Members wishing to advertise in this space should ensure that their ads reach the Editor by the 20th of the month preceding the month of publication. Deadline for the next issue will be 20th Jan.1986. Please write or print plainly and be sure to include your name, address and phone number. There is no charge for this service. No telephone ads will be accepted. The N.Z.V.R.S. is not responsible for any transactions.

WANTED

Both chassis for Radiola 86. Old Williamson amplifiers or any hi-fi amp using 2A3,s.
Ian W.Sangster, 846 West coast Road,
Oratia R.D. Auckland Ph.814-9492

Illustrations and schematic for RCA Radiola 4-tube shortwave receiver circa 1927 but model number unknown, using UX-222, 2X UX-201A, UX-112. Interstage transformer (bakelite case) for Fada Neutro-Junior model 195A. Also would like to contact anyone having or knowing whereabouts of, Radiola SW10 shortwave converter using One 224A and 2 X 227s.
Ray Knowles, 507 Wellwood St
Hastings. Ph (070)-84338

Valve, Mullard or Philips type EH2; also Mullard model X31A any condition for parts.
Gordon Baker, 110 Wood St,
Palmerston North. Ph.68546

Service manual and diagram for Redifon communications receiver type R.146 Ser.414.
Jack Rhodes, 2700 Burdick Avenue,
OAK BAY, Victoria, B.C. Canada V8R 3L9.

Three knobs for Philips 930A. Two interstage transformers for Grebe Synchrophase MU-1
George King 42 Norbiton Rd, Foxton.

Knob, (bandswitch) to suit Zenith 5711T, or dimensions and detail thereof.
Henry Devenport, Coventry Station,
Private Bag, Gisborne. Ph 28-876.

Dial escutcheon for Grebe AC-6 and any information on this model.
Bryan Marsh, 20 Rimu Rd,
Mangere Bridge, Auckland, Ph. 667-712

Philips speaker, Sevenette , PCJ or similar. Back cover for Philips Theatrette. RCA 5" EM speaker for model R28P. Back for NZ Philco 401 and glass dial scale for 202. Dial scale for Mullard 736. Any large radio or industrial valves. Any source of grille cloth, even overseas.
Barry King, 36 Flaxdale St, Birkdale
Auckland 10. Ph.438-823

Internal mains connector to fit inside back cover of Philips model 634A. Info, circui and pictures on Pilot AC Super Wasp. Chassis and dial escutcheons for RCA-HMV R-37. Four knobs and speaker for Fisk Radiolette 1936 dual-wave model. Four 201-A valves for crystal amplifier. Table model cabinet for AK 708. Set of plug-in coils for Ultimate Screen Grid 4 (metal box battery set).
Don Strange, 10 Pendlebury St,
Titirangi, Auckland. Ph.817-8611

Speaker, 6" EM preferably with O/P transformer for RCA 125. One small wooden knob for RCA 122. Large idler wheel, or complete dial drive assembly for AK 337. Console cabinet for Wells Gardner (Gulbransen) OEL chassis, 11-valve with 12" speaker. Console cabinet for 9-valve STC 5026 chassis. Tuning capacitors, or parts thereof, for Philips models 630A or 634A. Knobs for AK 145.
Ross Paton, 56 Glengarry Rd
Glen Eden,Auckland 7. Ph. 818-8463

FOR SALE OR TRADE

Hasn't anyone got anything ???

NZVRS BULLETIN

Vol. 6 No. 3 Nov. 1985

NEW ZEALAND
VINTAGE RADIO SOCIETY

An organisation devoted to the preservation and restoration of early radio equipment, and collation of associated information

December 1922. Publication No. 326.

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Editorial Notes

In the August *BULLETIN* I was intrigued to read Ned Matich's story of his visit to San Francisco. There he enjoyed the hospitality and generosity so characteristic of the American people when he visited radio collectors who presented him with some very rare items and gave willingly of their time.

But what about that character who had so much equipment that he couldn't house it all, and would rather have it rot than part with a single piece?

Why do we collect? collecting seems to be basic to human nature. Whether it be money, stamps, rocks, bottles cars or even radios. Just about anything is collectable to someone, and the basic motives are pleasure and satisfaction. At an elementary level are the ephemeral satisfactions of acquiring some new treasure, or the excitement of tracking down a rare item. Closely associated is the game of one-up-manship. These are very reasonable and legitimate pursuits.

Less transient is the pleasure derived by those with a creative urge who resurrect and restore some old piece of equipment to add to their collections. A lot of satisfaction can come fro m properly displaying, researching and cataloguing one,s treasures.

I am sure that many of us derive most satisfaction from the sharing of ideas, equipment and knowledge. This is why clubs thrive. The rewards of Ned Matich,s visit to San Francisco were probably not all one way. His hosts had the lasting satisfaction of sharing and of a secured friendship.

Returning to the hoarder. Regrettably, collectors like him are all too common. To them collecting is an end in itself, rather than having any regard for the objects collected. Suspicion and greed inhibit their relationships with fellow collectors.

Peter Lankshear.

(A guest editorial)

Letters to the Editor

If I am correct in assuming that the majority of collectors are past, if not well past, the age of fifty years, your editorial in the August 1985 issue of the *Bulletin* concerning the future disposition of private collections was most timely. It is a subject which must nag us all. Although, in the case quoted, there may have been compelling reasons, the rejection by a museum of such a collection serves to illustrate that not everyone shares our enthusiasm for the hobby.*

In addition, many people hang on to rare and perhaps valuable pieces of equipment in which they have no real interest. They do so from a misguided sense of duty or sentimentality.

About fifteen years ago, when I wa scouring the length and breadth of New Zealand in my search for Scott radios, I tracked down an early Scott battery set. This set was owned by an elderly lady and her spinster daughter who had retained it from the estate of a long-departed husband and father. The set had not been seen for over nine years and so a search was started. It was finally found atop a high shelf and when brought down was found to be rust-red and mouldy-green. Bur readily restorable! However, no inducement was found which would permit their parting with the set.

In another town I located an elderly lady whose front verandah contained a stack of sealed wooden boxes which, she said, contained radio parts and equipment. Her husband had been a ship's wireless operator, sailing to the west coast of America, and, she explained, he was constantly bringing home pieces of radio gear. She did not know exactly what was in the boxes, nor would she allow them to be opened because she was keeping their contents for her grandson. Upon enquiry it was determined that the grandson was eight years old at the time!

Whilst no one is obliged to dispose of such possessions, save in a manner that suits the owner, nevertheless I will leave it to your readers to consider what might have been a more fitting disposition of the property cited, after taking all the factors into account.

Jack Rhodes
British Columbia.

**Ed.note. In this case there was another reason.*

Further to Bruce Holmes' story of the Brunswick retrieved from the farmyard, together with details of the unusual audio lineup and controls. I am reminded of a later model of the same brand which used a pair of 47s in parallel. Again they used a single (concentric) knob assembly with a large outer one for tuning and a smaller one for volume. In addition, when the volume knob was pulled outwards or pushed inwards it operated the tone control and at the same time changed the color of the dial light so that it showed red for 'bass', gradually changing to green for 'treble'. Very tricky.

Another make of set to have the 45 output valves fed directly from the detector was Majestic. This system was used in the models 60, 130, 230 etc, and also in the Canadian Rogers model 646.

The high-impedance transformer required the use of extremely fine wire which resulted in frequent open circuits in the windings. If a regular plate-to-grid transformer was used for a replacement the sound quality was very thin and the gain very low. No ordinary transformer will restore the early glory of these sets. You could try using resistance-capacity coupling which will give reasonable sound quality but the amplification will be 'dodgy'. If you are not a purist I would sneak a triode audio driver inside the old transformer can, and nobody would be any the wiser..

Alan Roycroft
Honolulu.

R3

MAKING REPRODUCTION KNOBS

by Paul McDiarmid

Part 2. CASTING

Having discussed in broad terms the various steps in making the re-usable moulds for reproduction knobs, I will now go into details of the process of making the castings themselves. Modern plastics technology is ever increasing in scope and complexity, but the simple process that follows uses the most basic of ingredients. If one were attempting to reproduce more vital mechanical parts, such as escapment mechanisms etc, it is probable that the very basic resin-only system to be described would require further reinforcement by the inclusion of some introduced fibre content to improve tensile and impact strength. This is probably outside the scope of this article, but I mention it so that you may be aware that the simple process does does have some limitations.

A polyester-type resin is used as it is readily available and cheap. Total material cost per knob (excluding the cost of the mould) will amount to only a few cents ! As only small quantities are required it's better to call on your local fibreglass boatbuilder for supplies. Please take some suitable containers with you. You will need the following dry containers:

A 1-litre glass jar with screw-top lid, or tin with tight fitting lid for acetone (solvent)

A ½-litre jar as above for polyester resin, either spray or casting viscosity, clear or cloudy.

Several glass jars with lids for Gelcoat in various colours, i.e. red, yellow, black, white etc.

A small (50 mls) glass jar with plastic lid for MEKP (hardener).

WARNING - The hardener, also known as a catalyst, is an organic peroxide, methyl-ethyl-ketone-peroxide and can be a considerable hazard. Do not allow skin contact or allow it to contaminate clothing and be extremely careful not to get any in your eyes. If you do cataracts and subsequent loss of sight will almost certainly follow. MEKP can also spontaneously ignite when contaminated with combustibles such as rags, clothing, oil, sawdust etc . If spilt, wipe up immediately with copious quantities of water-soaked rags or newspaper, then bury or burn at the bottom of the garden. Unused MEKP must be disposed of in a similar manner. Do not tip it into your rubbish bin. Kept cool, away from sunlight and handled with care it is quite safe. Ignore safety precautions and pay the price.

As MEKP can react with some metals, purchase it in a small glass jar which has a good fitting plastic lid. Keep all your materials in a cool dark place, out of the reach of small children. Also remember that acetone is highly flammable.

Now for the actual procedure. The gelcoat is mixed with the resin until the desired depth of colour is reached. Mixing of reda with blacks/yellows etc will cover almost all your shades of browns and maroons; some experimenting will be needed here. Mottled effects can be obtained by mixing up separate batches of the constituent colours. These are then individually 'catalysed' by the addition of hardener, then slowly poured layer by layer, or else in unison, into a common container. A turn or ywo with a mixing stick will produce quite marked swirl effects, further distorted and broken up as you pour the 'brew' into the mould. (Trial and error will give you the 'feel' of this.)

Gelcoat may be used as the main casting material but in general it is a little too thick in consistency and tends to entrap air; hence it is better to use a thinner casting or spraying-type resin. This is tinted by the use of gelcoat or polyester pigment paste as outlined.

Notes for P. Hach 26/1/85

PREPARATION OF MOULDS.

No release agent is required as the mould is self releasing. Premix a sufficient supply of resin to do your entire set of knobs. This will avoid any mismatch of colour. Any unused material may be kept in an uncatalysed stat for several months if it is stored in an airtight jar and kept cool.

MIXING RATIO OF HARDENER TO RESIN.

This is critical Too much - beyond 4% by volume -will result in an incomplete cure, as will too little. About 1% is regarded as a practical minimum. Shorter 'gel' times (i.e. a state where the resin becomes non-pourable) will be observed as hardener levels are increased up to the safe working maximum of 4%. Volume measurements are a little tricky in sm all quantities; suggest you use resin weight to catalyst volume. As a handy rule, a 14 ounce Watties tin(now 450 gram) filled with resin will weigh weigh 1 lb. To this measure of resin is added 4 mls (1% by volume, low limit) of MEKP hardener. The standard graduated medicinal measure (costing approx.66 cents from your chemist) is idea as a short-term catalyst measure, though it will gradually melt! Dispose of it when your reproduction run has been completed.

Resin can be weighed on kitchen scales, well protected by sheet plastic for safety and domestic bliss. I suggest you initially try adding the catalyst at the rate of 5 mls to 1 lb of resin; smaller quantities can be mixed up using the same ratio. This will give an indication of working time to 'gel', which is varaible and depends on temperature, resin type and so on. It is best to try to work below a temperature of below 65 degrees F. as otherwise results can be unreliable.

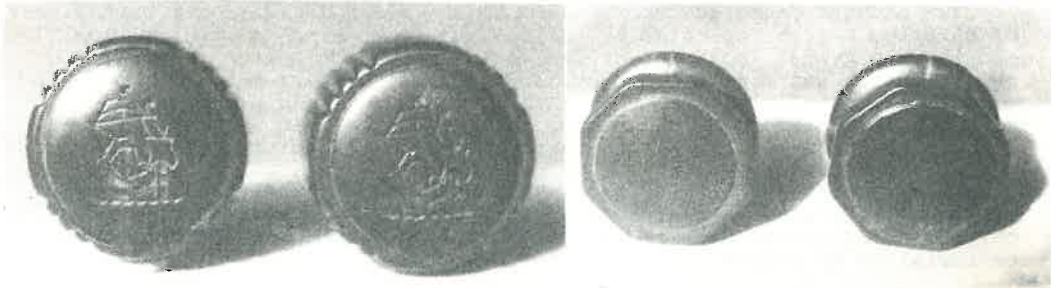
A word of caution: when getting all your gear set up ensure no trace of water exists in any containers, including those that the raw materials were purchased in. Any trace of water will inhibit the curing process. Check all containers carefully.

Casting is straightforward. The desired colour mix is catalysed, then carefully and slowlystirred (so as to reduce entrapped air to a minimum) with a clean dry stick. Allow the 'brew' to stand for about three minutes to de-air, then slowly pour into your mould from one side if possible. This will reduce the chances of air entrapment to a minimum. All going well, within an hour or two the knobs may be pulled free of the mould.

You may find a sticky surface on the reproduction. This is caused by early shrinkage which pulls the knob away from the sides of the self-releasing RTV mould. This effect is caused by oxygen in the atmosphere inhibiting the surface cure of the resin. The stickiness is readily removed by brushing a little acetone solvent over the offending 'goo'. Observe the No Smoking rule when using acetone.

Although the acetone will not materially attack the finished knob you may wish to avoid the need for its use by adding a little styrene wax solutionto the resin if it does not already contain it. Enquire at time of purchase. This additive will effectively seal the resin against air during the 'gel' process and will thus prevent 'air inhibition'.

And that's about it. A good rub of the finished knobs with cutters and a little 'Brasso' after drilling for sleeves and grubscrews, then screw them on and admire the results!



Can you tell the 'repro' from the original?

R1 and C2

A.W.A.'s FIRST AC SUPERHET

AND A SMALL MYSTERY

by John Stokes

Although Amalgamated Wireless (A/sia) Ltd had produced their first superheterodynes, the C17,18,19 series, as early as 1924 and continued to market 50 Kc supers alongside TRFs during 1926-27, these early supers were far too primitive and expensive ever to becaome popular. As in other countries, it was not until the superhet had been tamed and 'electrified' that it displaced TRF and Neutrodyne, becoming and remaining the most commonly used type of circuit.

In December 1932 AWA announced their first AC superhet, the Fisk Radiola 120, a 5-valve model using an all-pentode valve lineup comprising 57 Autodyne, 58 IF amplifier, 57 biassed detector and 59 output. The intermediate frequency used was 175 Kc, the American standard of the day. As in the U.S. there was no long-wave BC service so the choice of IF was unaffected by this factor. However, as the model 120 had no RF stage the low (by more recent standards) intermediate frequency made it necessary to incorporate a band-pass (preselector) input circuit to achieve freedom from double-spot tuning.

It is interesting to compare the physical construction of this 1933 model with that of the previous year's TRFs. The latter were notable for the use of 'bathtub'-type tuning gangs and clip-on coil shields which were identical to those used on the 1931-32 American Atwater Kent radios. No satisfactory explanation has yet been forthcoming of why these two A K features were copied exactly, particulary in view of AWA's close association with RCA.

However, with the introduction of the model 120 RCA's influence was once again apparent. The IF transformer cans were fastened to the chassis by means of a thread formed on the rim, exactly as was done in RCA receivers of the period,and were mounted underneath the chassis.

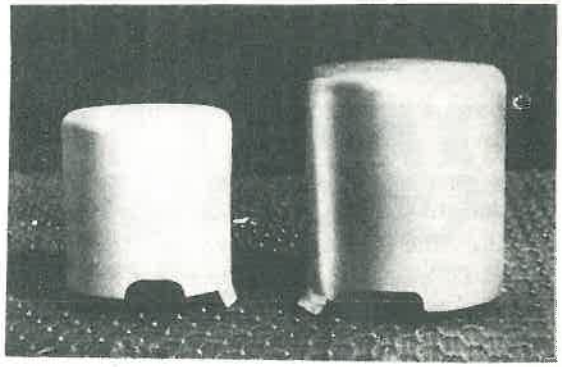
Other changes were in the use of a new type of shielded ganged tuning condenser and the fitting of pressed steel covers to the power transformer which still retained the earlier lamination clamps instead of screws and nuts. It is interesting to note that AWA had not yet started to use electrolytic filter capacitors, the paper types used being made at their own factory.

By comparison with AWA's TRF models, and also with the superhets of competing manufacturers, the chassis of the 120 was extremely compact, measuring only 12 inches by 8inches. It is not quite clear why such a small chassis was chosen although it may be because the same chassis was used in the smaller model 110 Radiolette. In the latter model the tone and volume controls were placed closer together, the chassis being provided with two sets of mounting holes to allow the appropriate positioning of the controls in the two different cabinets.

Two unusual features incorporated in the model 120 were the inclusion of a muting switch, operated by pulling out or pushing in the tuning knob, and the electrical isolation of the aerial and earth connections. The muting switch was considered necessary because the extremely high overall gain resulted in 'blasting' when tuning from a weak distant station to a strong local one, bearing in mind that this model did not have AVC. The isolation of the aerial and earth terminals, a feature that was incorporated in AWA's rceivers for many years afterwards, was a way of overcoming Electrical Wiring Regulations in existence at the time which required that any wire connected directly to the chassis must be installed only by a registered electrician. With isolated terminals the set could be installed by anyone.

A K OR AWA?

Why were these coil cans so similar? In 1932 Australian Radiola receivers used coil shields and ganged tuning condensers which were almost identical to those used by Atwater Kent.Who knows why?



R5

SOME IDLE REFLECTIONS

It seems that the more one examines some of the older AC radios, and the more of them one examines, the more are the questions that arise. The sort of questions that cannot be answered by reference to any available literature. Such questions as - Why did such and such a manufacturer do so and so ... or not do it? Here are a few examples, and to simplify matters only New Zealand made sets will be considered.

Why did most manufacturers put the toothed lockwashers (originally 'Shakeproof') directly under the mounting nut of the various control mounting bush instead of placing it between the control and the chassis? And why did so many manufacturers fail to make use of the locating lug provided by the maker of the controls? And why did the first N.Z. firm (Courtenay) to provide the necessary chassis holes to accomodate the lugs discontinue the procedure after only two or three years, never to take it up again?

And what would those Auckland radio manufacturers have done without 'Fibrekane' in the early days? Radio Ltd certainly made good use of it. Wire-wound resistors were wound on it, it was used for the formers and cheeks of their power transformers, terminal boards and aerial and earth tags were made from it, even bobbins for IF transformers were constructed from it. However, they never went as far as another firm, Sheffield, who made wave-change switch wafers from it, believe it or not.

The insulating properties of Fibrekane couldn't have been any worse than the grey fibre used in the 'Candohm' metal-clad tagstrips found in Radio Ltd's sets of a slightly later vintage. And speaking of Candohm, do you know how the name arose? I must confess that I didn't until quite recently.It simply means "canned ohm". We're talking about those metal-clad voltage dividers made by the Leslie F.Muter Co of Chigago which were so beloved by Radio Ltd. So much so that even after the war when supplies of American components were restricted by currency problems, Radio Ltd turned to a British maker, Cressal, for a substitute.

Then there are the myths that persist to this very day, at least I think they're myths. There are people who will swear that EM speakers sound better than PM types; people who state with conviction that 2A3s sound better than 6A3s; even that the early type 2A3s sound better than the later type. Surely there is no scientific basis for such beliefs? As listening to music is a notoriously subjective process this must be the explanation.

By the way, the 'Hagra' receiver illustrated on p.14 of the May 1985 *Bulletin* was not the only N.Z. made receiver to use a screen-grid valve in 1928 because in that same year Radio Ltd also produced a screen-grid set, but theirs was an all-wave model using plug-in coils. The valves used in the two sets were quite different, the Hagra used an Osram S625, being the only commercially made set to do so. The Ultimate set used a Philips A442, and in the AC model an E442.

J.W.S.

THE ULTIMATE 524 SUPERHET

by G.R.Gilbert

Some months ago I purchased an early Ultimate radio in tatty condition As was often the case with sets using this particular type of dial movement, the friction drive had failed and a heroic repair had been attempted by cutting a hole through the escutcheon and fitting a ¼" shaft direct to the gang spindle via the original centre boss of the dial. This permitted the set to be tuned and indeed it still functioned after a fashion.

Comparison between the set (see illustration) and an advertisement in the 1932 N.Z.Radio Guide and Call Book led me to believe that I had a model 524, described in the ad as a 'beautiful superheterodyne mantel receiver'. This model, as far as I know, was probably the first superhet* to be designed and manufactured commercially in New Zealand.

The set was largely untouched, other than for some replacements in the power supply, as the photograph shows. I traced the circuit and from the lie of the components and unused chassis holes guessed that the same chassis had been used for a two-stage TRF in previous years. The valve line-up was pretty standard for the time - 24A autodyne mixer, 35/51 IF stage having variable bias for volume control, 24A plate detector and 47 pentode output. The rectifier was an 80.

There was an inductively-coupled band-pass 'filter' between aerial and autodyne grid which was intended to minimise 'second-spotting', as it was called, due to the low intermediate frequency used (approx 140Hz), as the image could fall within the band.

The most surprising aspect of the set, apart from the fact that to replace the torn grille cloth the entire front of the cabinet had to be prised away,* was the appearance of the IF transformers. They were obviously hand made, one at a time from basic raw materials - wire, sheet metal, insulating material and nuts and bolts - using hand tools. The metal was cut with shears and the bases and bobbins were secured by brass nuts and bolts in a somewhat amateur fashion. Even the single pre-set capacitor on each transformer had been fabricated from phosphor-bronze sheet.

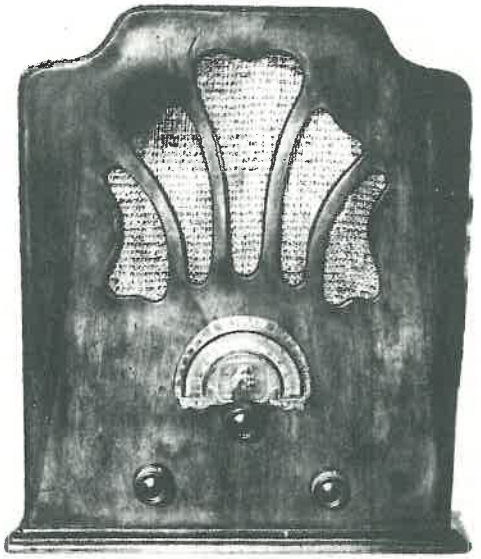
In several ways the set was, understandably, primitive, though a good example of Kiwi ingenuity.

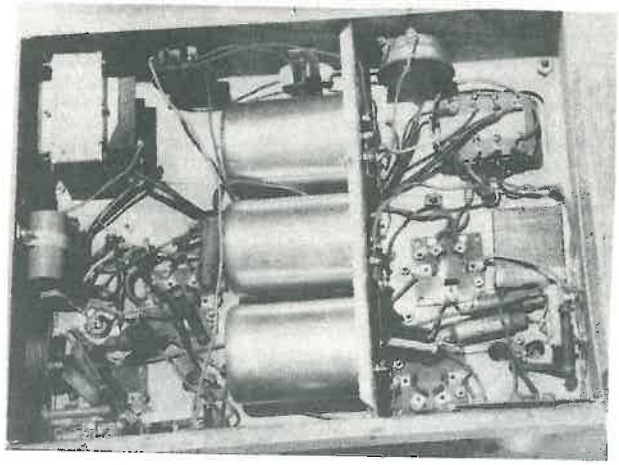
As Ultimate was, I understand, our first manufacturer of radio receivers on a reasonably large scale this set may merit some interest. It is an early model and only a few may still survive.

* *This should not have been necessary Ed.* All it was necessary was to knock out the glue blocks on the baffle board

* Not 1931 model 8 was the first

The mutilated Ultimate 524. Note hole cut in escutcheon





Underside view of 524 chassis

SOUND REPRODUCERS

Alan L.Roycroft

Up to the time of experiments with human voice reproduction by Bell and his contemporaries the only sound reproducer used was for Morse or other coded telegraphic signals; it consisted of a clickety-clack electromagnetic sounder. If amplification was needed a sounding board or an elementary horn was added. Upon development of sound or voice reproduction by the new telephone or phonograph in the late 19th century, a search was started for a compliant non-resonant diaphragm that has not ceased in the ensuing one hundred years.

Edison listed hundreds of materials from which a diaphragm could be made and set his staff on to endless experimants. Bell, on the other hand, a more practical inventor, concentrated on iron and steel suspended in a magnetic field whose flux could be modified with an associated coil passing electrical impulses. The lighter the diaphragm, together with the strongest magnetic field with the least spacing between the poles and the diaphragm, the better the results for both transmission and listening. Bell telephones, used for both functions, were into their third year before a carbon transmitter was used.

Since vacuum tube amplifiers were not introduced until the early 20th century, reproduction had to be by earphone(s) although a 'carbon' amplifier was introduced and used up to the 1920s. It consisted of an electromagnetic armature directly connected to a carbon microphone diaphragm. Amplify it did, but with atrocious distortion. One German model had a double-button carbon set up with an earpiece connected to each button. Stereo yet?

Phonograph experimenters concentrated on using horns for sound magnification and it was soon realised that horn shapes which followed the mathematical expansion rate of the exponential curve were the most successful. The length of the horn determined the lowest frequency that could be amplified without loss. Sir Oliver Lodge developed and patented a type of moving-coil speaker and one of his early 20-ft-long horns is still used to announce the daily closing of the Science Museum in london.

Horns could be rolled, flattened, reflexed or curved so that some early acoustic phonographs had phenomenal sound qualities, considering the restricted response of early recordings. As soon as vacuum tube amplifiers were available, loudspaeker development followed along phonograph horn shapes. In spite of the knowledge that was available, some manufacturers appeared to ignore the principles involved. For example, the Radiola 'UZ' horn speakers with their thick throats and stubby flares looked very clumsy. This was rather strange for RCA had bought out the Victor Talking Machine plant and would thus have had access to all the Victor designs and patents.

However, RCA was one of the first manufacturers to switch to the production of magnetic cone speakers, the Radiols 100 series which were attractive and also sounded great. Another early manufacturer was Crosley whose 'Musicone' speaker was noted for its efficiency and attractive appearance.

To improve the housewife's acceptance of the 'wireless', manufacturers began installing both cone speakers and horn speakers in the same cabinet which housed the radio itself. Some manufacturers, notably Atwater Kent and Crosley, continued to offer sets which had a separate speaker for some time after 'all-electric' radios were in common use.

With the advent of electrical recording, some console model phonographs had better sound quality than most radios. Music critics stressed this in articles and radio manufacturers had nowhere to go.

Meanwhile the development of of moving-coil speakers continued. Magnavox used a moving coil connected by a metal tripod arrangement to a regular flat iron diaphragm. Moving coil or 'dynamic' it surely was, but the wide magnetic gap was too much for the permanent magnets of the 1920s to cope with and so a 6-volt electro magnet was used.

Finally, patent restrictions were eased and even moving-coil headphones became available. In their day these were as sensational as listening to stereo is today on modern dynamic headsets. The 1930s period was noted for the number of different brands of speakers made, both by set makers and specialist manufacturers. In England during the early 1930s Electric & Musical Industries Ltd began making some very fine sets which used outstanding speakers and had cabinets designed with speaker resonamce in mind. A large triode output valve, or bass boosters, or equalised response, or even negative feedback were used to improve reproduction. In the U.S. Zenith used resonator shells over the console model speakers which could be adjusted by the listener. Philco was the first to add a tweeter, although they had used 6" or 8" 'resonators' for a few years. These were speaker frames and cones with the apexof the cone fastened to a pliable fibre strip and mounted in the front panel of the cabinet.

At this time permanent magnets were known, but particularly in the U.S., they were seldom used and did not find acceptance until improved alloys such as 'Alnico' were introduced. The Jensen company had a license to manufacture the Western Electric 15" and 18" "Loudspeaking Telephones' which the Bell Co had developed for "Wide Range" and "Mirrorphonic" theatre sound systems. Jensen's 14" model M20 was a marvellous speaker for PA work. I used them in Auckland at Western Springs, the Domain, the Town Hall, just about everywhere.

Telefunken in Germany had developed the electrostatic speaker at the time when the magnetic cone type were in general use. The construction consisted of a backplate with a floating diaphragm polarised by the application of a high voltage. Because of the difficulty of obtaing a pliant insulating diaphragm that could be coated with a film of conducting material,electrical breakdowns were common and for this reason the early electrostatic speakers were not very successful.

The Brush Development Co in the later thirties developed the piezo-electric crystal reproducers and microphones. The speakers were mainly tweeters and the Brush crystal earphones were very popular, even used by hams of the day as microphones. The art of sealing the man-made crystals and their ultimate decomposition was beyond the practices and materials available at the time. Woe betide any technician opening these crystal cartridges as the Rochelle salts used has about six times the potency of Epsom salts. I think we all suffered.

Once the dynamic speaker was accepted as the only way to go, there came on the market all sorts of variations. The Peerless Co made one with a voice coil consisting of a single turn flat copper strip with the matching transformer likewise having a single turn strap as the secondary winding. To explore the qualities of low impedance triodes, such as the Marconi-Osram PX25A, and their damping action on the speaker diaphragm, two English factories produced speakers having centre-tapped voice coils of sufficiently high impedance not to require the use of output transformers.

In the early days some American firms such as Baldwin, Jensen and Magnavox made speakers having 6-volt field coils. Originally such coils were energised by the 6-volt storage battery used for tube filament lighting but with the advent of all-electric operation these speakers were fitted with step-down mains transformer and dry-plate rectifier. Sometimes an electrolytic capacitor was used for hum reduction. Which components failed first could be identified by the smell. If the smell was pitchy it was the capacitor, if the rectifier failed one could imagine that there were cats about with poor kidney action.

Whatever the future holds in speaker development, I doubt that any will exceed the efficiency of the Western Electric 555 driver coupled to their standard 12-ft exponential coiled horn designed for early talkie use. A 3000-set house could be adequately served with one type 42 amplifier having only 4.4 watts total power output. Two English companies, Tannoy and Vitavox, still sell straight exponential horns about four feet long and fitted with duralumin-diaphragm drivers. The sound quality far exceeds that of the horrible reflex 'bull horns'. The sound velocity is maintained so that with fairly low sound pressure changes, the penetrating effect of their reproduction catches everyone,s attention. I installed some of these straight exponentials at a baseball field in Pearl Harbor Navy base which was used for an address to Navy personnel by President Eisenhower. Aides later asked me where they could get similar speakers, so i gave them the Vitavox name and address. I often wonder if I missed out on some commission!

SIMPLE JOBS FOR SIMPLE PEOPLE

by ALAN ROYCROFT

Well you did a fantastic job on the cabinet, the cracked dial glass can hardly be seen, but there is that terrible smell of death from the power transformer when the set is switched on. Take heart, all need not be lost. All you need is courage, a steady hand and a clear head. These primary requirements will no doubt disqualify some of my readers, but let us press on regardless.

To have a smelly power transformer the set is likely to have been made between 1928 and 1940*; the rectifier valves most commonly used during this period being the types 80, 5Y3. The first step is to remove the rectifier then turn on the set and wait for the ominous aroma. If it happens then carefully go over the dial light connections, or better still remove all dial light holders from their clips. The reason? A lot of early sets had the heater supply center-tapped to ground and it takes very little for a dial lampholder to touch a groundedmetal part of the dial and thus short out half the heater winding on the transformer. This rarely caused a burnt out transformer but it sure could stink up the house.

Now, if the stinkup disappeared when you removed the rectifier you could be lucky, for the next step, to locate the cause of the excessive B+ current, would make Sherlock Holmes very proud. Remove the output tube(s), which can usually be identified as being larger than others in the set, replace the rectifier and switch on.* If pitchypoo does not return you may have a shorted output tube, a fault that easily be traced with a tube checker or by substitution. If the tube test OK, and I include a gaseous condition (no,silly I mean the tube not you) there is sometimes another cause, such as lack of grid bias due to a shorted or leaky audio coupling condenser or shorted bias bypass cap which may get some people into a gray area, but at least you tried and you did not yank out the transformer.

Finally, if after removing the output tube the stinkeroo continues, you have one more chance to save the day against enlisting more technical help . Turn the chassis upside down and identify the main filter capacitors, which could be 1" by 7" aluminium cylinders, clip off the connections to the bottom terminal and try again. If the set is of 1928-1932 vintage the capacitors are likely to be enclosed in a metal can with lots of lovely coloured wires protruding. You could cut away widly, or you could cut them after you have identified them with tags. Then plug the set back in, when it will hum like a hive of wild bees, but not to worry. Wait for the telling smelling and if it does not return you are on your way. Reconnect the pretty wires one at a time until you find the culprit.

If the set uses 'wet' tubular aluminium can electrolytics you could simply disconnect them and leave them in place, replacing them with modern tubular dry types. On the otherhand, if you are a purist, you could carefully remove the crimped top caps, pull out the, er, guts and insert new capacitors in the old cans and no one will know they are there.

After all this, if the smell still prevails you will need a large shovel and an instruction manual for the burial of the dead, according to which religious persuasion you follow, because unless the set is worth fitting a new power transformer it will soon be quite dead.

** This procedure should be used with care. In cases where a high-resistance (2500 ohm) series-connected speaker field coil, together with a 385-volt transformer, is used the rise in HT voltage can blow the first filter capacitor if it is a paper or dry electrolytic type. Ed.*

VINTAGE RADIOS BECAUSE .....

an R.King

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SEEN AT THE FLEAMARKET

Above. Phil McGechie in discussion with Des Wright (r.)

Above right. Peter Noonan came down from Whangarei for the occasion.

Lower right. Don Strange (r) appears to be bowled by something told to him by Eric Kirby (l). Gary Bryan (extreme r.) seems to have found a bargain.

OMINOUS RUMBLINGS DEPARTMENT

With this issue of the Bulletin my supply of material from contributors is just about used up. Unless further contributions are forthcoming the future of the Bulletin is in jeopardy.

It amounts to this: if you want the Bulletin to continue the you must do your bit by putting pen to paper. There must be many members who could provide contributions but who have not yet done so.

Let's hear from you ..... soon.

Without contributions from members there can be no Bulletin, and without a bulletin the Society is unlikely to able to function on a national basis. Don't let it happen to us.

John Stokes
Bulletin Editor.

POWER AMPLIFIERS.

SIMPLE JOBS FOR S

by ALAN ROYCR

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The Power Amplifier is designed for Amplification of Wireless Speech and Music.

A unique feature of this amplifier is that the output is entirely controlled by switches on the panel, thus avoiding the use of complicated connections to one, two or three valves. The switches operate the filaments and complete the output circuit to the RADIO MAGNAVOX. A separate rheostat is provided for each valve and the instruments are splendidly finished in polished Mahogany with polished bakelite panel and nickelled fittings.

In the design and manufacture of these instruments the aim has been to produce a reliable amplifier free from distortion of speech and music. Reproduction free from distortion can be obtained only with Amplifiers designed and manufactured by experts, and in this class **MAGNAVOX POWER AMPLIFIERS** stand supreme.

No. R 1343.

No. R 1332. **Two-valve power amplifier** in polished mahogany case, polished bakelite panel and nickelled fittings, complete **with valves** but without batteries.

Price **£22 - 10 - 0**

No. R 1343. **Three valve ditto.**

Price **£35 - 0 - 0**

Note. A six Volt accumulator should be used for filament lighting and the high tension battery (for plate) must be from 100 to 300 volts.

When using a Magnavox Power Amplifier it is necessary to connect a Low Frequency Intervalve Transformer between the output of the receiving set and the input of the Power Amplifier. Any standard type of transformer will answer the purpose.

BRITISH MAGNAVOX ... AND ANOTHER SMALL MYSTERY

This page from a 1922 Sterling Electric catalogue is interesting because it clearly illustrates the difference between the American and British Magnavox amplifiers. As can be seen, the British amplifiers are fitted with what appears to be a unique type of American style 'UV' valve socket having two separate twist-lock bayonet slots, apparently to allow the use of valves having either the standard American UV type bases or the Western Electric special base. But, why not 'English' sockets on a British product? And just what were the makes and types of the valves shown in the illustration?

Bearing in mind the date, 1922, it seems likely that the valves could easily have been W W I surplus types, but what actually were they? In the R1332 amp. the two valves have a strong resenblance to the American Moorhead type VT32 (see p.14 "70 Years" or p.171 "Saga") but there is no record of these particular tubes being fitted with UV bases. The valves in the R1343 amp. look very much like the wartime British R type, but here again there is no record of such valves being fitted with UV bases.

I COLLECT AND RESTORE VINTAGE RADIOS BECAUSE .....

by Ian R.King

A final check over the power pack connections, a half turn of the 'on' knob and a gold and brown wrinkle-finish Crosley 601 Bandbox tuned to a local station quietly produced a small miracle. No visible effect on a youngster standing by, but to me a sudden and sweet trip back down memory lane.

All the yesterdays, the long queues at the Regent Theatre on a Saturday afternoon, the warm sixpence for admission in my pocket, together with a penny for the tram ride home, the noisy smell of toffees being chewed, the hundred-and-one pleasures that sixpence could bring a small boy in the 1930s, they all came flooding back.

Fifty years rolled away and all because issuing from the speaker was the sweet, true voice of a young lady who never knew how many coal buckets I had filled, how many hens I had fed or how many messages I had run to earn the pocket money to go and hear her sing.

"It's Raining Sunbeams", "It's Foolish But It's Fun", "Amapola", were just a few of the best remembered. Deanna Durbin was the queen of my heart when I was seven years old . What a pity she will never know what enjoyment she brought a New Zealand kid with sixpence in his pocket.

In those days times were harder and the material things of life did not drop into your possession as easily as today, but they all the more were precious because of that. I am saddened that today's youngsters will never know those simple pleasures, but they have gone forever, and shouldn't our generation bear a lot of the blame?

Memories; yes, I think that is the reason why I collect and restore old radios. Any other members with the same problem?

N.Z.V.R.S. LIBRARY

Our librarian, Clarry Schollum, now has an updated list of publications which are available for borrowing. In addition to many new books there are also periodicals issued by the various societies with whom we have reciprocal rights. There is no charge for borrowing but out-of-town members must pay postage both ways. When ordering it is suggested that a remittance of $4 or $5 be included and any surplus will be refunded. Anyone interested should write for a copy of the book list to:-

Clarry Schollum
34 Pentland Ave
Mt Eden, Auckland 3.

OBITUARIES

George M.Howard, Hastings, on Sept 9 after a long illness. George was a keen DXer in the 1920s when he used a Federal Receiver.

Fred Collis, Henderson, suddenly on Oct.6. Fred, who worked for the Waitemata Electric Power board, was well known as a collector and restorer in the Henderson area.