choke or field)	-3	-2
Voltage across choke	-40	
Voltage across field		-120

ALIGNMENT PROCEDURE

EQUIPMENT REQUIRED:—

All-wave signal generator and output meter.

(N.B.—Before commencing alignment it should be remembered that the receiver has been correctly aligned at the factory and in general only small adjustments will be required except in cases of oscillator coil or trimmer replacements.)

1—Connect output meter across output transformer primary and signal generator to mixer grid of 6K8G through a .1 mfd condenser—set generator at 455 K.C.—turn volume control to maximum.

2—With wave switch in broadcast position and gang fully open, adjust trimmers 1, 2, 3 and 4 in that order. Repeat the procedure and check for correct alignment by tuning generator through resonance to observe that there is only one peak of correct frequency.

3—For correct alignment of R.F. stages of the receiver a standard dummy aerial should be used. If this is not available use a 400 ohm resistor between generator and receiver for all shortwave ranges, and a 200 mmfd. condenser for broadcast frequencies.

4—See that dial pointer is correctly lined up. It should be set at the extreme low frequency end of the dial with gang fully closed.

5—For all subsequent adjustments the generator is connected to the aerial terminal of the receiver through the appropriate termination. (See 3.)

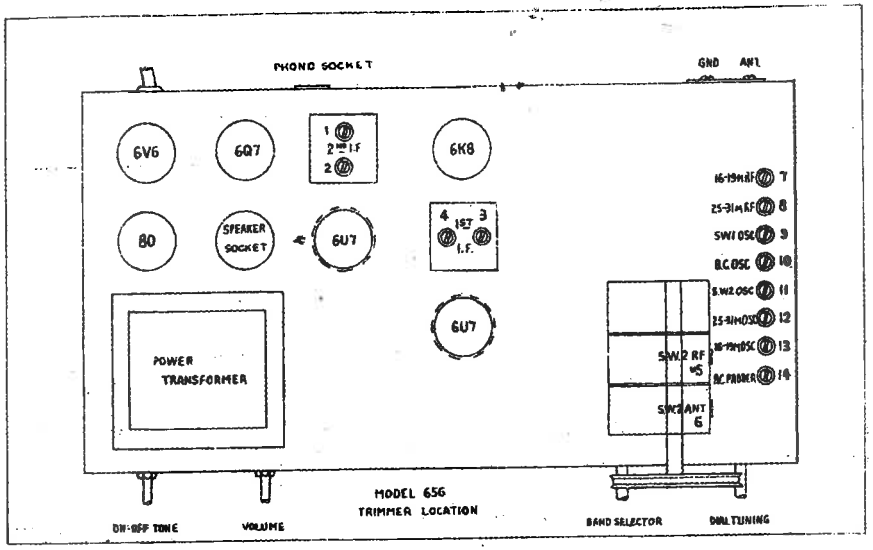
6—Set waveswitch to S.W.2 and tune generator and receiver to 17 MC. Adjust C11 (Check that the weaker image signal appears higher on the generator scale, i.e., 17.91 MC). Adjust C5 and C6 for resonance.

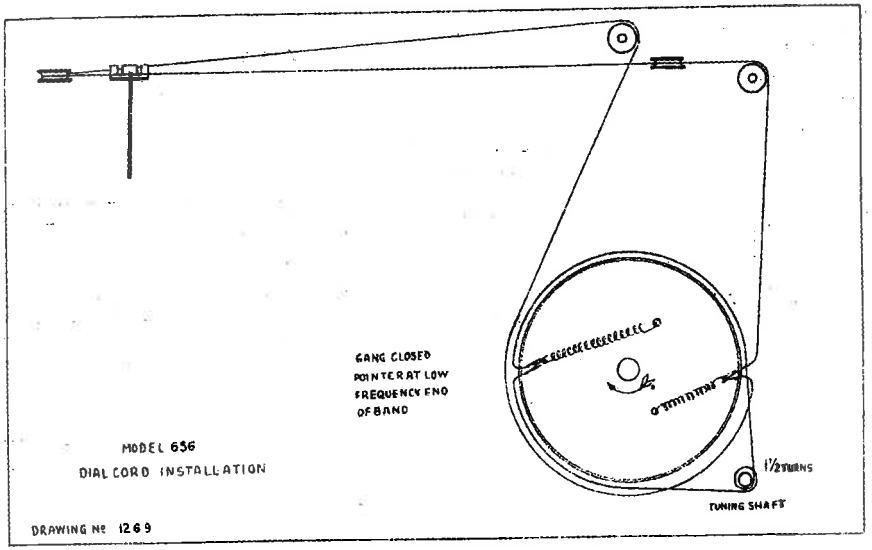
7—Set waveswitch to Broadcast and generator and receiver to 1400 KC. Adjust C10 rocking gang for maximum output. Set generator and receiver to 600 KC—adjust C14 rocking gang for maximum output—again adjust C10 at 1400 KC.

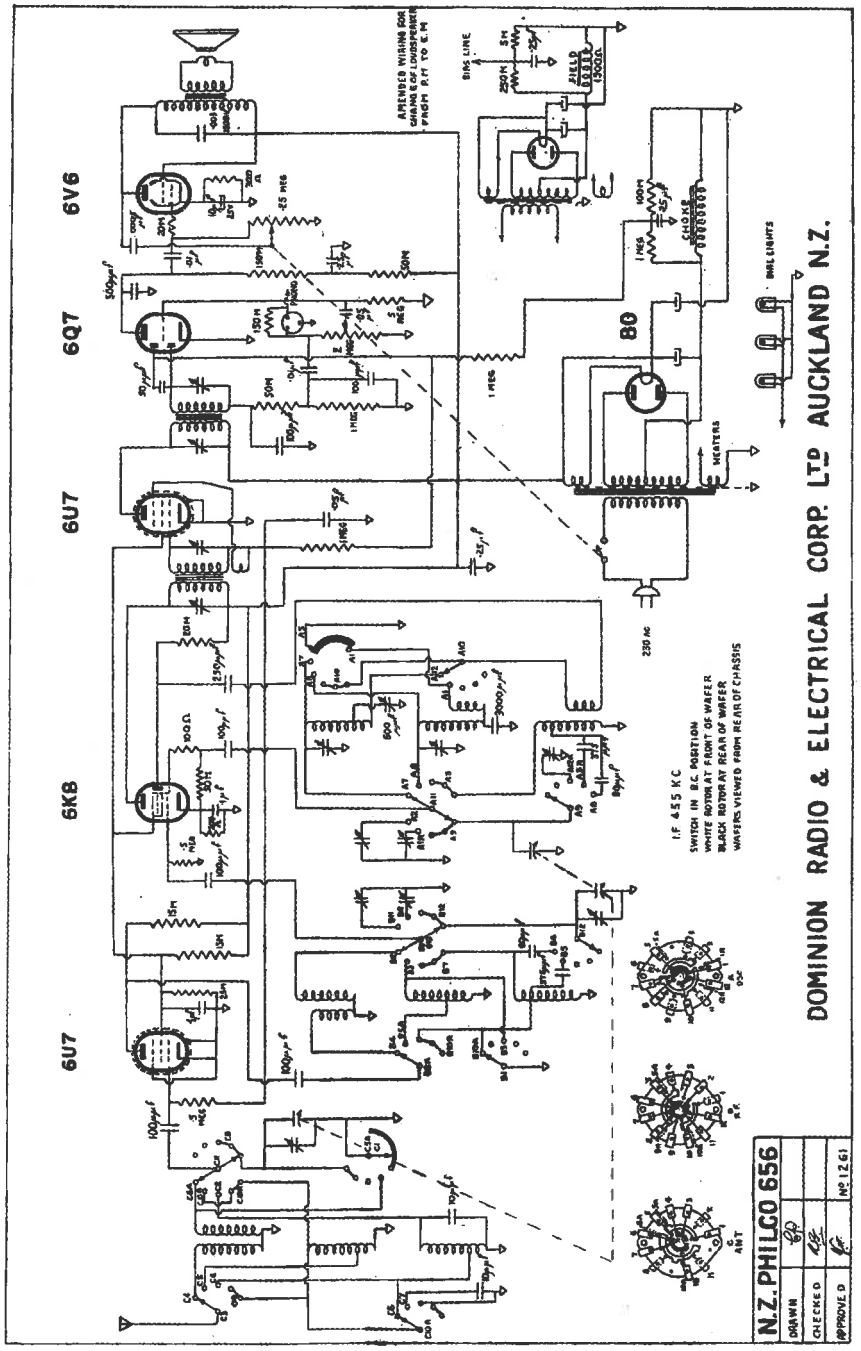
8—Set waveswitch to S.W.1 and generator and receiver to 6 MC. Adjust C9 (check for image).

9—Set waveswitch to Bandspread 2. Set generator and receiver to 17 MC. Adjust C13 (check for image as in "6"). Adjust C7 for resonance. (This trimmer has two peaks and should be adjusted to the inner peak, i.e., greater capacity).

10—Set waveswitch to Bandspread 1. Set generator and receiver to 11 MC. Adjust C12 (check for image). Adjust C8 for resonance (to inner peak).


PHONO SOCKET
GND
ANT
6V6
6Q7
6K8
80
SPEAKER SOCKET
6U7
I.F.
POWER TRANSFORMER
SW.2 RF
SW.ANT
16-19m RF
25-31m RF
SW1 OSC
B.C. OSC
SW2 OSC
25-31m OSC
16-19m OSC
B.C. PRIMER
ON-OFF TONE
VOLUME
MODEL 656
TRIMMER LOCATION
BAND SELECTOR
DIAL TUNING


GANG CLOSED
POINTER AT LOW
FREQUENCY END
OF BAND
1½ TURNS
TUNING SHAFT
MODEL 656
DIAL CORD INSTALLATION
DRAWING Nº 1269


6V6
6Q7
6U7
6K8
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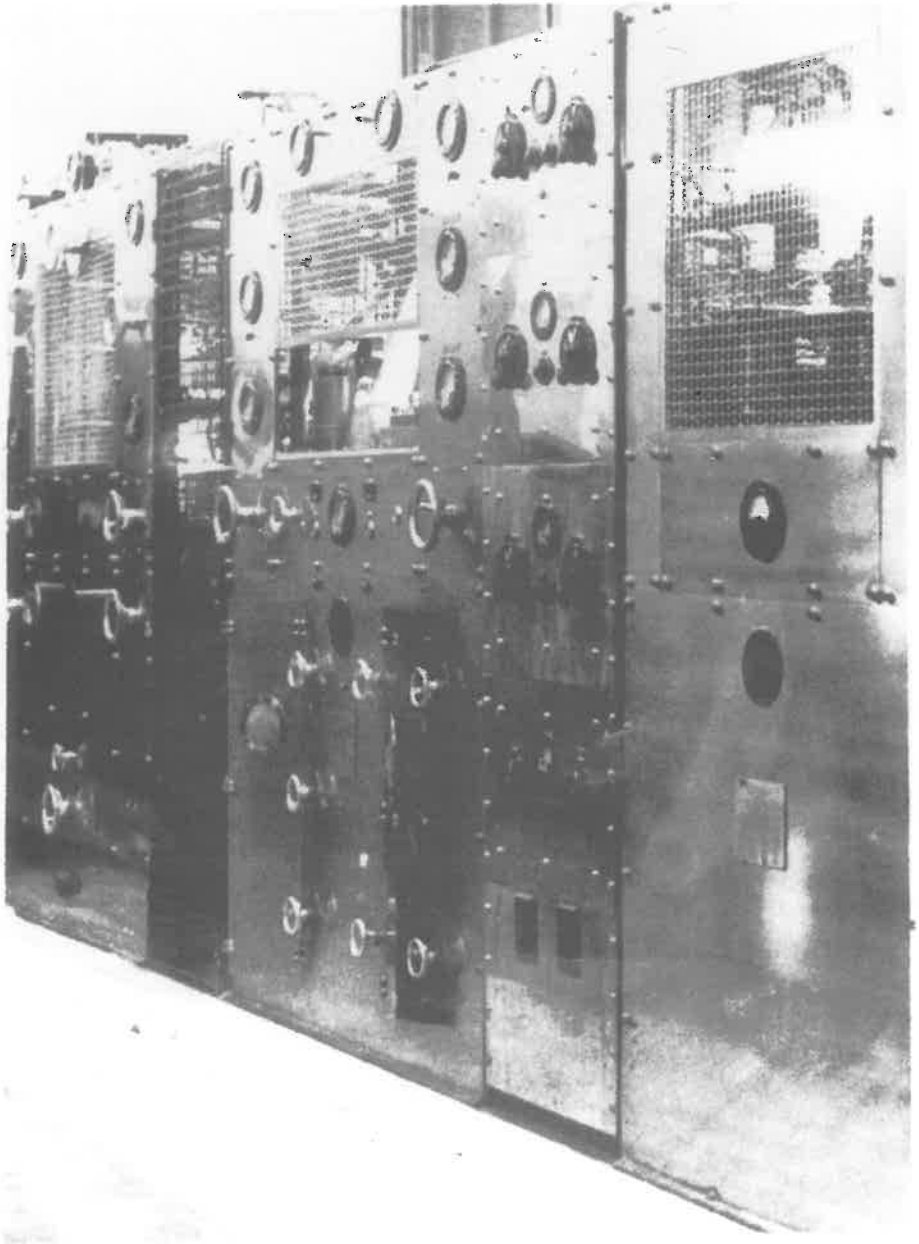
80
DOMINION RADIO & ELECTRICAL CORP. LTD AUCKLAND N.Z.
N.Z. PHILCO 656
DRAWN
CHECKED
APPROVED
Nº 1261
I.F. 455 KC
SWITCH IN B.C. POSITION
WHITE ROTOR AT FRONT OF WAFER
BLACK ROTOR AT REAR OF WAFER
WAFERS VIEWED FROM REAR OF CHASSIS
HEATERS
PILOT LIGHTS
BIAS LINE
ANT
GND



A.W.A 3 kW "BRASS" TRANSMITTER (WELLINGTON RADIO - 1929)

SHORT WAVE ON A CRYSTAL SET

George King

I read with interest the article by Bill Heinz in the August issue of the Bulletin, in which he verified receiving a short wave news broadcast on a crystal set in Wellington from "Radio Station ZLT7 of the New Zealand Post & Telegraph Department" in about 1944.

As a relatively young Post Office Radio Technician employed at the Wellington Radio Transmitting Station on Tinakori Hill in 1943, I can confirm that what Bill heard was indeed ZLT7

In 1943 the Defence Department approached the Post Office Director General with a request as to whether the nightly 9 o'clock news from 2YA could be broadcast to the South Pacific so that the New Zealand Forces could keep abreast of what was happening at home. This was agreed to and as a result a speech line was provided from the 2YA News Room to a transmitter at Wellington Radio affectionately known as "The old brass b.....". This transmitter was purchased from A.W.A. Ltd. for the Wellington to Sydney Radiotelephone Service which opened in 1930. It occupied a considerable floor area and the panels and tuning control wheels were all of solid brass. The output power was rated at one kilowatt on telephony and from all accounts this provided a satisfactory signal level for the Pacific Forces to receive the 9 o'clock evening news from New Zealand on short wave.

This however, is not the end of the story. A certain technician who shall remain nameless, considered that surely the Troops in the Pacific would long for something more than a mere news bulletin. On his rostered 4pm - Midnight shift he decided to bring on duty his electric gramophone turntable and pickup, along with a selection of his favourite jazz records. For some thirty minutes prior to each 9 pm news, the modulator of ZLT7 became alive with the sounds of such famous bands as Tommy Dorsey, Duke Ellington, Woody Herman etc. This "test music" prior to the 9 o'clock news became an instant hit with the South Pacific Forces, although their enjoyment was to be short lived. When a letter of appreciation from the Army Commander, South Pacific arrived on the desk of the Post Office Director General and ultimately the Engineer-in-Chief, Radio Section, I think it sufficient to say that "All hell broke loose". The unofficial test programmes were never again part of any ZLT7 transmission.

The enclosed photograph features the famous A.W.A. brass transmitter at Wellington Radio which opened the Wellington to Sydney Telephone Service in 1930* and years later was to provide Bill Heinz with his surprise reception of short wave on a crystal set. The transmitter units depicted in the photo are, from the right, the main rectifier unit, the exciter unit, the driver unit and the final stage in which were installed two large type MT9F valves. Not in view, to the right, is the custom built modulator unit supplied by Collier & Beale Ltd. to replace the original modulator which employed water cooling.

* A little more detail about this radiotelephone service is given in an article "Overseas Radio-Telephone Reception in 1930" published in this journal for May 1990, Vol 11, no 1, page 16.

LETTERS TO THE EDITOR

I would like the committee to consider changing the date and time of NZVRS meetings.

The present time of 7.30 on Monday night makes it very difficult for "out of Auckland" members to attend. Anyone within a few hours commuting distance of Auckland has to take time off work on Monday to arrive by 7PM. Unless they are prepared to drive late at night and arrive home in the early hours of Tuesday they also need to take time off on Tuesday.

Even for Auckland members, most of whom are getting older each year (except me) the thought of driving home at 10.30 in the evening makes them less likely to attend.

My suggestion is to change the time to 10AM Sunday. This would allow those not living in Auckland to make it a day trip or take the weekend and return home in daylight.

I realise that the hall has been booked in advance but I am sure it, or some other hall could be booked for 10AM Sunday.

Rod Osborne, Tauranga.

I would like to thank those members who took the time to show me their collections while I was on holiday in Auckland recently. Special thanks to Ernie, George and Jerry of Auckland and Rod Osborne of Tauranga.

Eddie Wood, Invercargill

HINT Keep your NZVRS bulletins tidy on your bookshelf. A 3 Litre "Chateau cardboard" wine cask cut diagonally makes an ideal holder for these. It also makes a sturdy box for sending valves or other fragile items through the post.

Arthur R Williams

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

390 HMV's model 471, RCA Victor model 128 and RCA Victor model 143. Photos, circuit, features. Radio Bygones No 61 Oct/Nov 1999, P5.

391. Loftin-White Amplifier. design, circuits. Radio Bygones No 61 Oct/Nov 1999, P18.

392. Aircraft Radio - a Brief History (1899-1939). Photos descriptions. Radio Bygones No 61 Oct/Nov 1999, P22.

393. Radion type 6L.5. description, circuit. Wellington Vintage Radio Newsletter, Sept 99, P4.

394. The Spanspace Four (1927). constructional details, photos. Wellington Vingtage Radio Newsletter , Sept 99 P8.

395.Zenith 5S-237 Chairside Radio. circuit, photo. Wellington Vintage Radio Newsletter, Nov 99, p6

396. More on the Crosley Book Condenser. Photos, patent drawings, description. Antique Radio Classified, Vol 17/1, Jan 2000, p8

397 Recreating a Timbertone speaker. diagrams, description. Antique Radio Classified, Vol 17/1, Jan 2000, p10

398 Rebuilding an Atwater Kent horn speaker driver. Antique Radio Classified, Vol 17/1, Jan 2000, p18

399 The Clydelco Crystal set. BVWS bulletin, vol 24/4, Winter 99, p7

400. My Wind-up Wireless, The Scheidner "Turny". Photo, description. BVWS bulletin, vol 24/4, Winter 99, p11

401 Marconi-Osram Valve - extract from The Saga of Marconi Osram Valves, part 1 - the story up to 1919. BVWS bulletin, vol 24/4, Winter 99, p12

402. Great Scotts! and McMurdo Silvers (not forgetting the occasional Midwest) Many photos, some descriptions. BVWS bulletin, vol 24/4, Winter 99, p22

403. Restoring the McMichael 382. photos, descriptions, schematic. BVWS bulletin, vol 24/4, Winter 99, p32

404. Aircraft Radio - a Brief History - Part 2, from WW2 onwards. photos descriptions. Radio Bygones no 62, Christmas 1999 p16

MONSTER RADIO GARAGE SALE

Sat. 25th Nov. 2000 at
"Melody Park" , 38 James Laurie St, Henderson.
9.30 am start time.
Large quantity of radios, parts, valves, books and lots of test gear.
Some free, some cheap, some expensive.
This is a combined vendor's and deceased member's collection of surplus items, mostly sold without reserve.
Refreshments provided
E J (Ned) Matich. Ph 09/5364400

MARKETPLACE

Advertisements for the next issue must reach the editor by the 15th January 2001. Ads must be either hand printed, typed on a separate page or emailed. No verbal or phone ads. Remember to include your name address and phone number. There is no charge for ads but the NZVRS is not responsible for transactions between members. Address ads to Reg Motion, 2A Hazel Terrace, Tauranga, New Zealand or email regmotion@xtra.co.nz

AVAILABLE

Columbus 90X (going well), Two Bell Colts, Philco 5 valve plastic, Zenith 5-R-312A, Zenith H500-5H40 Transoceanic, Zenith 6 valve Waltons cabinet with shutter dial (going, needs work), Edison Fireside Phonograph with two piece horn plus 80 tube records. Mal Johnson, Ph 09/4370347.

HMV 128 "magic brain" console, complete but untidy, $40. Ian Sangster, 75 Anawhata Rd, Piha 1232. Ph 09/8149597.

Repro wood knobs for vintage radios. AK 206, 217, etc., RCA Victor, Stewart Warner beehive etc. $5 each. Can also do knobs for Wells-Gardner (copper ring insert) and large types as used on A1, 7L etc (similar Columbus without ship design). Also Zenith large "flying saucers", "top hats" and "stetsons" with Z engraved from $6 to $7-50. Other types can be made to order. Arthur R Williams, 26 Centre St, Invercargill. Ph 03/2168985. email arvmwilliams@xtra.co.nz

WANTED

Vitavox DU120, 12" speaker. Ian Sangster, 75 Anawhata Rd, Piha 1232. Ph 09/8149597.