

# Marketplace

Members wishing to advertise in this space should ensure that their ads reach the editor by the 21st of the month preceding publication. Deadline for the next issue is 21st July, 1988. Make sure to include your full name, address and telephone number. There is no charge for this service. **NOTE:** no telephone or verbal ads accepted. **ADDRESS ADS TO:** The Editor, NZVRS Bulletin, 281-C Hillsborough Rd, Mt Roskill, Auckland

## AVAILABLE

Hallicrafters Super Skyrider 13-tube Receiver c.1938; Canadian Marconi type SMR-3 marine receiver with manual; Hallicrafters S-40 receiver; also various military items. (some mods); Trio 9R-59 receiver, Sell or swap. Ray Knowles, 507 Wellwood St. Hastings Ph. (070) 84338

Parts for Stewart Warner model 300 battery set - 3 metal dial plates and 3 matching pointer knobs, plus group of 5 metal-sleeve UV sockets and intact wiring mounted on orig. bakelite strip. Sell for \$15 or WHY. John Stokes, 281-C Hillsborough Rd, Auckland Ph. 656-615 after 6pm

Courier 7-valve; Courtenay 75, both repolished; Philips Theatrette; power transformer Ekco Sw86. Offers wanted. A. Jones, 10 Crowe St, Dunedin Phone 37176 Dunedin,

Suitable for restoration - Kreisler mod 11-20 chassis working, bakelite cabinet broken; Gulbransen Al Teledial (1937); Rogers 4825; Golden Knight PBK (white); Philips BZ126a; AK60 chassis; Ak55 Chassis; Philco 202 and spare cabinet; Radio Ltd RBG chassis only Ultimate RAW portable (white); Philco 353 roll-top portable (1953); Skyscraper RBE; Beethoven SG Minor 4 (1929) portable chassis only; Philips 2515 (QP) cabinet only; Ultimate RU 1947; Philco 401 working, cabinet (blue) cracked (1954)  
Don Strange, 10 Pendlebury St, Titirangi, Auckland Ph. 817-8611

RCA chassis (3) one is 9T-1; Silvertone aero dial; Ultimate 6LDW; Courier 7CAW; Murphy B40 transmitter \$150. Sell or swap, prices are negotiable. Peter Escher, 104 Scenic Drive Titirangi, Auckland Ph. 817-3217

AVO valve characteristic meter (VCM) Mk. III, with data book and circuit diagram. Good working order (Intended for those with a professional interest in valves). Also some parts available for Mk. I and Mk. II models. Don Beswick, 283 Happy Valley Rd Wellington 2, Ph. 836-723

## WANTED

Knobs, set of 5 wooden for Columbus 75; set of 3 wooden for Ultimate 524; 3 bakelite for Ekco brown SW86 (tuning knob not required); Wavechange switch for Zenith 6S-128 Mike Coatham, 61 Moana Cres, Dunedin

Oscillator coil for AWA Radiolette R29 or an old chassis with coil would be OK Paul McLaren, 11 Heaton Tce, Wellington 2, Ph. 844-778  
Chassis for 1931 Ultimate with dial offset to left (see consolette p. 69 Golden Age) Cromwell rectangular nameplate blue/silver; celluloid dial scale for Philco 84E see p. 110 Golden Age; Brass plate approx 3" square marked VOLUME for Radio Ltd 1934 chest Dial escutcheons for - Troubadour (p. 78 Golden Age), Ultimate 4-V TRF (p. 70 Golden Age) Stewart Warner peephole. Buy or swap. Ray Knowles, 507 Wellwood St, Hastings Ph. (070) 84338

Chassis for Majestic 50 (dial offset) any condition as long as complete Frits Willemsen, 42 Challinor St, Hamilton Ph. 493-580

Loewe OE333 with dud 3-in-1 valve, offers; Telefunken Arcolette 3W in working order. \$220. Dieter Bardenheier, 50A Park Rd, Titirangi, Auckland Ph. 817-7268

Instruction book or chart for Supreme model 504-A valve tester John Stokes, 281-C Hillsborough Rd, Auckland Ph. 656-615 (after 6pm)

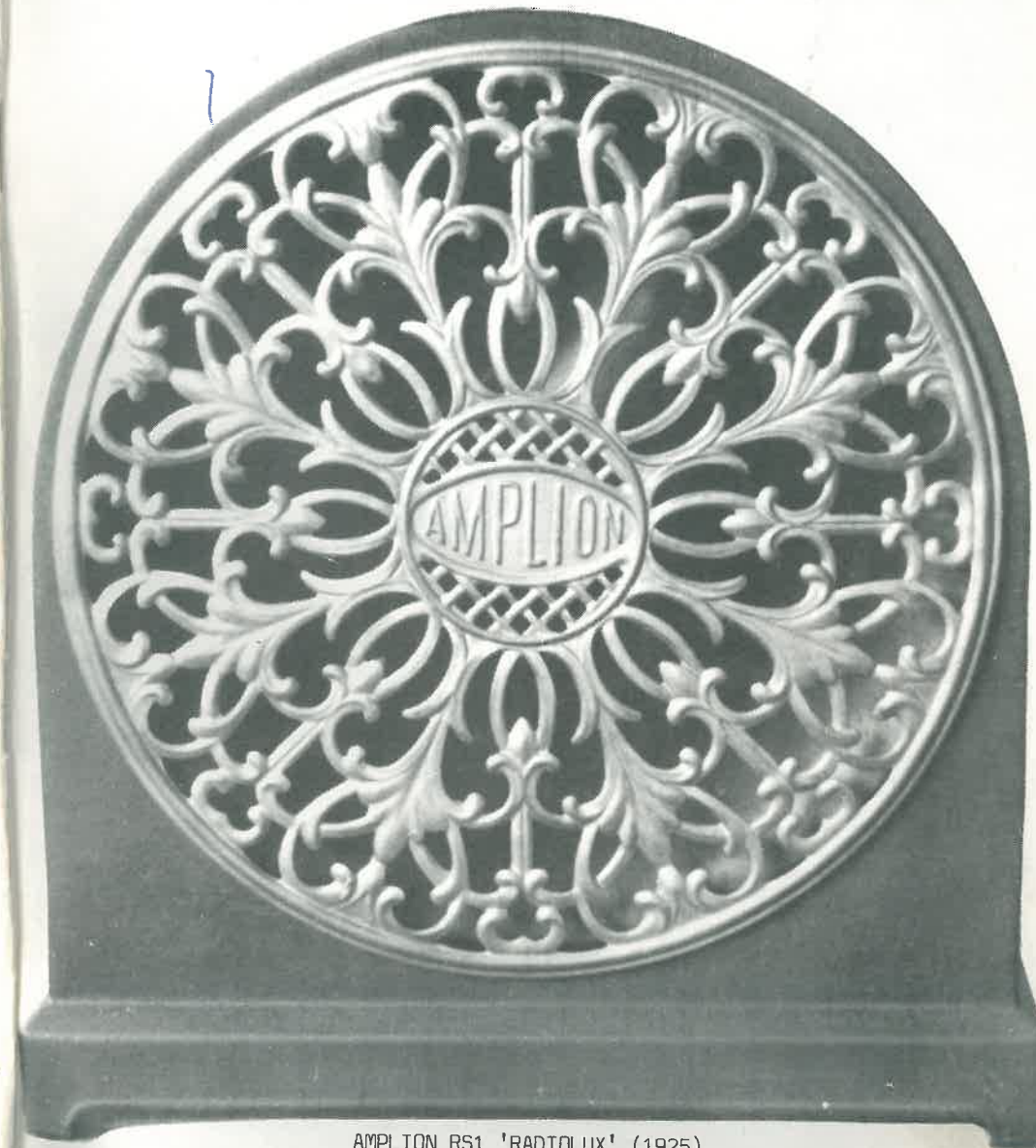
Any plastic Radiolette in good condition, appropriate \$\$\$\$ paid. Philip Collins, 10965 Rochester Ave. #201, Los Angeles Ca. 90024 USA Tel. (213) 479 0167

NZVRS

BULLETIN

Vol. 9 No. 1  
May 1988

NEW ZEALAND VINTAGE RADIO SOCIETY



AMPLION RS1 'RADIOLUX' (1925)

*Jan Ranson's horn speaks p. 13* *file copy*

*5/18 For Sale*

# NEW ZEALAND VINTAGE RADIO SOCIETY

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

**PRESIDENT:** Bill Farmer 26 Irirangi Rd, One Tree Hill, Auckland Ph. 665-549

**SECRETARY:** Don Strange 10 Pendlebury St, Titirangi, Auckland Ph. 817-8611

**TREASURER:** Bryan Marsh, 20 Rimu Road, Mangere Bridge, Auckland Ph. 667-712

THE N.Z.V.R.S. BULLETIN is published quarterly in the months of February, May, August and November. Contributions are welcome and should be sent to the Editor.

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**BULLETIN MAILING:** Tim Gash, 32 Staveley Ave, Mt. Roskill, Auckland Ph. 657-525

## Editorial Notes

One of the things which has struck me when visiting the homes of collectors, both in this country and overseas, is the diversity in the way radios and associated items are displayed. Although it is very much a matter of personal taste, there must be few collectors who do not have at least one or two choice items on display which can be shown to admiring visitors.

In many cases, of course, it is lack of space rather than lack of desire which prevents a collector from mounting a full-blown display. Lacking a separate room for use as a display area, many people are restricted to using an odd corner of the living room where radios rub shoulders with other unrelated collectibles or household effects. Even so, these 'in house' arrangements can often be very effective and may range from perhaps just one choice console model which blends in with the rest of the furniture, to a small wall-mounted display which can look very attractive if carefully arranged. After all, any sets displayed in a living room are in their natural habitat, so to speak.

Those people who are fortunate enough to have a separate display area, which may range from a small spare bedroom to a large basement, can usually let their imaginations run riot when it comes to arranging things to suit themselves. This will obviously entail the putting up of shelves, but it may be hard to resist the temptation to continue putting up ever more shelves until the place looks more like an overstocked warehouse than a nicely arranged display. But, at least, that is better than just stacking sets one on top of the other, (something that cannot be done by those who collect only cathedral radios!).

It seems that the first law of collecting is that no matter how much space is available the collection will inevitably grow until all the space is filled to overflowing. It takes a strong willed person indeed to resist the temptation to add just one more set!

I once visited the home of a collector (not in N.Z.) who had radios stacked in every room in the house, including the toilet. His wife eventually left him. Coming nearer to home, another true story: a one-time collector amassed so many radios that his wife was driven to issuing an ultimatum - "Either they go or I go". They went. He now has only one set left. These are extreme cases, of course, but they may serve as a warning to others.

J.W.S.

## Letters to the Editor

As a newer member of the club, I feel I should comment favourably on the handling of the sale (5-3-88) for the estate of the late Graham Jessop. The amount of work put into this by some members must have been considerable, and I hope they received some well deserved consideration for their efforts. I think that thanks should also be extended to them from club members for this effort.

The sale clearly showed efficient and well considered organisation, pricing and grouping of goods to achieve a quick clearance for the family - a clear cut result and return. Though the acquisitive streak in some members is somewhat incongruous at such a time, the result was a quick, efficient sale. Full marks and thanks must go to the organisers.

Jack Whittaker.

TO THE 'TRADE AND EXCHANGE' PRACTICAL JOKER APRIL 1st 1988

May the curse of ancient radio descend on you by medium waves of borer to de Forest your cabinets, may voltas surge and soften your tubes so that when your Armstrong supers heterodyne and your TRfs howl, you will yell blue Arcturus until your Tesla Hertz and finally your capacitance leaks and you fade away into a hum.

(Signed) ON-MI-PHONE

Ed. Note: This 'odd ode' was prompted by the appearance in an Auckland 'Trade and Exchange' paper of the bogus ads shown here. It was someones idea of an April Fools Day joke but the people whose phone numbers were given were not amused.

GRAMOPHONE - Granny bedside type with 1ge horn speaker (metal), 150W. hybrid amplifier, horn speaker can be hand held if so desired, approx 1930, needs new power cord, \$125 ono. 667-712

FREE for removal, 1ge shed with a few old radio cabinets, eg. Columbus etc, all must go. 836-4400

RADIO, valve type, Mickey House, Astor, has a little borer, but otherwise in reas. running, order, also incl. wth radio is special trap antennae, \$125. 604-213

RADIO, wireless set, 1920's upright type, v ornate, made by Roman Catholic Church to celebrate discovery of Turin Shroud, \$125. 403-8388

WIRELESS set, vintage type, '1913, Coni-mar, battery set, wth bicycle generator incorporated in unit, made in Suva by Lofa Company Ltd, very collectible, quite rare, possibly only one in N.Z. \$325 ono, or swap w.h.y. Ted 836-4400

GRAMOPHONE - Granny bedside type with 1ge horn speaker (metal), 150W. hybrid amplifier, horn speaker can be hand held if so desired, approx 1930, needs new power cord, \$125 ono. 667-712

RADIO parts, valves galore, early 1902 types, wth Tip-Top type bases, & top off tops, blue & green types, mostly all in working order, except for early ones around 1902, which have mostly lost their vacuum, ideal collectors items, for those people wth the really rare 1902 radios, from \$10 ea, ask for Barry 438-823

## OBITUARY

DEREK DESMOND THOMSON (88)

Derek Thompson, father of Mark Thomson, was a licensed ham since 1934 and remained active in this field until 1984. He was also a qualified radio serviceman and worked for Johns Ltd in the 1930s. His lifelong interest in radio has been passed on to his son Mark who is shortly due to 'inherit' the same call-sign (ZL1KB).

## CHANGE OF EDITORIAL ADDRESS

The attention of readers is drawn to the following change of address. In future please ensure that all Bulletin advertisements and letters to the editor are sent to :-

281-C Hillsborough Rd  
Mt Roskill  
AUCKLAND 4

\* 20-11-93 All talk, as usual! 3

# THE CROSLLEY 130

Peter Lankshear

Your Editor has asked me to comment on the accompanying circuit of the Crosley 130, dating from 1932. Compared with more conventional receivers, the 130 is, to say the least, different. It should be pointed out that in 1932, receiver design had not fully stabilised, and it was inevitable that some ideas would be tried and found to be not worth developing further. It is easy now to be critical of unsuccessful ideas but we should remember that the designers of the time were at the sharp end of a rapidly developing technology, and had much to learn.

A cursory study of the circuit is sufficient to show that the detector and audio system are unusual. The use of 6.3 Volt 42's with 2.5 volt valves can be easily explained. In 1932, the 2.5 volt series was the mainstay of A.C. sets, but the output pentode was the directly heated 47. Crosley and Philco were both quick to recognise the merits of the indirectly heated 42 pentode. Within a year, the indirectly heated 59 and 2A5 had become available and in general use in 2.5 volt receivers.

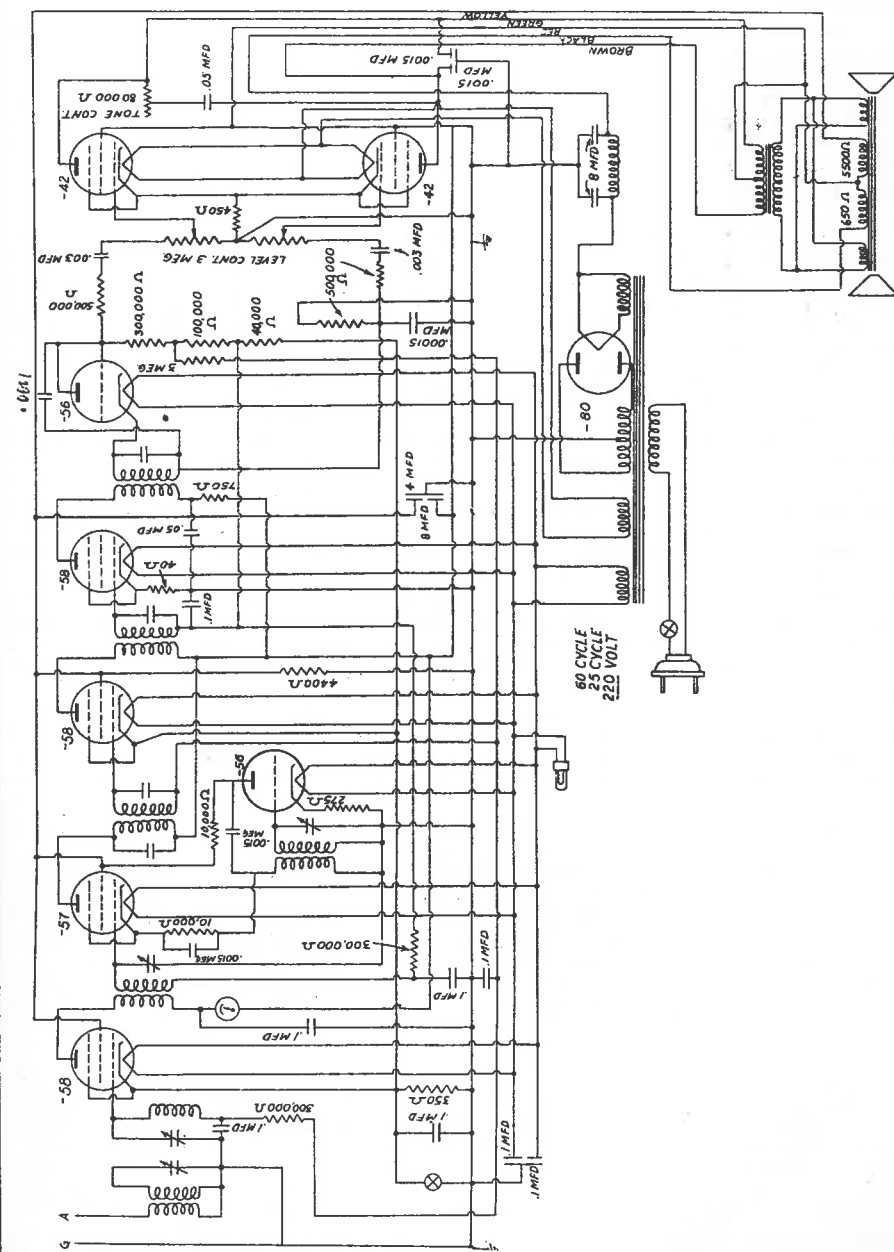
Much more unusual is the lack of an amplifier or phase inverter between the detector and the push pull output stage. Furthermore, the 56 is strapped as a diode, functioning as a phase inverter and being expected to provide enough drive for the grids of a pair of output pentodes! Is this really possible? The answer is - yes - maybe.

In the case of the Lafayette D-50 featured in the February 1988 issue, it was shown that it is indeed possible to have a diode detector operating as a phase inverter, and this Crosley example is another variety. Equal and opposite voltages are developed across resistor strings connected to earth from the anode and cathode circuits. 500 k resistors are used to filter R.F. voltages and to couple the detector to the grids of the 42 output valves.

Normally, to provide sufficient drive to the output valves, an audio amplifier stage would follow the detector. There have been plenty of successful examples where an intermediate audio amplifier has not been used. Philips, for example, produced several such receivers and even developed special output pentodes with diodes such as the EBL1 and the EBL21 especially for this class of service. However these valves were about three times as sensitive as the 42. Even so, and most importantly, the rest of these receivers were designed to provide a large detector output. This was achieved by several inter related methods, an obvious one being to compensate for the lack of audio gain by having plenty of IF gain. The Crosley 130 did meet this requirement by having two IF stages. The IF system should also be capable of supplying the detector with sufficient signal to fully drive the audio system. In the case of the 130, this is a stringent requirement, and ideally would be met by operating the final IF valve into a double tuned I.F. transformer and with fixed bias rather than controlling it with A.G.C. The Crosley falls down in this respect in fact, the whole bias and control system is a bit of a mess with some of the valves operating, in the absence of a strong signal, with virtually no bias at all, in spite of their apparently having

## MODEL 130-1 Schematic

CROSLLEY RADIO CORP.





cathode bias resistors.

A well designed A.G.C. system has sufficient delay in its onset of control to allow sufficient signal level to be built up before the detector. This is not critical in conventional receivers because they have plenty of audio gain, but is most important in cases like the 130 which is a compromise, as it is practically impossible to properly combine the functions of detection and delayed A.G.C. in one diode. Had another valve been allowed for, a far better design would have been possible.

The anode load of the 56 detector consists of a string of resistors to earth, with A.G.C. voltages being tapped off. Note that at the bottom is a 40k resistor connected to a 350 ohm resistor carrying the cathode current of the R.F. and 1st I.F. valves, putting a positive voltage on the A.G.C. line. This can be regarded as a delay voltage certainly, in as much as it cancels any negative A.G.C. voltage until the signal level has reached several volts. However, until the delay is overcome, the 2nd I.F. valve has a positive grid bias which the 40 ohm cathode resistor is unable to counteract. This is very bad practice and conditions are just about as bad for the R.F. and 2nd I.F. valves in that they receive no bias until the A.G.C. delay is overcome. There is partial control as only a fraction of the A.G.C. voltage is fed to the controlled stages. The requirement that the last I. F. valve should operate under optimum conditions at all times is not met and consequently, it is unlikely that the 42's could be driven to anything like full output. Note that there is a switch across the 350 ohm resistor. This is would have been a "local/distance" switch for use with very strong signals. When closed, it removes the positive delay voltage and enables the A.G.C. system to operate in a more conventional manner, but as explained already, not very efficiently.

There is yet another design flaw. To keep the loading of the detector as light as possible, the ganged volume controls which act as the grid resistors of the 42's are no less than 3 megohms! This is six times the maximum value recommended by the valve manufacturers. To use such a high value is to invite a form of grid current run away, leading to high distortion, excessive dissipation and short valve life.

Had there been no attempt to incorporate A.G.C. but instead the R.F. and 1st I.F. sections controlled manually, as was common practice in those days, the use of a better design of detector, would have been possible. As it is, the receiver would have been an indifferent performer with some of the valves operating incorrectly and an A.G.C. system that had inadequate control. The output valves could not be driven adequately, and there can be no justification for the 3 megohm gridleaks.

Footnote: After I had written this article I discovered that Ian King had a 130 lurking in his impressive collection. What better than to fire it up and check out my assessment. Ian offered to extract the chassis from the console cabinet and have it ready for me, but when I arrived he pointed out a significant modification. At some stage someone had replaced the 56 detector with a 2B7 and substituted a double tuned third I.F. transformer. Whilst I could no longer make any valid measurements, the modification said everything. Long ago, someone had decided that the performance and were inadequate and had done something about it.

## WHERE HAVE ALL THE CROSLEYS GONE?

Judging by the small number of Crosley receivers to be found in the hands of N.Z. vintage radio collectors, relatively more Crosleys seem to have disappeared over the years than any other well known make. Just why this should be so is a bit of a mystery because there were quite a lot of them around at one time.

The name Crosley has had a long association with the N.Z. scene, extending back to 1924 when such early battery sets as the 'Trirdyn', 5-38 and 50 were marketed and continuing on up through the 1930s until import restrictions finally ended their importation.

Nowadays it is the metal-box models, such as the 'Gembox', 30S 'Monotrad' and 40S 'Unitrad' which seem to be the survivors. Regarding the last named, a little anecdote can be told. In common with many other early American AC sets the Crosleys gave a lot of trouble with audio transformers within quite a short period of use; they gave perhaps even more trouble with bypass condensers of a particular brand - John E. Fast of Chicago. Now it so happened that a serviceman friend who worked for the Auckland distributors of Crosley at the time felt sufficiently strongly about the condenser problem to take it upon himself to write to the John E. Fast Co to lodge a complaint.

But in order to properly appreciate this little story it is necessary to understand that the person concerned was of a somewhat religious nature and did not normally use swear words in the course of conversation. However, on this occasion his feelings got the better of him. His letter was a model of brevity. Here is what he wrote: "Your condensers are certainly fast F---- After a Short Time". Needless to say, he did not receive a reply!

Many old time repairmen will remember the grotesque 'Repwood' series, at least that's how we thought of them a few years later; but now of course they have become extremely collectable. Their names were more familiar than their model numbers - who will ever forget the 'Buddy Boy', the 'Show Boy' and the 'Wigit' not to mention the 'Super Buddy Boy' with its accursed dynatron oscillator? Then there those funny squat Repwood consoles like the 'Arbiter', 'Pal' and 'Director'. And what about those giant cathedral-als? - the 9-valve 'Mayor', 10-valve 'Ten Ace' and the daddy of them all, the monster 12-valve model 132 in a cabinet only 7 inches shorter than the 'Pal' console!

Yes indeed, just what did happen to all those Crosleys?

J.W.S.



Merphon wet electrolytic condensers (originally known as "electric" condensers) were a familiar sight in the early Crosley AC sets. However, the first Merphons were in glass jars, which somehow seemed to emphasise their 'wetness'. Later types were in copper cans. The very first Merphons were produced as far back as 1922; the type illustrated were made in 1925.

**Merphon** ELECTRIC  
30 MFD-Duo type  
CONDENSER

# RESISTORS

By Peter Lankshear

Resistors, along with capacitors, are the most frequently encountered components in receivers. There are two families in general use, wirewound, and the group known as carbon, each category having both fixed and variable forms. Whilst there are overlapping areas, the two types have separate functions. Wirewound resistors are the more expensive and are used in high current conditions and where high stability is required. It is rare to find them with values above about 50 k.ohms. Some manufactures avoided them where possible. Carbon resistors are the mainstay of any receiver and can cover the whole spectrum of values.

As well as being made from carbon and an inert binder such as clay, "carbon" resistors can also be composition, carbon film or metalised. Whilst these have their specialist uses, in standard valve radios the various categories can be regarded as interchangeable which is just as well, because they can be hard to differentiate.

Carbon resistors do not have long term stability, particularly if operating near their full rating. Most vulnerable are voltage dividers and audio amplifier anode and screen grid dropping resistors. Tolerance should be taken into account when checking values. Resistors with a gold band or end have a 5% tolerance. 10% types have a silver coding whilst no tolerance code means that a variation of up to plus or minus 20% of the marked value can be expected. Thus a nominal 1000 ohm resistor can be as low as 800 ohms and as high as 1200 ohms, which is quite a large variation. Radial leads were favoured in early resistors. The resistive element was much like an overgrown pencil lead, often encased in a ceramic tube, some having cast metal ends. Receivers of U.S. and local origin used resistors coded in the standard R.M.A. colours whilst the Europeans favoured printing the value on the body. Philips had an annoying habit of labelling only with a part number. Unless you have a circuit or parts list, checking values of these resistors can be very frustrating. Fortunately, Philips have always made very good resistors and if electrode voltages seem right, don't worry too much.

In the mid 1930's insulated moulded resistors with axial leads became common. Around this time there was a gradual change from the "body-end-dot" coding to rings of colour. Atwater Kent were characteristically reluctant to join in the R.M.A. coding system and until the 1935 models, used their own peculiar code.

Whilst carbon resistors can change value even when unused, the commonest reason for their being out of specification is over rating. This results from resistor manufacturers being over optimistic about the long term stability of their products, particularly with high value, low wattage types. Ohms law says that a 250k anode coupling resistor may be dissipating 0.1 watts, but experience has shown that commonly used 0.25 watt resistors often fail in this situation. Carbon resistors in the 10k - 25k range used for supplying R.F. valves are

often operated at maximum ratings and are likely to have increased in value. Conversely, when subjected to heavy overload, very low value carbon stick resistors can decrease in value, probably because the binder carbonises.

A good indicator of resistor problems is a set of voltage readings, but these must not be taken as the last word, one way or the other. Other faults can upset voltages and it is quite possible for voltages to be correct although resistors can be defective. Care is necessary in checking and interpreting measurements of resistors. As a generalisation, a resistor should be disconnected at one end before it is measured. If there is no D.C. path beyond the resistor, it can be tested in circuit. Typical examples are anode and grid resistors, but if there is any doubt, disconnect it before testing. Many multimeters are not suitable for accurate checking of resistors above about 100k or so. The high value resistors most likely to be out of specification are the audio amplifier anode coupling and where used, the audio amplifier screen resistors. Today, resistors are cheap and plentiful and if there is any doubt, the easiest approach is to replace anyway. Modern 1 watt resistors are small enough to be fitted just about anywhere in a valve radio, so to avoid doubts or uncertainty about ratings, I recommend using them for replacement as a matter of course.

Wire wound resistors are made with resistance wire wound on to an insulated former, often ceramic, and the assembly is frequently encased in a vitreous or moulded coating. Taps are often fitted and occasionally these are adjustable. Others, particularly H.T. voltage dividers, are encased in a tinned metal strip casing with protruding tags for connections and tie points. Known as "candohms", an appropriate pun, they are an excellent idea that didn't quite make it. Unfortunately, they are notoriously unreliable and frequently are found to be open circuited in one or more sections. It is quite likely that, as a result of previous servicing, there will be other resistors already bridging a defective section. Another type of wire wound voltage divider will often be found in Australian receivers. These are made from a cardboard or fibre former an inch or so in diameter with adjustable clips for the tapings. Unfortunately, these voltage dividers are another good idea that didn't quite live up to expectation. The slightest heavy handedness in adjusting or tightening the taps is likely to break the fine resistance wire and there is no reliable way of mending it. Years of operation can oxidise taps and make contact with the element unreliable. The accepted way of servicing voltage divider assemblies is to bridge the defective section with a new resistor. If the resistance of the section is known there is no problem. However, if this is not the case, a bit of common sense and experimentation may be necessary. It is possible to derive the exact value by calculation but there are so many variables that giving an easy or foolproof formula is not practicable. Wirewound resistors are used in high wattage situations and they therefore get hot, so watch that they are not mounted close to other components.

Before 1940, some manufacturers used flexible resistors. These were made by winding thin resistance wire on a string or asbestos core and covering it overall with cotton braid. Apart from some sort of termination, these resistors looked like a length of wire and can be a trap for the unsuspecting. What appears to be an innocent piece of hookup wire can produce a voltage drop, or even be open circuited.

Variable resistors are, universally (but incorrectly) known as potentiometers. These will be covered in a subsequent article.

R1  
THE RCA-VICTOR RE57 with "Micro-Synchronous" Tuning

by Dave McLaren

Almost every week I do a circuit of the Auction rooms in Dunedin. There seems to be more of them lately and so far I have counted seven, some of which operate week and others (those with pretensions), monthly.

✓ Around February 1987 one of the better establishments advertised a Saturday morning Antique Auction so, as it is only some two minutes down the road, I called past to have a look. These days there are hardly ever any significant radios offered for sale, and by that I mean pre-1935, but this time I hit the jackpot. The huge RCA-Victor console crouched in one corner of the rooms, ignored (or so I thought) by by all. The doors on the front were closed and took a bit of opening as the drop handles were missing, but what a revelation it was when they were opened.

A radiogram with original turntable and pickup, even though there was a small cosmetic piece missing from the arm. The Auctioneer was quick to tell me that he had been assured it had been going "about three months ago". Gullible fool!



Nobody in Dunedin bids for radios like that, but when I made my first bid I was almost killed in the rush. I stood back and let them go then came in again at the death knock. I recognised my opponent. A retired publican with a bankroll that would choke a horse, but I soldiered on past my limit for I was sure that publican wouldn't really appreciate such a beauty. He drove me to within \$40 of my second limit before he dropped out. As I wrote the cheque I wondered whether Auckland had finally come to Dunedin.

It took two of us to load the monster onto a trailer, and even then we should have used three people. But, home and examination time.

The RE57\* is a 1930 TRF using seven valves and an 80 rectifier. It is divided into two massive chassis, the bottom one contains all of the weight since the

\* The letters 'RE' indicate Radio Electrola (Ed.)

or Radio-Electrola

THE RCA-VICTOR RE57 (cont)

speaker (using one of the biggest field coils this collector has seen outside a Majestic) is bolted directly to it. The top chassis has three RF valves, the first AF valve and the detector thereon, as well as the piece-de-resistance - the Micro-Synchronous tuning mechanism. On the top level is the 78 RPM turntable and switching gear, for this model also has provision for making your own records on pre-grooved blanks. The only significant item missing was the microphone, but I didn't worry too much about that, as even if I had it it is unlikely I would be able to find any of the blank 78 discs required.

The first examination centered on the audio chassis. This set had its original 110-volt transformer with the addition of a huge step-down transformer bolted underneath the cabinet which created an extremely ugly appearance when viewed from the front, hanging as it did almost to the floor.

The repair catalogue was enormous - and daunting. Open input and output transformers, two open filter chokes, and the problem with the 110-volt power transformer. Decision time. I want the set to last forever, so I finally had everything except the speaker field coil rewound. In the top chassis the only deficient coil was an open three-section RF choke. The only other serious problem was the two-section volume control pot that operated both on the primary of aerial coil and the cathodes of the RF tubes. The original control had been replaced by a single unit. No problem to Bill Farmer who made up a suitable replacement, and a short time later a neat little bracket and various shafts and linkages were bolted into place, and bingo - the monster came alive.

This set performs as well as other TRF of the same vintage. The pot controlling the aerial input really does dampen out local stations at increasing gain while allowing distant stations to come in clearly and with minimum interference. But that Micro-Synchronous tuning. It's almost as entertaining to watch it in action as it is to listen to the set going.

The essence of the system is that all five tuning condensers are mounted separately under the chassis, shafts up and protected by an aluminium cans. The shafts are interconnected above the chassis by a large metal disc with a complicated system of steel bands and springs. The disc is rotated by the main tuning control shaft which runs a worm over 60° (approx) arc through a slot in the front panel of the cabinet. In operation it is very smooth and, following a bit of judicious lubrication, very silent - but strange.

Already I have turned up another RCA pickup arm, complete with the missing piece. In time I hope to locate the missing tops of the valve shields and a couple of suitable drop handles. I have moved the Gulbransen which formerly occupied pride of place in my office, and consigned it to oblivion in a back room. Every day I can look across at my new treasure and occasionally, when there is a big game of Rugby in progress, even turn it on - and hope that the confounded Micro-Synchronous tuning doesn't break down.

Meanwhile, if anyone can tell me what the valve shield tops look like, or better still lend me a sample, I would greatly appreciate it.



I have been reading with interest Peter Lankshear's articles on servicing and the various components one encounters. To start with, let me say that even with my experience I have found the articles most informative and worthwhile - a creditable effort.

The article on capacitors set me to put a few thoughts of my own to paper. My experience has taught me to be very wary of the sky-blue Solar type. I have found too many faulty ones so treat them the same way as I treat the waxed paper types. The problem with the waxed ones is that the wax is hygroscopic. They were good when first made but the slow ingress of moisture over the years has rendered them leaky, almost without exception. Although I have never looked upon blanket replacement of any components as a legitimate method of servicing, it is a good idea where these capacitors are concerned.

Wet electrolytics are best treated the same way. In the days when these were in common use a leakage of 1 milliamp per microfarad was considered the safe maximum. Anything more caused heating of the electrolyte (commonly, borax) which in turn caused pressure inside the can, which caused - yes ... Servicemen tell horrific stories of damage and even personal injury caused by these little time bombs.

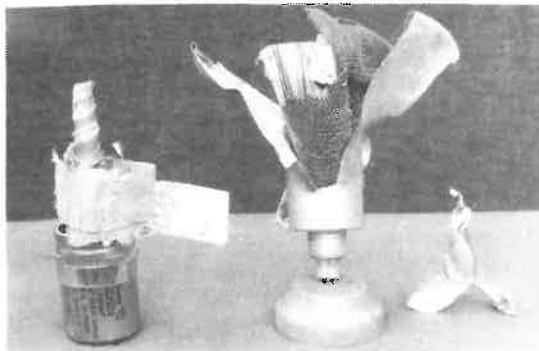
Where filter input capacitors are concerned I do not like using more than 10uF with a directly heated rectifier, particularly if the set has an EM speaker. I recall once replacing a 8uF with a 16uF in this position only to find that it caused flashover in the output valve while the set was warming up. An 8uF each side should be sufficient. That's what was used originally, so why change it? Valve data manuals generally give a maximum value for this position.

Where a capacitor is used directly on AC mains a working voltage of 600 DC is the safe minimum. It is better to use 1000-V units if you can get them. For mains filters the dual ceramic types as used in fluorescent light units are ideal. NEVER use any of the plastic type capacitors on the mains. There's an awful lot of power in a wall socket, and with nothing to limit it the ripple current through the capacitor can be very high. Under these conditions the capacitor acts like a resistor, dissipating power, and this can only go off as heat. This lowers the dielectric strength, which causes the leakage current to increase which causes the heating to increase, which causes the current to increase, which causes .... ka- Blam! Believe me, it doesn't take long.

Where a large capacitor must be used against the mains it should be an oil-filled paper type. These generally have a fair surface area which can dissipate the heat, but, again, watch that working voltage! The mains has a peak of about 326 volts so double that figure for safety. The writer once encountered a receiver which used a capacitor as a current limiter in series with a string of valve heaters straight off the mains. Home-made, as I recall. Saves buying a transformer. Such a system does not seem to be common, which is probably just as well, although I have encountered it in Ni-cad chargers associated with small appliances such as shavers. Manufacturers produce special capacitors for this application, radio types should not be used as replacements. Always remember that it is voltage and heat that causes failure under these conditions. If a capacitor must be used as a current limiter make sure its ripple current rating is adequate.

### THEY WENT BANG

An illustration showing how both wet and dry electrolytics can explode. It should be emphasised that in both cases such an event is extremely rare.



Bringing something from the 1920s to the 1980s might seem a trivial challenge these days with the advent of computers and technology, but with a limited budget and only an old photo to go by, plus over eight years of patient toil, I can now say that I am probably the only person in the world now manufacturing a radio horn speaker that can be used in conjunction with a vintage radio - or even a modern stereo system.

All this started several years ago when I was given a crystal set.

Since then I have acquired an interest in early radio as a hobby.

Some years ago I joined the then newly formed NZRVRS and came by an early battery set, minus its original horn speaker. Being unable to obtain a suitable speaker anywhere, I decided to set about making one myself, not realising that it would take dozens of drawings, models and then, finally, steel dies to produce a horn speaker that would look as if it had just come out of the 1920s.

Finally, all that was left was to give it a name and design a label to suit. I decided to use my surname in the form of an anagram and came up with 'SONNAR-PHONE'.

Now, after extensive advertising in vintage radio magazines around the world, I have the satisfaction of knowing that New Zealand made horn speakers are to be found in at least six countries.

Ian Ranson



### NEW MEMBERS

A Taylor	New Plymouth
A.B. Griffith	Auckland
D. Crozier	Auckland
A.D. McNichol	Christchurch
A. Mackaway-Jones	Dunedin
S. Gooch	England
R. Hill	Auckland
W.W. Allan	Te Awamutu
N. Clarke	Kihikihi
C.C. Harrison	Auckland
D. Fairbank	Gisborne
C. Irwin	Paengaroa
J.S. Duncalfe	Te Awamutu
R.W. Wilson	Australia

### DE FOREST REMEMBERED

George Weston reminds us that 1988 marks the 80th anniversary of Lee de Forest's famous "interposed grid" patent, number 879,532 of 1908. In this patent the inventor describes how a piece of wire bent into a zigzag shape and placed between the filament and plate of a two-element 'Audion' tube (diode) gave improved results as a detector of wireless signals. Thus, the triode was born!



Bill Farmer is well known as a Zenith fan who specialises in the collecting of the 'Transoceanic' portable series. However, just to balance things up, Bill's pride and joy is a Zenith from the opposite end of the scale - the 12-valve monster depicted here, a model 12U159, chassis 1203.

Compared with many other members, Bill is by no means an avid collector, but, judging by the steady increase in the number of sets he now owns it looks as though he is getting sucked in!

One thing noticeable about Bill's collection is his preference for American receivers to the almost total exclusion of sets from other countries.



**BOOK REVIEW ....** RADIOS: The Golden Age by Philip Collins  
Published by the Chronicle Press, San Francisco, 1988

This review must commence by drawing attention to the similarity in the titles of this book and an earlier and quite different one published in New Zealand.\* Whilst the similarity is only coincidental it is mentioned here as it could possibly cause confusion in the marketplace.

Philip Collins' work is a picture book dealing almost exclusively with radios made between 1933 and 1957 which had coloured plastic cabinets. But whether the author is justified in regarding this time span as the 'Golden Age' is another matter; certainly there was a lot more to Radio's Golden Age than plastic cabinets. Rather obviously, the nature of such a book makes it essential to use full colour illustrations to do the subject justice, but because of the expense of colour reproduction its use is normally out of the question in specialised limited print run publications of this nature. How then was it done?

The author is an executive of Columbia Pictures and, although not specifically stated, it seems likely that the superb colour photography was done, if not actually in the Columbia studios then, by a professional from the company. But that is only part of it. By having the printing done 'off shore' by the Dai Nippon Printing Co of Hong Kong the resultant savings in costs enabled the price of the book to be held to a much lower figure than would otherwise have been the case.

Apart from a short introduction and a few brief notes there is no text but all the illustrations are identified at the back of the book, though there is no index as such. Over 100 radios, arranged in chronological order, are illustrated in full colour, some of them even having their dials illuminated to give an added touch of realism. With one exception, all are 'full frontal' views, the exception being somewhat coyly captioned - "Behind the Painted Smile", but the rather sad appearance of the chassis causes one to speculate on how many other of the other sets depicted are 'painted ladies'. Also, it may be remarked, the inclusion of a picture of six tube cartons from a much earlier period adds a somewhat incongruous touch; surely it would have been possible to obtain cartons from the correct period? And a small error spotted: it was not necessary to wait until 1945 before the first 'drinks cabinet' radios appeared. The first were seen long before that, their appearance followed the repeal of prohibition in the U.S. in 1933.

So, although the subject matter of this book may be too specialised to appeal to all vintage radio people it is worth the price just to feast one's eyes on the magnificent colour pictures.

J.W.S

\* The Golden Age Of Radio In the Home by John W. Stokes

## WANTED

Majestic chassis & speaker for 70E or 180; complete base for BTH horn speaker; horn section only to fit large Burndebt base; Temple chassis & speaker 9-valve TRF with pp 45s, has large green chassis and baseplate and 14" speaker; Stewart Warner horn speaker; AWA cabinet model unknown; wiring diagram for Johns Ltd ACE electric  
Don Strange, 10 Pendlebury St, Titirangi, Auck. Ph. 817-8611

Any microphones made before 1960, e.g. Ribbon, Dynamic, Carbon, PA and early broadcast types; also early 16mm or 35mm films. John Henderson, 85 Parker St, Bassendean 6054  
West Australia Ph. (09) 279 1234

One semi-rolled celluloid dial scale for Pacemaker 618p/619P (circa) (circa 1950); dial glass for Columbus 14A; also 3 circular dial scales for HMV mini-cathedrals using 6A7, 6B7, 41, 1V valve lineup. Ian Cook, 85 Fox St, Ngaio, Wellington Ph. 797-285

Chassis for RCA R28P, will buy or exchange for other items.

Dave McLaren, 25 Aotea St, Dunedin Ph. 44777

Chassis for the following: Arwater Kent 145 (4 knobs), Gloritone cathedral 26PY, Lyratone and escutcheon, Gulbransen cathedral model 130-131 and escutcheon, Fada chest 1926 large box type. Peter Escher, 104 Scenic Drive, Titirangi, Auck Ph 817-3217

Cabinet & speaker for AK 70L, swap or trade. John Thompson, 32 Trent St, Oamaru  
PH. 45727

Dial Scale for Pye QAC3 (Fig 572, p.150 Radio, Radio) Ross Paton, 52 Glengarry St  
Auckland Ph. 818-8463

One valve shield, 12 holes around top, 12 holes around circumference for Clsaron 1932 cathedral; Any red, blue, green, yellow plastic mantels e.g. Bell Colt, Philco, Clipper, also Pacemaker flip-up dial portables. One last plea for photos, ads Xeroxs or data on cathedral radios. Many thanks to those who have already responded. Signed "Mark"

Parts for making Marconi 'Economy Three' battery set - valves DEL210, 410 or 610, DEP 215, 410 or 610, Igranic 'Indigraph' vernier dial, AWA logarithmic variable condenser 350pF, ebonite coil former 3" diam X 5", panel 18"x7"x3/16", terminal strip 18"x1 1/2" 3/16, Glazite wire, wire 26 DSC (green????) Barry King, 16D Parity Place, Glenfield  
Auckland Ph. 438-823

## A CORRECTION

On p.6 of the Feb. 1987 issue it was stated in the article on Philips superhets that the autodyne mixer was not used commercially by this firm. This is not correct the 1934 Australian model 'A' used an autodyne.

## ANNUAL BALANCE SHEET

Our treasurer, Bryan Marsh, advises that copies of the annual Balance Sheet are now available. Anyone requiring a copy should write to: Bryan Marsh, 20 Rimu Rd Mangere Bridge, Auckland enclosing a stamped addressed envelope.

## A MYSTERY SOLVED

On p.5 of The Golden Age of Radio in the Home appears a picture of a Philips speaker captioned " ... cannot be identified". Well now it can. Don Strange recently came across an illustration in Ray Kelly's SHRSA Loudspeaker Notebook in which the speaker is advertised as 'The New Concert Grand' and priced at £8-10-0. Although it uses the same unit as other Philips cone speakers this one has a most unusual case made of wood covered with plaster and finished to resemble metal. Now all that is lacking is its type number. Can anyone help?