

The Vintage Wireless and Gramophone Club of Western Australia Inc.

RADIO-GRAM

Issue 140

March 2023



News from the Vintage Wireless and Gramophone Club, Perth. WA.
This issue comprises the August 2022 to February 2023 Meetings.



Richard Rennie and Rodney House gave a presentation and amazing display of Toy and Novelty Gramophones at our Sept 2022 meeting.



HMV Model 886 wood cabinet mantle radio c.1946, AC, Broadcast and SW, was put into the Jan 2023 auction at a reserve of \$150, which was not attained.



Gail Cleland gave a presentation on some of her collection of His Masters Voice products at the 24 October 2022 meeting



At the January Members Auction there were plenty of items to look at and note down for potential bidding!

VINTAGE WIRELESS AND GRAMAPHONE CLUB OF WESTERN AUSTRALIA Inc.

EXECUTIVE 2020-2021

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Committee: Rob Nunn, Barry Kinsella, Andrew Wakeman, Vince Taylor, Reg Gauci, Tony Bayliss, Tony Barbatano

Assistant Committee : Sydney Pateman (Auctions).

Editor: Rob Nunn; Publicity/Website: Reg Gauci

Meetings are currently held on the fourth Monday of each month (with the exception of December) at 8pm in the Blue Gum Community Centre—Function Room. Visitors are always welcome!

Although the main interests of members are wireless receivers and gramophones (or phonographs) , many members are also interested in amplifiers, telephones, musical boxes, tape recorders, television receivers and other associated equipment and memorabilia.

Radio-Gram is currently published twice per year, in about February and September.

Send articles and advertisements to the editor :

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Please make sure your 'copy' is submitted by the meeting night prior to the issue month.

Advertisements are placed FREE of charge, but should be of a non-exploitive nature.

**Subscriptions: \$35 (payable in June)
(Concession rate: \$30)**

Editorial



Rob Nunn

Welcome to Edition No 140 of our Club magazine, "Radio-Gram"! This issue covers our club activities during the period from August 2022 to February 2023. Our club magazine is published twice a year at the present time.

The magazine complements our Club Website, <http://vwgc.org.au> managed by our Vice-President Reg Gauci. Members are reminded to refer to the website for all club activities.

At our August meeting John Paskulich gave an excellent presentation on "An Introduction to Optical Fibres" using a well-illustrated set of Powerpoint (PP) slides. This generated much discussion and questions. Thank you John! There was also a small auction of donated items.

Richard Rennie and Rodney House and Steve Austin provided an excellent display and PP presentation on "Toy and Novelty Gramophones" at our September meeting. This included demonstrations of a number of these vintage "toy" gramophones, many of which are quite rare.

Our magazine "Radio-Gram" No. 139 was handed out to members present at the September meeting and posted to others in early October.

At our October meeting, three of our members gave Short Talk presentations :

Gail Cleland (HMV product collectables) ; Barry Kinsella (Westinghouse) ; and Tim Gillett (Tape Recorders). Many thanks to these members for interesting presentations. There was also a small auction of donated items.

Our annual wind-up dinner, attended by about 30 members was held at the Melville Community Centre on 28 November 2022. This event was catered and paid by our club with \$10/person contributions from attendees. Thank you to Morgan and his wife for the music! Unfortunately a few members contracted Covid-19 at this event on this night. This was a reminder that the disease is still out there and debilitating. Fortunately there were no hospitalization cases.

The January Members Auction was held at the 23 January 2023 meeting. This was a large auction and included many vintage radios, amplifiers, turntables and a portable TV, which raised over \$700 for members selling.

A Committee meeting was held on 6 February 2023. Many items were discussed including the upcoming program for our monthly meetings to June 2023.

At the 27 February 2023 meeting a DVD was shown to members present, called "How We Got to Now—Light", narrated by Steven Johnson and produced by Nutopia.

Best wishes to all—Rob Nunn (Editor)

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CONTRIBUTORS TO ARTICLES IN THIS EDITION



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President and Editor
Rob Nunn



Webmaster and Vice-President
Reg Gauci



Secretary
Andrew Wakeman



Treasurer
Barry Kinsella



Minutes Secretary
Vince Taylor



Tony Barbatano
-Auctioneer



Committee
Tony Bayliss

ASSISTANT COMMITTEE 2022—2023



Assistant Auctioneer
Syd Pateman

Recent Events

August 22, 2022 : Optical Fibres (John Paskulich)

September 26, 2022 : Toy and Novelty Gramophones (Richard Rennie/Stephen Austin/Rodney House)

October 24, 2022 : Short Talks by Members :

- Gail Cleland – HMV products
- Barry Kinsella – Westinghouse
- Gary Cowans – Cossor Melody Maker radio
- Tim Gillett – Tape Recorders

November 28, 2022 : End of Year Dinner

January 2, 2023 : Members Auction

February 27, 2023 : DVD movie “How We Got to Now—Light” by Steven Johnson (60 mins)

March 27, 2023 — “The Story of Bakelite” Powerpoint presentation on history by Rob Nunn, with Andrew Wakeman on care and restoration of bakelite, with display examples.

Coming Events

April 24, 2023— Short Talks by members— Ohmmeters (Norbert Torney), Stewart Warner Radios (Barry Kinsella), TBA

May 22, 2023— DVD “Early Radio Shows in Australia” by David Hawks. Courtesy of Tim Gillett. (60 minutes)

June 26, 2023—AGM and Members Auction

24 July, 2023 – 6WN and 6WF (Russell Nash)

28 August, 2023 – “Vertical Record Players” (Norbert Torney)

25 September, 2023 – “The Story of Musgraves” (Vince Taylor)

23 October, 2023 – TBA

27 November, 2023 – End of Year Dinner - TBA



John Paskulich



Richard Rennie



Rodney House



Steven Austin



Tim Gillett



Gary Cowan



Gail Cleland



Barry Kinsella



Rob Nunn



Andrew Wakeman



Russell Nash



Norbert Torney



Vince Taylor

Minutes of Vintage Wireless and Gramophone Collectors Club meeting held at clubrooms Monday 22 August 2022

Minutes of Vintage Wireless and Gramophone Collectors Club meeting held at clubrooms Monday 22nd August 2022. 28 members present.

8.00pm. Meeting commenced.

The meeting was opened by President Rob Nunn. Apologies for not attending last month's meeting but was on holiday. All members are reminded that they must fill in the attendance book, this helps for Covid19 contact tracing.

Radiogram #139 is ready to go to the printer. There are some back issues of previous magazines here tonight if anyone wants one. Thank you to all members who have contributed to the latest issue. Don't forget to keep up with what's happening via the website.

Memberships were due in June and if you haven't renewed yet you can do so tonight or make your payment via bank transfer.

Tonight's presentation will be by John Paskulich on optical fibres. This talk was recently delivered at Wireless Hill for Science Week. Next month Steve Austin, Rodney House and Richard Rennie will present on toy and novelty gramophones.

Secretary's Report.

The club will be having a display at Have a Go Day at Burswood on November 9th. There was no incoming correspondence. Outgoing correspondence was a letter of appreciation for the talk delivered by Peter Strickland. The secretary's report was moved as correct by Don Ripper and seconded by Paul Hansen. Passed unanimously.

Treasurer's Report.

Tabled as a separate document. Moved as correct by Tony Bayliss and seconded by Dennis Grimwood. Passed unanimously.

General Business.

John Paskulich- Would like some pamphlets advertising the club as he will be giving another presentation in October at Wireless Hill Museum.

Don Ripper- Happy to offer his services as editor to anyone preparing an item for the club magazine. He was an editor for technical manuals for the ADF and has experience in the subject.

Items of Interest.

There were no Items of Interest.

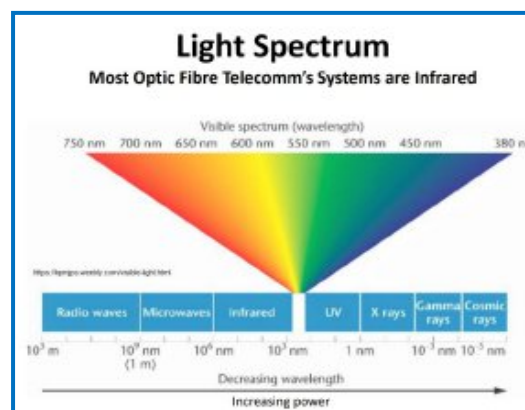
Meeting closed 8.15pm.



John Paskulich gave a very interesting presentation on "Optic Fibres" at our 22 Aug 2022 meeting.

Optical Fibre

- Consists of a light-carrying central core surrounded by a cladding material with a different refractive index to the core.
- This results in "total internal reflection" that enables light rays to travel the length of the fibre, even around bends
- Data can be transmitted over a fibre – usually as varying amplitudes, or pulses, of light
- Core usually a high quality/low loss glass



Typical Applications of Optic Fibres

- Internet and telephony systems
- Computer Networking
- Automotive Industry
- Surgery and Dentistry
- Decorations and Lighting
- Mechanical Inspections
- Military and Space Applications
- etc. etc.

22 August 2022 meeting photos



From Left to right (foreground) : John Parker with Barry Kinsella and Reg Gauci, examine some of the items up for auction during the August meeting.



Astor JN bakelite radio (painted) c. 1950's was auctioned for \$20



National "Ledsonic 1500"
AM/FM/Radio/Cassette/Record Player,
c. 1980's



Home-made signal tracer and multimeter
was auctioned for \$3.



From left to right : Rod Edward, Tony Barbatano and Syd Pateman examine some of the items up for auction.



From left to right (foreground and background) : Andrew, David, Tony, Reg, Richard, Barry and Dennis

Minutes of Vintage Wireless and Gramophone Collectors Club meeting held at clubrooms Monday 26th September 2022.

30 members present. 2 visitors.

8.00pm. Meeting commenced.

The meeting was opened by President Rob Nunn. Apologies were received from Reg Gauci, James Wemm, Richard Jefferies and Richard Yates.

Radiogram #139 has been distributed by PDF and hard copies are available tonight. Please make sure your name is checked off as you take one so we save on postage. Thanks to those who contributed. Keep in touch with activities via the club website.

An application has been made to the City of Melville for a grant to help with rental assistance for our meeting space.

Tonight's talk will be by Richard Rennie and Rodney House on the subject of novelty and toy gramophones.

After supper there will be an auction of donated items. A reminder that you cannot bid unless you are a financial member. Subs were due in July so get financial. The next meeting will be the last regular meeting for the year and we will be featuring short talks by some of our members.

Secretary's Report.

The Club will be represented at the Have a Go Day at Burswood on November 9th. There was no incoming or outgoing correspondence. The secretary's report was moved as correct by Tony Bayliss and seconded by Don Ripper. Passed unanimously.

Treasurer's Report.

Tabled as a separate document. Moved as correct by Bill Oxwell and seconded by Phil Oxwell. Passed unanimously.

General Business.

There was no general business to discuss.

Items of Interest.

Tony Bayliss- Astor NJ mantle radio, red painted case, Australian manufacture c.1950.

Norbert Tourney- Home made experimental FM radio from an Australian magazine circuit diagram c.1950.

Uses TV spare parts and has magic eye tuning.

Rodney House- Very slim portable gramophone by Poly Portable USA. Features an oscillator/ resonator rather than a soundbox and horn.

Dennis Grimwood- was listening to Mid-West Radio yesterday and was surprised to hear of them playing a vinyl Beatles half-speed master.

Meeting closed 8.20pm.

The talk was by Richard Rennie and Rodney House on the subject of novelty and toy gramophones. An auction of donated goods was held after.



Rodney House and Richard Rennie gave a superb talk and demonstration on Toy and Novelty Gramophones at the Sept 2022 meeting.



The talk employed a Powerpoint slide show illustrating many early toy gramophones.



26 September 2022 meeting photos



Rodney House and Richard Rennie gave a superb talk and demonstration on Toy and Novelty Gramophones at the Sept 2022 meeting.



26 September 2022 meeting photos



A good turnout of members at the 26 Sept 2022 meeting enjoyed the comprehensive display of Toy and Novelty Gramophones by Rodney House and Richard Rennie.



Left and right : Norbert Torney did a Show n Tell on his home made amplifier



AWA Cream-colour bakelite mantle radio Model 532ME, c.1950's was auctioned for a bargain price of \$30



Tony Bayliss showed his red-painted bakelite

Minutes of Vintage Wireless and Gramophone Collectors Club meeting held at clubrooms Monday 24th October 2020.

29 members present.

8.03pm. Meeting commenced.

The meeting was opened by President Rob Nunn. Apologies from James Wemm, John Parker, Richard Jefferies, Reg Gauci. Thanks to all who contributed to the last club magazine.

The application to the City of Melville for a grant of \$350 to help with our rent has been approved. This was the last time we were eligible to apply and we are grateful to the City of Melville for the assistance.

The annual dinner is set for Monday 28th November at 7.30pm. If you wish to attend you can pay tonight or by bank transfer, the cost is \$10. Thanks to Richard Rennie and Rodney House for last month's presentation.

Tonight we will have 3 mini-talks; Gail Cleland on collecting HMV, Tim Gillette on wire recorders and Barry Kinsella on Westinghouse.

Secretary's Report.

Would like to acknowledge all the work that Rob has done on securing the grant to help with our rent.

Have a Go Day is on at Burswood on November 9th and the club will be exhibiting.

Reminder to get your payment for the end of year dinner in early so we can confirm numbers for the caterers.

There was no incoming or outgoing correspondence. The secretary's report was moved as correct by Tony Bayliss and seconded by Tony Barbatano. Passed unanimously.

Treasurer's Report.

Tabled as a separate document. Pleased to note that about \$300 was made on the last donated items auction. Moved as correct by Don Ripper and seconded by Sid Pateman. Passed unanimously.

General Business.

No general business.

Items of Interest.

Tony Bayliss- Music box in the form of a stuffed kitty. It's head moves when it is operating. Date and origin unknown.

Meeting closed 8.15pm.

3 mini talks were given, Gail Cleland on collecting HMV, Tim Gillette on wire recorders and logging recorders and Barry Kinsella on Westinghouse radios.



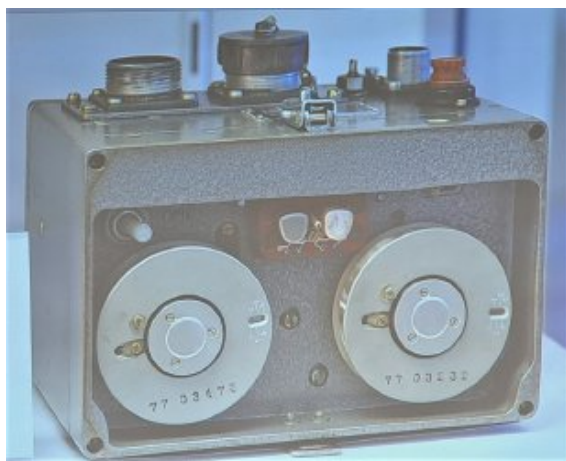
Gail Cleland gave a Short-Talk on her interesting collection of HMV products, Thanks Gail!



Above and below : Barry Kinsella gave a Short-Talk on his Westinghouse RF radio



24 October 2022 meeting



Above and Below : Tim Gillett gave a Short Talk on his interest in tape recorders, supplemented with a slide show and some examples from his collection.



Edison Standard Model B c 1906 phonograph was auctioned and brought \$150.



Above and right: More of Gail Clelands displays for her talk on HMV products.



28 November 2022 dinner



Our annual dinner was catered with a spit roast and dessert and attracted about 30 members.



Morgan Wilde and his wife provided a DJ service to entertain members at the dinner. Many thanks to them and great to see some dancing to the music!



Minutes of Vintage Wireless and Gramophone Collectors Club meeting held at clubrooms Monday 23 January 2023. 30 members present.

8.00pm. Meeting commenced.

Presidents Report

The meeting was opened by President Rob Nunn and a welcome extended to a visitor Stephen Mudge

Apologies received from Gail Cleland, Don Ripper, Richard Jefferies, Gary Cowans and Dean Ashworth. Members are reminded to sign the Attendance book.

Please do not attend our meetings if you have symptoms of Covid-19.

Many thanks to those members who contributed their stories and experiences to articles in the last edition of our club magazine, Radio-Gram No. 139.

Your Committee will be meeting in the next couple of weeks to put together a program of presentations for the year to June.

Tonight we have the first of our two yearly Members Auctions where members can sell their own gear. After the formal business we will break for **supper and then do the Members auction.**

Secretary's Report.

There was no incoming or outgoing correspondence. The SRC of WA Have-a-Go-Day was held on 2/1/2022 and we had a public display table of some radios and gramophones etc. Many thanks to the members who were involved in organising and setting up the display and providing information to interested members of the public.

Dean Ashworth has resigned as Librarian but will remain a non-meeting attending member. We do not plan to appoint a new Librarian at this stage. At the next meeting we plan to auction a lot of donated items. The Secretary's report was moved as correct by Tony Barbitano and seconded by Paul Hansen. Passed unanimously.

Treasurer's Report.

Tabled as a separate document. The November end of year dinner cost was \$1681. Attending members contributed \$300, so the net cost was \$1381 to the club. (30 attendees @\$10 each). The club may wish to consider whether this considerable expenditure is justified and sustainable.

Moved as correct by James Wemm and seconded by Lex Curnow. Passed unanimously.

General Business.

Some discussion on November dinner cost. Will be on the Agenda for the next Committee meeting.

Items of Interest.

No items were raised.

Meeting closed 8.20pm.



Bush BW 5777A c.1975 portable radio (working) was auctioned for \$25



National Panasonic GX600M was passed in with a reserve price of \$60.



GE replica Model 7-4100J cathedral style radio c.1932, with box was passed in with a reserve of \$80

23 January 2023 meeting



Members examine a large collection of items in the January Members Auction.



This Fender guitar amplifier (listed as faulty) was auctioned for \$10



A number of 1960's transistor radios were auctioned and sold.



This National Panasonic 5-Band transistor radio, in good condition was auctioned for \$35.



Philips FM-AM Deluxe ("Diamonds are Forever" radio) was sold for \$30.



Toshiba mains/portable TV was auctioned.

Right : Left side—King radio Neutrodyne c.1920's sold for \$40.
Right side 2-valve radio (valves listed as good) sold for \$20.



Minutes of Vintage Wireless and Gramophone Collectors Club meeting held at clubrooms Monday 27th February 2023.

32 members present.

8.00pm. Meeting commenced.

The meeting was opened by President Rob Nunn. We have apologies tonight from Reg Gauci, James Wemm and Don Ripper. Members are asked to sign the attendance book.

Thanks to all who have submitted items to Radiogram #139. Radiogram #140 is now in preparation and submissions are welcomed. Keep in touch with the club activities via the website.

A committee meeting was held on February 6th and a programme was set for the net half of the year. The club has decided to no longer participate in the Shannons Classic Car Show as it is now being run by a third party and charges are being made for club participation.

The club is looking for more speakers for the monthly meetings. Even if you only wish to give a short talk we can group three or four together as we have done successfully in the past. Tonight's presentation will be a DVD of an episode in the series How We Got To Now dealing with light, our current understanding and technology.

This will be followed by an auction of donated items. We are still looking for a few auction bidder numbers that are missing. At the next meeting in March we will be featuring a presentation on Bakelite. Bring in your Bakelite radios to help illustrate this talk.

Secretary's Report.

Correspondence in consisted of the HRSA magazine Radiowaves. There was no outgoing correspondence. We will not be showing at the Shannons Car Show due to the new management and cost but the Have A Go Day event will continue to be a good opportunity for us.

At present we are still waiting to hear if the Guildford Heritage Day is going to resume and if so will exhibit there.

There are lots of good donated items available at auction after the presentation tonight. The secretary's report was moved as correct by John Pascolich and seconded by Merv Thompson. Passed unanimously.

Treasurer's Report.

Tabled as a separate document. The term deposit interest rate has increased to 3.6%. There is a small discrepancy in the takings from the January action due to a money handling error. Moved as correct by Bill Oxwell and seconded by Tony Bayliss. Passed unanimously.

General Business.

John Pascolich- A collectors Fair will be held at Maida Vale Reserve on Sunday 5th March. Might be something interesting there.

Items of Interest.

Norbert Tourney- Mantle Radio, wood case, B352 made in Australia by Brittain . Was purchased at the last auction in very poor shape, the only good component was the chassis which is basically a Phillips copy.

Tony Barbatano- LCR Bridge for accurate electronic measurements.

Meeting closed 8.15pm.

Tonight's presentation is an episode of the series How We Got To Now dealing with light, our current understanding and technology. This will be followed by an auction of donated items.

Steven Johnson



Steven Johnson presented "How We Got to Here—Light" DVD



The DVD began the story of Light by showing the earliest popular forms of artificial light derived from the burning of valuable sperm whale oil.

27 February 2023 Meeting



Tandberg Model 74B reel to reel tape recorder sold at auction for \$25



From left : David Tennant, David Littlely and Norbert Torney examine items up for auction



Norbert showed a Brittain mantle radio which he purchased at the last auction.



Box of mainly mini-valves in the auction



Capella 548 Linnet and Laursen valve mantle radio c. 1950's was sold at auction for \$60



Left to right : Tech Signal Generator, model TE-20D sold for \$10, and white plastic case Kriesler mantle radio c. 1960's, in the auction, sold for \$20

The Detector-less Radios, the Darrelle and the Airzone 300 baby cathedral.

Question: how does a radio work without a detector? Answer: it doesn't!



Norbert Torney

A couple of decades ago Len Lewis (a former club president & the proprietor of the "Bower Bird" the best known record shop in Perth at the time offered me some of his radios, one was a Darrelle, few people including me ever heard of one. The radio dated from the 1930 to 1933 period; a three valves plus rectifier set up (57, 58, 59 and type 80 rectifier).

These radios are usually autodynes or band filter TRFs with reactive detectors, of either the grid leak or anode bend type. This type of detection was necessary, because after de Forrest invented the triode valve and his Audion, there was no need for diodes anymore; thus nobody manufactured same, until 1934 when diode detection became necessary again.

The Audion was a peak level detector, in effect the forerunner of all reactive detectors, not only provided this triode detector RF or signal detection, it also produced sizeable gain.

If a valve or transistor is biased off, into a stage when no current flows any amount of a very small voltage above the cut off level will produce a current flow, making the circuit a peak level detector or RF rectifier. This method of demodulation was practised until diodes were reinvented at about 1934.

In Europe it was the AB1/2 and in the USA the 6H6, both dual diodes. For practical reasons diodes + triode or diodes + pentode valve combination followed and after 1934 reactive detectors became relicts of the past. Diode detectors not only produce audio but also a negative DC voltage which enables effective auto gain control (AGC) but also can control magic eyes (tuning indicators). Diode detectors became standard fare until integrated circuits were introduced.

Before I continue I need to explain what signal detection actually is. After Heinrich Hertz proved the existence of electromagnetic waves it was possible to generate same and detect same, but Hertz's method worked only up to one meter effectively. Something more effective had to be invented.

Edouard Branly came up with the "Coherer" the first effective long distance wave detector. Marconi improved same to the extent that long distance wireless telegraphy was possible (Scotland to Canada). F. Braun invented the galena crystal detector and J. A. Fleming the vacuum tube diode. Both inventions were a sizeable improvement over the coherer.

The coherer is a device which changes from a non conductive stage to a conductive stage when activated by an electromagnetic wave; a coherer can only detect carrier waves but not sound (audio). By contrast diode detectors (crystal & vacuum tube variety) detect audio by rectifying the carrier wave; this will separate either the positive or negative sideband from the carrier wave, thereby producing audio after passing a RF filter. -

This applies only to AM radio, FM, SSB, CW and other forms of modulation require much more sophisticated decoding methods. Because demodulation of AM signals is rectification of the RF carrier wave it also generates a DC voltage analogous to the field strength of the carrier wave, it is used for automatic volume control; in actual facts the volume of every station is just about the same if applied correctly. Reactive detectors cannot do this job.

However diode detectors are unable to identify continuous wave transmission (CW) as used for Morse code transmission. To make Morse code audible a BFO is necessary. By contrast a reactive detector is capable to produce beat frequency notes if the feedback control is advanced far enough. A radio with a reactive detector and feedback control is capable to produce an audible signal when CW has been detected.

Diode vision detection was also used in televisions until the event of digital TV. - Note, not for sound detection as same was FM. Except early British and German TVs (405 & 444 line systems). TV was pseudo AM with the lower sideband suppressed.



Airzone Model 300 cathedral type, c.1934

There are no detector-less radios apart from the Darrelle and the Airzone 300 to my knowledge, therefore I assumed that a detector needed to be added to these radios to make them work. Question is how could a radio work, that theoretically can't work; clearly I was missing something, but what? Unable to find the secret property I

missed, I proceeded to find a more acceptable solution. My first thought was to replace the 58 IF tube with a diode pentode combination like the 75, unfortunately they are all 6 Volt tubes. Another solution might be to replace the output tube (59) with a Philips ABL1 (dual diode, power pentode), again it is a 4 Volt variety.

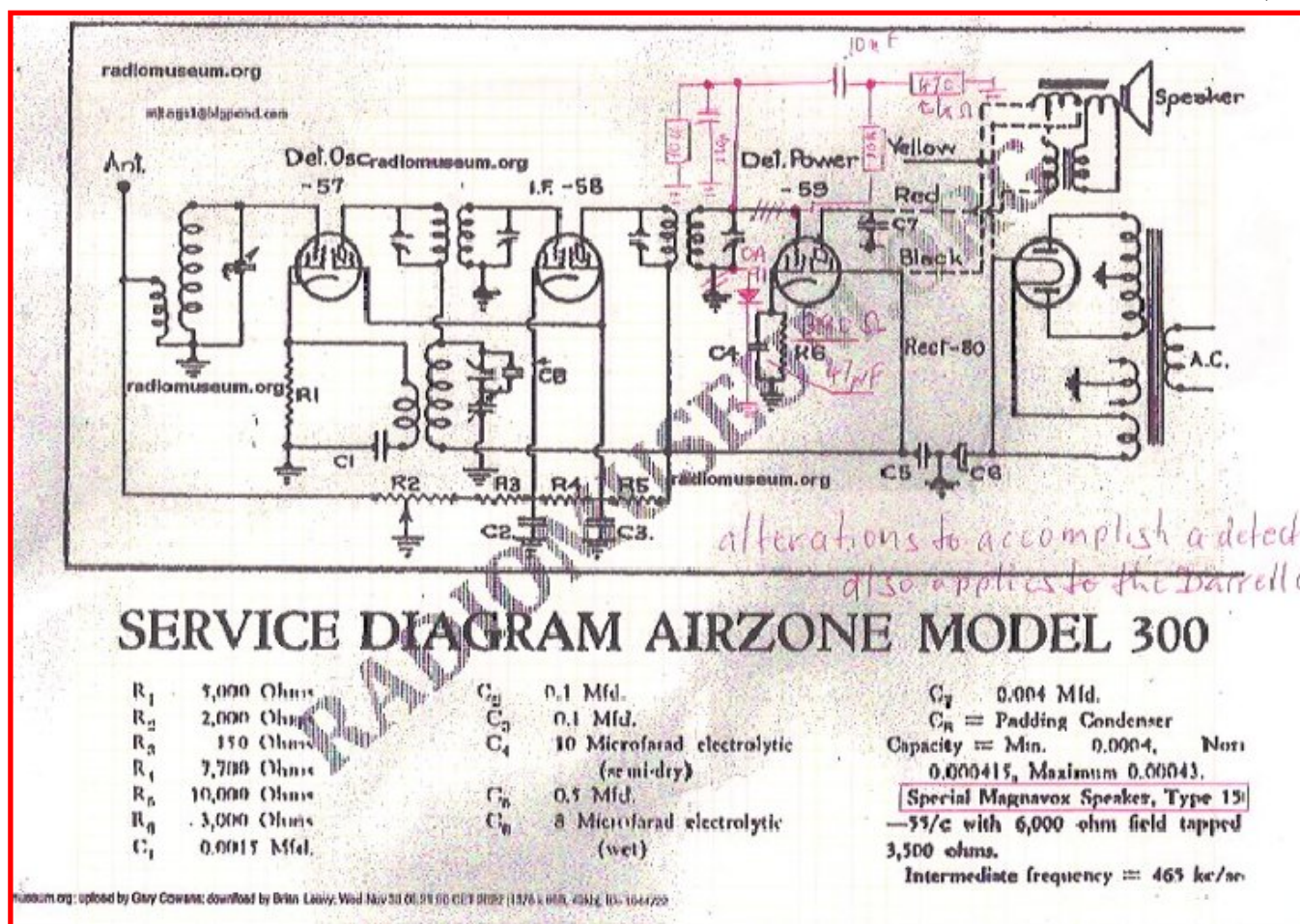
Another solution was to wire up grid 3 of the 58 as a substitute diode anode; this idea worked but produced insufficient volume. I added a transistor preamp but the volume was still too low.

Over the years when I fixed common radios with low volume and poor AGC response I did wire GE point contact diodes across the original vacuum tube diodes. That generally doubles volume and produces measurable AGC.

Replacing same with a suitable new one and bingo the radio worked. So why couldn't I make the radio work in its original condition, I couldn't work it out. I published my findings in the Radiogram magazine of our club, which was also sent to other clubs in exchange to their magazines.

After a while collectors from Melbourne gave me a plausible explanation. It appears the original radios used a 50 kilo Ohm output transformer together with a 10 Kohm cathode resistor, running the 59 at near cut-off point thereby getting demodulation and also sound. I was assured nobody had ever seen a working original 50 Kohm output transformer that wasn't open circuit. No better solution as I already had found was offered.

THE AIRZONE 300, I WAS ASKED TO FIX HAD AN ALMOST IDENTICAL CHASSIS TO THE "DARRELLE",



Recently I fixed a radio with uncontrollable spurious oscillation (howling, motor boating etc.) by adding a GE diode across the tube diode, it was like a miracle, clean sound and a negative voltage across the AGC line even without a signal. Because of the low threshold of GE diodes atmospheric noise is also rectified and the resulting negative voltage stabilizes the radio.

Using a new old stock Philips OA81 this idea worked like the proverbial clappers. I decided on a tidy unobtrusive wiring of the last IF coil and adding a grid leak resistor from G1 of the 59 to ground; the sound was tinny and unimpressive due to a nicely toasted cathode resistor.

note, the modes that made the radio work. Alterations are drawn in red into the original circuit. Now a short circuit description of the Airzone 300 radio, the second radio I experienced with no obvious detector.

The mixer using the 57 pentode is a stock standard text book design. Volume control is the common RF variety whereby the antenna terminal is loaded (actually earthed) via a potentiometer (wiper earthed) this pot also serves as a variable cathode resistor for the IF tube, increasing or decreasing the gain of the 58 IF tube; also a textbook circuit. But now we see the last IF transformer feeding straight into G1 of the type 59 output tube. A design

which can't possibly work, because the coil with only about 3 – 5 ohm resistance would short any audio present straight down to earth, making it impossible for any sound reaching the speaker transformer. However this design would make a good low power transmitter for the 465 khz IF frequency.

In accordance with the crt. diagram the cathode resistor is 10 000 ohm, producing about – 28 volt bias roughly cut off bias for the 59 output tube; impossible to get enough plate current to drive a standard 3 watt speaker. Looking at a supply voltage of 280 Volt and a total resistance of approximately 60 000 Ohm the total plate current cannot exceed 4.5 mA, the power produced this way hovers around 55 mW. Actually using a 3 Watt tube to produce 55 mW? I am clearly missing something.

Having said all that I would dearly love to hear one of these radios in original condition and working! - They must have existed otherwise the radios wouldn't have been bought. Maybe someone decided to invent square wheels!

.....Norbert Torney

In Memory of Tony Smith

I was very sad to hear of the recent passing of Tony Smith.

I am pleased that our Treasurer, Barry Kinsella was able to represent our club at Tony Smiths wake.



Tony Smith

Tony joined our club in 2007. Tony has made major contributions to the club over the 16+ years, including films and presentations at our monthly meetings, contributions of magazine articles to our club magazine "Radio-Gram" and his substantial period as a Committee member.

Tony was a well respected and well liked fellow who was always very polite and well spoken to other club members.

We are aware that Tonys health was deteriorating over the last year or so, which made it very difficult to attend our monthly meetings, but a number of members kept in touch with him.

We will miss Tonys cheerful presence at our club meetings and his interesting talks. And comments.

We offer our sincere condolences to his family and loved ones.

Rob Nunn
President and Editor - Vintage Wireless and Gramophone Club WA Inc
29 March 2023

Have-a-Go-Day 9 November, 2022

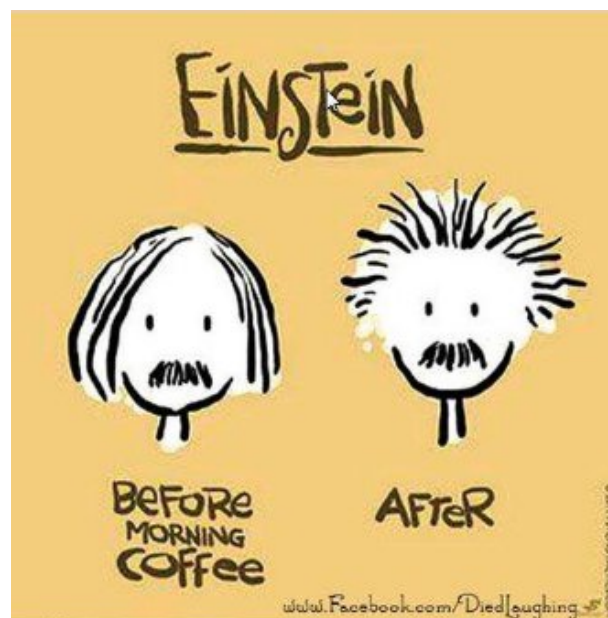


From left to right : Tony Baylis, Barry Kinsella, Rodney House and Reg Gauci. Thanks for your work!

The annual SRC of WA Inc. Have a Go Day 2022 was held on 9 November, 2022 at Burswood Park in Perth. Our club was represented by Barry Kinsella, Reg Gauci, Rodney House and Tony Baylis, who brought along various items of their radio and gramophone collections for display to the public.

Our display stand received many visitors, and some of these had questions about their own possessions which our resident experts endeavored to answer.

Many thanks to our representatives on site for their hard work in setting up the display and assisting with enquiries from the public.



THE BOMBING OF DARWIN THE WIRELESS SET 22 (AUST) YELLOW BAND



Fred Franklin

During the morning of 19 February 1943 Father McGrath was a priest on the Tiwi Islands eighty Kilometres north of Darwin.

Father McGrath observed a large formation of aircraft flying over the Tiwi Islands. He called Darwin RAAF and told them of this event. He was told to send the message in code or not at all. Father replied that they had no code book or codes. The message was ignored.

He called again and said that the formation of aircraft was very large and headed for Darwin. Darwin said that it was a flight of American Kitty Hawke military air craft so do not worry about it.

At two minutes to ten o'clock Darwin was bombed off the face of the earth by the Japanese.

In Darwin at that time there was a Chinese population who were mainly miners and merchants. Some Aboriginal children remarked to each other that there were Chinese men flying the air craft. The pilots were Japanese and appeared similar to Chinese.

On the occasion of the 80th anniversary of the bombing of Darwin by the Japanese I went to the East Point Military Museum where I was shown the radio that was used to receive the message in Darwin. It is a Wireless set of the 22 (Aust.) yellow band series transmitter/receiver built by PYE.

These radios can be "desk mounted" complete with their battery and vibrator power pack, "vehicle mounted" and run off its battery via a vibrator power supply or carried by two men, one to carry the radio and operate it and the other man to carry the batteries and power pack in a backpack.

There are two different power packs for this Radio. One is a conventional single vibrator unit supplying the 300volts for the receiver and, via a large resistor, 150volts for the transmitter. The other has two vibrators. One supplies the 300 volts for the receiver and the other vibrator provides the 150volts for the transmitter. The two power packs are interchangeable.

As the circuit goes it is quite basic. The valves are mainly 1volt filament and octal base although there are a couple of 6volt ones. These are held in place by a metal collar around the shoulders and two small springs on each collar attached to the chassis.

The valves are

PART TYPE	USE
1D5G pentode	RF and IF

1C7G pentagrid	converter
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1H6G double diode triode	audio frequency
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1F5G audio output	Audio Output
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6H6GT double diode	rf double diode	detector
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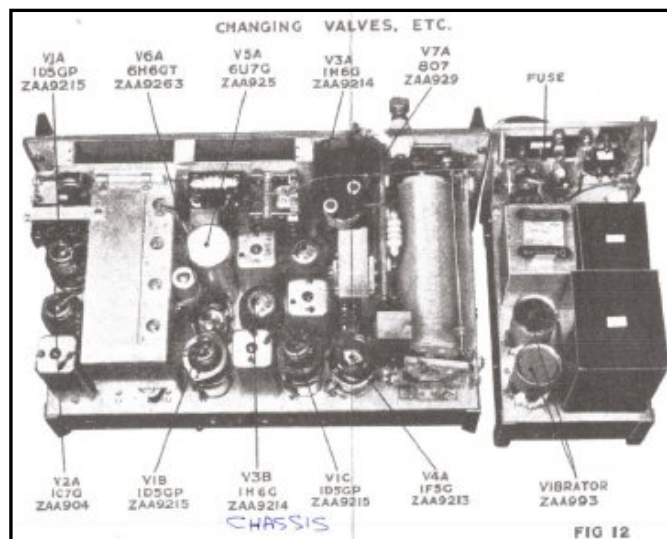
6U7G pentode	
--------------	--

807 beam tetrode	power amplifier (transmitter)
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PYE transceiver used by RAAF to receive the message from Tiwi Islands to Darwin, alerting them to the imminent arrival of many Japanese aircraft..

Both circuits are fairly basic but servicing would be complicated by the congestion of parts under the chassis. Of interest is the bridge rectifier on the aerial terminal.

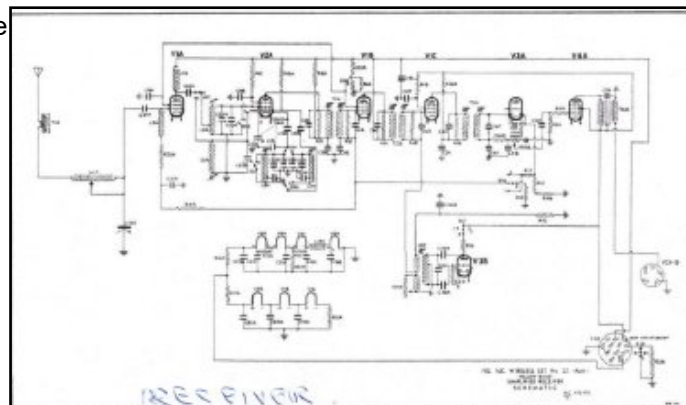


Both the transmitter and the receiver share the same aerial terminal. If by bad chance the transmitter started sending while the receiver is receiving, the huge transmitter signal would go for a romp through the receiver and blow it all up.

The rectifier would arrest this signal, rectify it and send it off to earth where it will do minimal damage. The incoming receiver signal is so small that it can not get through the rectifier so it proceeds to the aerial amplifier.

This is similar to the AR8 receiver where there is a 6X5GT full wave rectifier valve on the aerial terminal.

Radio-Gram Issue 140 March 2023



The

FIG. 10. WHEEL 10' IN 10 UNIT.
SCHEMATIC

other two circuits are provided by the manufacturer to show the technician how the individual receiver or transmitter works and therefore the signal path through the unit after the switching has been done for the particular function.

I included those circuits as the manufacturer said "this is how it looks for the receiver after the switching is done and this is how the transmitter looks after the switching is done".

Tape recorders were famous for using various stages of the amplifier for both the recording and playback functions and switching was used accordingly. The switching actually reversed the section of the amplifier and this method is used in this communications unit as well. It reduces the duplication of expensive parts and reduces the physical size of the device.

All the best everyone, Happy collecting and restoring.
Fred Franklin (Darwin

Wireless Set No. 22 Supply Unit No. 2

The main circuit of the unit is a transmitter/receiver where stages of the receiver are used for both receiving and transmitting. This is done using relays to swap the stages from one area to the other.

Women in Telecommunications in Australia

John Paskulich WAHTS 2022



John Paskulich

Introduction

This article is a summary of women's status and employment in the Australian telecommunications industry from colonial to present times. Telecommunications in this context refers to telegraphy, telephony etc. leading to present day communications.

Australian telecommunications history

Australia comprised separate colonial administrations until federation on 1 Jan 1901. Each colony ran its own independent postal, telegraph and telephone services.

Australian telecommunications began with Morse telegraphy in 1854 and progressed through the first public manual telephone exchanges in 1880 and the first auto (dial) exchange in 1912. Major World events such as WW1 (1914-19), the great depression (1929-39) and WW2 (1939-45) affected the development of Australian telecommunications. After WW2, there was a major expansion of Australian telecommunications, particularly from around 1960, and this has persisted to today.

The Australian network was a Commonwealth Government owned monopoly between 1901 and 1991. Initially part of the Australian Post Office under the Postmaster General's Department (PMG) between 1901 and 1975, Telecom Australia formed and separated from postal services in 1975. In 1995,

Telecom was renamed Telstra and progressively privatised from 1997. Today, the three private corporations, Telstra, Optus and Vodafone share the market. Control of the cable distribution network was resumed by the Commonwealth government under NBNCo from 2009.

By the late 20th century, transmission and switching technologies had shifted from analogue to digital, coincident with the rise of the Internet in the early 1990s. Today we have Australia-wide and world-wide optic fibre digital transmission networks, a significant space satellite network as well as terrestrial mobile networks. Traditional copper wire based telephony is moribund.

Status of women in Colonial Australia

In colonial Australia, a mature "single" woman (unmarried, divorced, widowed etc) had some autonomy over her financial affairs but, upon marriage, her individual legal existence disappeared under "marital unity". A husband had almost exclusive power and responsibility over his wife's actions and assets. Various Married Women's Property Acts were proclaimed in the colonies between 1879 and 1897 so married women eventually gained some control over their assets but legal issues persisted well into the 20th century.

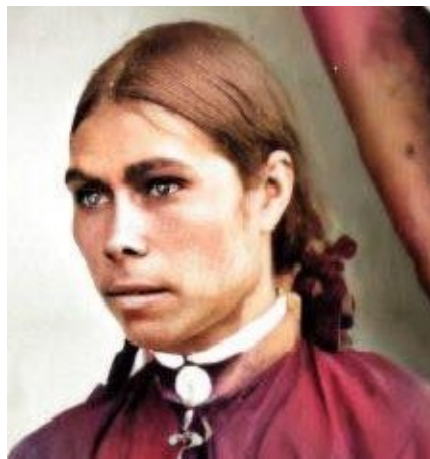
After Federation, (white) women gained the right to vote in federal elections in 1902. Interestingly, women in WA and SA already had the vote in colonial/state elections but not so for the remainder; the last being Victoria from 1908.

Women's roles in the industry in Colonial Australia Women were often disregarded and discriminated against in 19th C. but, when it was convenient for the authorities, they were able to take up significant roles. For example, in 1874, a married, female, aboriginal postmistress/telegraphist was employed at Victoria Plains (New Norcia) WA. There are numerous examples of single and married women employed as postmistresses, telegraphists and, later telephonists, throughout the colonies.

Women were particularly valued as telephonists, as this comment reveals:

"The first telephone exchanges employed message boys to operate the equipment, however, the boys quickly earned a reputation as inefficient, unruly and impertinent, and in an effort to improve customer service these first operators were replaced by women specifically employed for the job" (<https://www.slq.qld.gov.au/>)

Mary Ellen Cuper (1847 – 1877) Postmistress and telegraphist WA



Images: Benedictine Community of New Norcia and <https://telegramsaustralia.com/>

Born *Ellen Pangieran* in Bunbury, WA, to Aboriginal mother, *Yanjipp*, Mary was sent to Bishop Salvado's Benedictine mission in New Norcia for education. She married there and became Mrs Cuper

The new telegraph line to Geraldton via New Norcia required a full-time telegraphist. Bishop Salvado trained and recommended Mary. The office at Victoria Plains became vacant in 1873.

Although WA Telegraphs Superintendant, J. C. Fleming, expressed some misgivings, Mary was appointed post-mistress in early 1874 (annual salary of £30). She gave exemplary service and also trained other indigenous women as telegraphists who were equally proficient.

Sadly, Mary Ellen died of tuberculosis 12 Jan 1877.

Mrs William Heddle Dick (1851 – 1922)
First Lady Telephone Exchange Superintendent
Queensland 1889.

In 1889, in Brisbane, thirteen positions were advertised for telephone exchange switch-board assistants at a salary of 10 shillings per week. 1671 young women applied. Mrs (Magdalene) Dick was appointed as Supervisor (<https://www.slq.qld.gov.au/>).



Status of women in 20th C Australia

All (white) women over 21 were granted the right to vote in Federal elections in 1902 but, at the same time, the new Commonwealth and State governments introduced a "marriage bar" to employment in the public service.

Women were sacked upon their marriage. Married women were only employed in temporary positions and denied superannuation and other benefits. This persisted until 1966 in the Commonwealth public service and a little later in state administrations.

With occasional exceptions, the majority of jobs held by single women were limited to telephonist or minor clerical positions.

During WW2 (1939-45) with huge numbers of men at war, women filled many traditionally male roles. No evidence has been found of female linespersons or telephone mechanics in the PMG but many worked in non-technical post office roles e.g. post-women.

About 70,000 women served in the women's auxiliary military services to release men for the front (about 6000 still served overseas). For example, in the Women's Air Force (WAAAF) they served as telegraphists, electricians, fitters, flight mechanics, instrument makers, radar operators etc. and in similar roles in the other services. Most were forced to return to domestic life on discharge at war's end.

The following image shows WAAAF telegraphists at HQ, Wireless Transmitting Station, RAAF Frognall, Canterbury Melb. Vic. ca 194 (Source: <https://bribierslsubbranch.org.au/>)



The "marriage bar" did not apply in private industry. Married and single women worked in communications equipment manufacturing during much of the 20th century. This image shows women in the AWA factory in NSW in 1924 (Australian Radio Museum).

From the late 1960s, women's workplace conditions slowly improved. Some legislation:

1969 Set the general female award minimum wage at 85% of the male wage.

1974 Equal minimum wage to all Australians, regardless of their sex.

1979 National Employment Strategy for Aboriginals (NESA).

1984 Commonwealth (and eventually states') equal opportunity legislation.

1999 Commonwealth "Equal Opportunity for Women in the Workplace Act".

Women's roles in telecommunications in latter half of 20th C

With the lifting of the "marriage bar" in 1966, married women started appearing in PMG and other Commonwealth jobs. The majority were still in clerical or telephonist roles but some had (usually) minor technical roles at the PMG/Telecom workshops.

From the late 1980s, there were wholesale job losses in manufacturing. STC stopped manufacturing in 1987 and AWA's successor, Exicom, went broke in 1996. Many hundreds of skilled and semi-skilled technical job opportunities for women evaporated.

This writer was privileged to teach the **first female Apprentice Telecommunications Technician** employed by Telecom Australia in 1982 at the WA Training Centre. Interviewed recently, she spoke highly of the quality of her training, her general treatment by colleagues and the opportunities it ultimately offered but also pointed out some blatant discrimination.

For example, at initial interview, in 1981, she was asked directly why she should be employed because she would only *"get married, get pregnant and quit"*. Another comment was along the lines that she *"had no experience with tools"* (to a new trainee!). She observed, by the end of that interview she *"had a lot of experience with tools!"*

Female telecommunications technicians, technical officers and engineers were rare in the late 20th C and it seems little progress has been made into this century.

The images below; 1970s PMG workshops staff and 1980s WA Telecom Technician (National Archives Australia and Telecom Australia).



Telecommunications in the 21st century

Reviewing the 20th C: The industry comprised; telegraphs, telephony and, later, digital data systems and mobile telephony. Staff were mostly public sector employees but there were also significant numbers of manufacturing jobs in the private sector. Also, work roles were clearly defined, e.g. telephonist, clerical, lines, technical, professional engineers, later computer staff etc. In the 21st C, there have been dramatic shifts in the industry. Some issues include:

- Today the technology is almost exclusively digital data and mobile technologies and many earlier jobs have faded away e.g. Telephonist, telephone exchange maintenance etc.
- No significant manufacturing in Australia and Telstra workshops are long gone
- Staff numbers have reduced significantly. For example, in 1970s, Telecom employed approx. 90 000 staff. Today, its successor, Telstra, employs around 30 000 but some of those jobs are offshore. The total number of jobs across the three Australian telcos is probably less than 40 000
- Questionable employment practices. For example, hundreds of NBNCo sub-contractors walked off the job in 2021 in protest of "pyramid" hiring schemes etc. (<https://www.itnews.com.au/news/nbn-subcontractors-describe-diabolical-working-conditions-569793>)

Women in 21st C Australian telecommunications

Opportunities for women in the industry appear to be limited for the above-mentioned reasons, but exacerbated by the fact that women are under-represented in STEM (science, technology engineering and mathematics) education and training and ultimately in STEM jobs.

Only about 2% of Australian technology and engineering tradespersons and 12% of **all** Engineers are female. These figures are similar to UK and USA. Surprisingly, the highest number of female STEM university graduates in the world is in Iran with 69%, followed closely by Saudi Arabia, Oman and the UAE! (*Fifty Million and Rising: The New Generation of Working Women Transforming the Muslim World*. 2018. S. Zahidi)

There may be some changes into the future. Telstra recently announced its next CEO will be Vicki Brady. She is expected to enter the role in September 2022. The CEO of Optus is Kelly Bayer Rosmarin who has been in the job since 2020.



Vicki Brady



Kelly Bayer Rosmarin

(<https://newsreleases.com/>)

(<https://www.cio.com/>)

CONCRETE MUSIC

In the late 1950s, **Concrete Music** reached Western Australia. It involves using sounds found in the real world, distorted in various ways to create music.



Richard Rennie

The idea behind **Musique Concrète** (French: "**Concrete Music**") is that the composer would begin with a set of "concrete" sounds (rather than musical instruments) and arrange them into a piece of music. This concept means that the composer is not limited by traditional musical instrumentation and theory.

The technique was developed about 1948 by the French composer Pierre Schaeffer and his associates at the Studio d'Essai ("Experimental Studio") of the French radio system.

The development of Musique Concrète was facilitated by the emergence of new technology in Europe, such as microphones, phonographs, and later **magnetic tape recorders**.

There's a strong argument that Musique Concrète laid the groundwork for all **sampling** as we know it today. The Beatles Tomorrow Never Knows on the Revolver Lp is a Musique Concrète exercise.

Recently three rare 1960 Concrete Music records were discovered in W.A.



Early FM in Australia,

Since about 1936 frequency modulated radio stations have been in operation in the USA, but nowhere else.



However after World War II the idea was picked up everywhere. Australia had to wait until 1975 when FM radio stations were established in Sydney and Melbourne. By 1977 all states had FM stations.

About 30 years ago a rather large lot of Radio & Hobbies magazines turned up at one of our club auctions, I obtained same, as I'm always fascinated by pre 1950s magazines, especially the period 1939 – 1949. To my unbelievable surprise FM radio stations existed in 1948 in Sydney and Melbourne.

The Radio & Hobbies magazine of November 1948 suggested a design of an experimental FM tuner. I decided to try it and built same.



During my apprenticeship in the early sixties I tried many magazine designs and found half of same didn't work. My rather helpful boss (an ex radar design engineer during WWII) laughed at me and stated: "Don't you know, you've got to wait for the next magazine when they've rectified the errors and misprints." - So I checked the 1949 update and another 1950 update which suggested the construction of a full bottle FM radio. - I decided this would be the way to go.

The design based around the widely available EF50 tubes, a wideband VHF tube. Having found a suitable chassis and four EF50 tubes I spread the word that I needed 9pin tube bases for the EF50s; a warm hearted club member gave me a bag full of same. I followed the instruction and the set worked first try. I

n Mandurah where we can receive the Bunbury TV stations (channel 3 & 5, the present day FM band), a discarded antenna was easily found. Even though the set worked I felt its RF sensitivity was insufficient; I added a RF preamp, the result was breathtaking. It actually turned into a fully working FM radio.

One problem I had at the time was finding 10.7 Mhz IF

coils or a discriminator coil. I decided on a rather novel solution, because I had a number of old black and white TV chassis I salvaged the 5.5 Mhz sound IF coils and the corresponding discriminator coil. The idea worked like a charm. -



One needs to consider that the internationally accepted 10.7 Mhz intermediate frequency was selected for a number of very good reasons, this doesn't mean that any different frequency can't do the job. Somehow I suspected that the much lower IF caused a sizeable gain increase by the EF50 tubes, however the original design idea incorporated automatic gain control, the 5.5 Mhz only constituted an improvement in IF gain.

Recently after a lengthy search I found my 1948/50 FM radio, albeit slightly rusted, it was still working A1. The 6DQ6 TV line tube used in my set constituted a substantial increase in bass response. At the time I was short of 6V6, EL3 or similar quality output tubes. 6CM5s and 6DQ6s do make a good substitute if the transformers are big enough.



.....Norbert Torney

ABD 6 ABC TV IN DARWIN

ABD6, ABC TV moved into the ABC studio complex on 1 Cavenagh Street Darwin city and started black and white tv transmissions on 13 August 1971.



Fred Franklin

The transmitter was owned by Channel 9 and located in Blake Street in The Gardens at the rear of the amphitheatre. These days the transmission is digital and the transmitter is on Deloraine Road, Shoal Bay.



Early programs were sent up here daily on commercial airlines. Even locally produced programs had to go south for processing and returned by commercial airlines. Local programs were sport, news and current affairs. Now all productions are processed and presented locally. Very sophisticated equipment is used now for outdoor broadcasts of sport, AZAC Day, news and so on.

The arrival of TV in Darwin caused some people to become tv addicts. Not only did they watch the test pattern but also the blank screen. And woe betide anyone who interrupted them. People stayed at home to watch tv instead of ging out for entertainment causing a huge drop in business for cinemas, restaurants and etc.

However, people overcame this addiction and returned to normal life until colour tv came along. They soon overcame that addiction.

Our friend cyclone Tracey came along on Christmas eve 1974 destroyed our city. ABD6 sent the first footage about this damage to our city about a week later and it was released around Australia.

At the time I lived on the ground floor of a block of eight flats in Peele Street and went outside to survey the damage and found a tv receiver that had flown from the flats across Mitchell Street and crash landed on its front right corner in my lawn minus its back cover. I sat it on a stool on the front veranda so that the sun would dry it out and the owner could come along and get it.

Eventually the power came back on, the owner had not collected the tv so I brought it into the lounge, sat it on the servery, connected a piece of hook up wire to each aerial terminal and plugged it into the power point and turned it on. The screen and the speaker bound into life and never before had I been so enthralled watching Sesame Steet. The set lasted for any years and eventually died.



My two favourite news readers of the day were Barbara McCarthy and Laetitia Lemke. Both had afro hair does and had a lot fun presenting the evening news. We had a



lot of fun watching the news. They were very professional. Barbara is now an NT Senator (Malandirri McCarthy) and Laetitia still does some work at the ABC. Both fulfilled the various roles of journalism, etc. at the ABC.





ABC TV Darwin present day studios



ABC TV Darwin present day studios

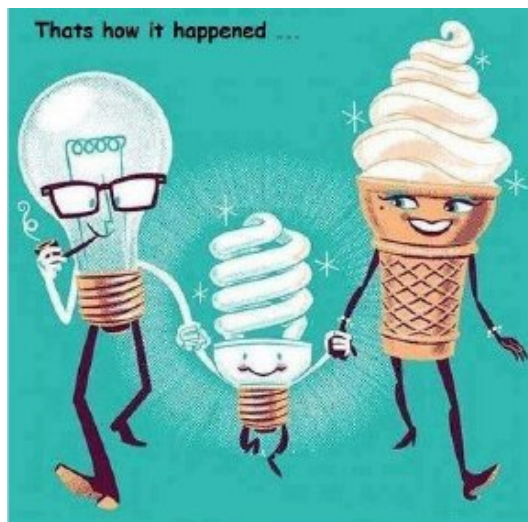
ABD6 is relayed to ABAD Alice springs, ABKD Katherine and ABTO Tennant Creek.
Many modern digital tv stations in Darwin are relayed around the Territory towns and communities.

References

Wikipedia ABD(television) ;ABC News ; ABC turns 50
Many thanks to Northern Territory Library (territory Stories)

ABC camera operator

.....Fred Franklin, Darwin



The Edison Phono Depot



Richard Rennie

Edison Phono. Depot

H.R. Firth opened the Edison Phono. Depot in Central Arcade, Perth in 1904.

His advertisements appeared regularly in The West Australian newspaper.

PHONOGRAPHS. Graphophones, Disc Records, Sundry Parts, good selection; Gold-mounted Records; bedrock prices. Edison Phono. Depot, Arcade, opposite station.

December 1904

However, he made a mistake in the ads. They referred to "Gold-mounted Records".

But the labels on the record boxes clearly indicated they were "Gold Moulded records".



Richard Rennie



BROADCASTING HISTORY

Magnetic Tape Recording

The sixties heralded the era of *top forty, news, weather and sport* on radio, and Australian stations closely followed presentation styles developing in the USA. Australian radio at that time was AM only and the audio was mono, not stereo.



Gus Slater



From its inception in the nineteen-fifties, full-track, monophonic Magnetic recording using quarter inch wide tape was in common use for pre-prepared programs, and the common tape speed of $7\frac{1}{2}$ inches per second provided admirable recordings indistinguishable from live programs if the machinery was properly maintained to The Commonwealth's *Blue Book* specifications. Australian made reel-to-reel tape recorders like the *Rola 66* and *Rola 77* became the most common radio station work-horses.

Rola's later *77 Mark 3* full track recorders were prolific in Australia's radio and television stations until stereo-broadcasting was introduced in the nineteen eighties. The later series known as *Mark 3B* featured an *EDIT* knob (near the top of the machine to the right of the top guide-roller). That enabled the head-shield to be closed during spooling, facilitating "scrub-audio" to assist in cueing.

This companion *Auto-Q* box was inserted into the audio *input* and *output* connections of the *Rola* tape-recorders and was connected to the machine's remote control socket. It provided a sub-audible (30 Hz) *enabling* tone that had to be present with the recorded material for the tape to *play-back* through that unit. More to the point, if the sub-audible tone was not present, the tape machine would *stop*.

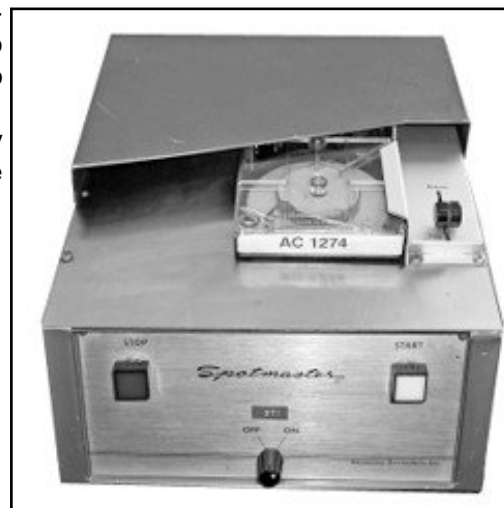


Using that system, all the commercial and promotional spots for a session could be pre-recorded sequentially on a tape, with the sub-audible tone punctuated at the start of each spot, or group of spots. *Auto-Q* freed the Radio panel-operators from their involvement with the live presentation of advertising material from gramophone-discs.



The "Auto-Q-tapes" could be presented from an external machine (typically in the control-room adjacent to the studio) using a remote-start push-button on the announcer's control panel.

Perhaps the greatest revolution in radio presentation in the sixties came from the introduction of tape-cartridge machines or *carts* as the Disc-Jockeys called them. Compact little machines, of which the *Spotmaster* series from the USA is one early example, were easy to operate and could fit comfortably into the studio environment within easy reach of the presenter.



Spots were recorded on individual cartridges or “cassettes” and loaded simply by sliding them into place and pulling the lever on the top of the machine forward to ready the tape-drive mechanism. The spot was played by either pushing the button on the front of the machine, or from the presenter’s control panel via a remote control connection on the back of the machine.

The cart-machine technology was innovative. For the monophonic sound-tracks of the sixties, machines like the *Spotmaster* recorded program on the lower half of the quarter inch wide tape and recorded a one kilohertz *stop* or *cue* pulse immediately before the start of the message, on the top track of the tape.

The cartridges, more often called ‘cassettes’ in Australia, contained an endless loop of tape spooled onto a tapered hub at the centre of the cartridge and lubricated with graphite so that the tape could easily slide against itself.

Cartridges were available in various tape lengths. Forty seconds was common, to accommodate thirty-second spots but larger sizes providing up to fifteen minutes of content were also available. With the *Top-40* format came station-identification jingles, and several short spots such as *jingles*, *stings* and *effects* could be recorded sequentially on each cassette for convenient presentation by the DJs.



Most stations had a limited number of the more complex *record-replay* cartridge machines and multiple *replay-only* machines. That arrangement secured more consistency of product. Some stations purchased cartridge-tape transport mechanisms and built their own replay amplifiers and control-circuits for the *replay-only* machines.

Preparation of the cassettes was usually done by a dedicated operator, commonly called the *cart-boy*. Since the cartridge machines did not have a conventional erase-head, before recording, cassettes were run through a *bulk eraser’s* magnetic field to wipe previous material, being careful to rotate the cartridge to avoid the eraser’s field leaving an audible impression which would manifest as a low frequency “woop...woop” sound behind the message and on the tail of the tape.

Operators also had to ensure that the inevitable splice at the ends of the tape loop was not part of the recording because that discontinuity had the potential to either rough-up the audio, or, worse still distort the cue-pulse so that once the machine was started it might not stop,

and, in the case of the *Spotmaster* machines, once the tape drive mechanism was engaged, the *load-unload* lever could not be operated.

Skill was required in cueing the message material accurately. In *record* mode, the machine would insert a *stop-pulse* on the top track of the tape whenever the start button was pushed, and the operator would play the message onto the bottom track of the tape immediately after that pulse. The replay machine would sense the *stop pulse* and stop the tape.

Clearly it was important to be consistent in the placement of the message so that it started immediately when it was called for. In preparing a cassette for a *top and tail* spot it was a good idea to put the *tail* on the tape first and the *top* next before cueing the finished product back to the *top*.

By doing that, the unused tape followed the first message while the announcer was busy, and the machine cued back to the start almost immediately after the second part, the *tail*, freeing it up to be quickly reloaded with a different item if the session was a busy one.

In the sixties, many contemporary-music stations began to record their most-played music tracks onto individual cassettes. Beside the ease of operation for the DJs that the taped music afforded, the crackles and pops of worn-out discs were eliminated.

As the broadcasting industry began to lean in the direction of automation, strict-formats and eventually a change to stereo sound; cartridges and reel-to-reel magnetic tape recorders were obviously more easily adapted than gramophone turntables and pickups.

.....Gus Slater



Radiola crystal set c.1922 (Sweden) with earphones and cat’s whisker detector. .

NTD8 Darwin commercial television station



Fred Franklin

NTD8 opened in its Blake Street, The Gardens, studios on the 11 November 1971.



NTD's former studios in The Gardens

Although it was owned by Channel nine, it was operated by Territory Television Pty. Ltd. They had a studio with remote control cameras and a tele-cine system for presenting movies and other programs.

On Christmas eve 1974 cyclone Tracey visited us and destroyed the studios. After a period of ten months of hard work the station was rebuilt and commenced transmissions again on 27-10-1975 with general programs, in colour, but no news or current affairs. However, in 1982 under the direction of Rex Clark the station started a daily news program.

During the 90s Channel eight formed an affiliation with channel ten to enhance their program offerings. In January 2003 Channel Eight became Channel Nine and ended its affiliation with channel ten and went digital in 2008. The analogue signal was turned off in 2013.

The digital transmitter is at Deloraine Road Shoal Bay. The Nine National News was moved from Darwin to Brisbane during 2017 and the Blake Street studios were decommissioned in 2019. Channel Nine moved into an office building in Mitchell Street Darwin with spacious offices, studios and production areas.

The Blake Street property is for sale now and the land will probably be used for housing.

REFERENCES

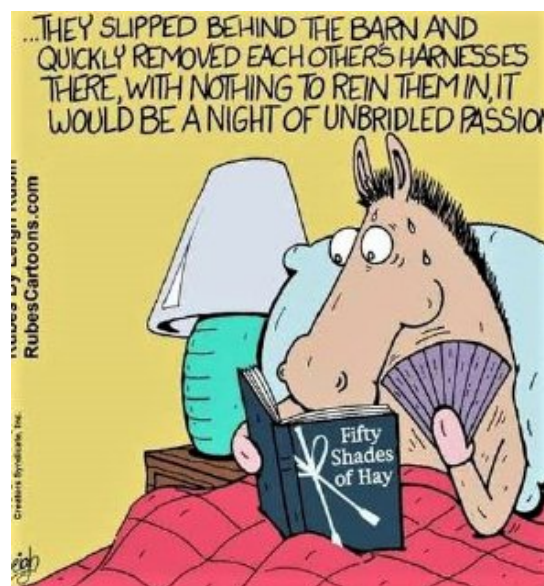
Nine Darwin 40 years today

Ntd (Australian tv station)

.....Fred Franklin, Darwin



A vintage radio advertisement c. 1920's



Rock N' Roll on 78 rpm Records - Part 1

by Richard Rennie



Richard Rennie



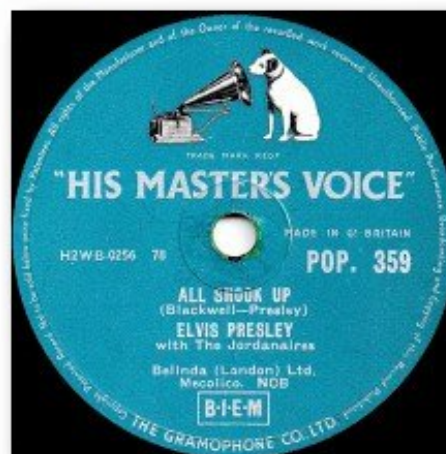
In 1934 "ROCK AND ROLL" by The Boswell Sisters was issued in Australia by Columbia.



The first Rock 'n' Roll recording to be made by an Australian singer was "Rock Around the Clock" by Vic Sabrino in 1955. Sabrino was an Australian jazz and blues singer.



By early 1955, Columbia in Australia had issued four 78 rpm discs containing eight of Decca's Bill Haley recordings. **But they did not issue "Rock Around the Clock"**.
Above: "Razzle-Dazzle" backed with "Two Hound Doos".



RCA did not issue Rock 'n' Roll on 78s in Australia; only 45s. But Elvis Presley was issued on 78s in some other countries. They were very popular in India.

Rock N' Roll on 78 rpm Records—Part 1 —(Cont.)



In October 1955 "Rock Around the Clock" by Bill Haley (recorded on 12 April 1954) was finally issued by Festival on a 78. Up until it was used in the film "Black Board Jungle" (1955) the recording had not been very successful.



"R-O-C-K" and "Saints Rock and Roll" were issued on 78 in Australia by Festival, but with three variations of the Festival label over a period of time.



Once Bill Haley became popular in Australia, some of his earlier (pre "Rock Around the Clock") Essex recordings were issued as 78s by EMI on their London label.

Above: "Rock The Joint", backed with "Yes Indeed!" recorded in 1952.



"Heartbreak Hotel" was recorded by Stan Freberg in 1956. This was a humorous take on Elvis Presley's version. It was backed by a version of "Rock Island Line". The "Echo by Mammoth Cave" relates to Elvis's use of an echo.



Johnny O'Keefe's debut single (issued as a 78rpm record), was "You Hit The Wrong Note, Billy Goat". It was released in July 1957. The song had been given to John by Bill Haley on Haley's Australian tour in January 1957. Above is the 'test record' supplied to 6PR prior to its release.



"That'll Be The Day" was recorded in 1957 by The Crickets, which included Buddy Holly.

Rock N' Roll on 78 rpm Records—Part 1 —(Cont.)



While not strictly Rock 'n' Roll, "Transfusion" by Nervous Norvus was however representative of the activities of some Rock 'n' Roll enthusiasts in the fifties. It was recorded for the Dot Record label in 1956.



"Blueberry Hill" was recorded on 27 June 1956 by Master Recorders, Hollywood, California, and released in Australia by E.M.I. on their London label. Prior to this, Fats Domino had recorded about 98 songs, going back as far as December 1949.

Emergency officials sound the alarm on electric vehicles dropping AM radio

Story by Andrew Paul (Popular Science magazine)

AM radio is a life-line during major emergencies, but EV's are quickly dropping support due to interference issues.



Amplitude modification transmissions, better known as AM, have been a mainstay in traditional car radios for decades. But consumers' adoption of electric vehicles could soon end the avenue for easy-to-access public safety announcements—and emergency response experts are sounding the alarm.

Amplitude modification transmissions, better known as AM, have been a mainstay in traditional car radios for decades. But consumers' adoption of electric vehicles could soon end the avenue for easy-to-access public safety announcements—and emergency response experts are sounding the alarm.

AM radio may be most often associated with rural church pastor sermons, local high school football coverage, and colorful talk radio hosts, but it actually still serves an extremely vital purpose—few sources are as reliable during disasters and emergencies. These messages can travel the farthest on low radio frequencies, and AM operates on some of the lowest: between 525 to 1705 kHz. Time and again, they inform upwards of 47 million Americans of real-time

federal and state information for hurricanes, tornadoes, snowstorms, wildfires, and other major public safety incidents.

As The Wall Street Journal reports, seven former administrators of the Federal Emergency Management Agency (FEMA) sent a letter on Sunday to both Transportation Secretary Pete Buttigieg and several congressional committees, urging legislators to guarantee continued AM radio support in carmakers' EVs.

According to FEMA via WSJ, an estimated 75 radio stations operating on the AM band covers over 90 percent of the entire US population, and are reinforced by backup comms equipment and generators allowing them to continue issuing crucial information in the event of an emergency.

Although EVs' arrival are needed to speed transitioning to a green transportation industry, losing an affordable, easy-to-maintain, and reliable safety tool could create major problems in the future.

Sen. Ed Markey (D, Mass) previously drew attention to the situation in December 2022 via a letter to 20 EV manufacturers, urging them to commit to continue AM availability in their products. The WSJ reports that the Alliance for Automotive Innovation, a group representing major carmakers in the US, pledged a commitment to "maintaining access to safety alerts," and has been meeting with the National Association of Broadcasters to discuss possible solutions.

For now, at least two automakers—Hyundai and Toyota—have stated they have no plans to remove AM radio support from their EV models, although representatives for the latter company conceded to WSJ that AM radio static "is a challenge" in its electric models.

The SURGISTOR (John Paskulich 2023)

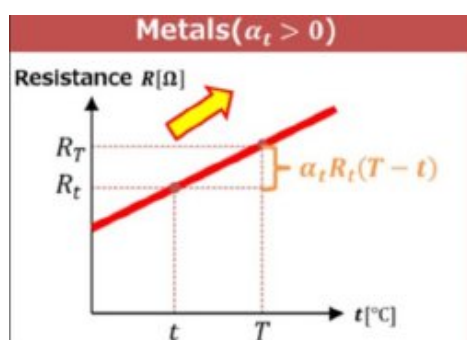
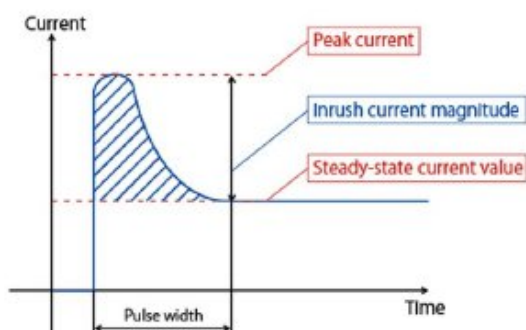


This topic was raised by members on an associated Facebook Group **Histor-Telephones Western Australia**.

To understand the purpose of the **Surgistor** and similar protective devices, the concepts of inrush current and positive temperature coefficient need reviewing.

When typical conducting materials are heated, their electrical **resistance** increases. These materials have a **positive temperature coefficient (PTC)**. This heat rise will also occur when current flows through a conductor and it dissipates some power - commonly referred to as **I^2R losses**.

When voltage is applied to a cold conductor, a relatively high current flows initially but, as it heats up, the current drops, often dramatically, depending on its **resistivity**. This phenomenon is **inrush** (AKA **surge**) current.



L-R: Inrush current (<https://www.sunpower-uk.com>). Positive Temperature Coefficient (<https://electrical-information.com/>)

In the past, before the rise of semiconductors, there was a need to protect filament based electrical and electronic devices such as incandescent globes and vacuum tubes (AKA valves). These filaments are resistive, metallic conductors, usually tungsten, with a PTC.

When voltage is applied to a cold filament, it has a high, momentary, inrush current due to its low resistance. In

some cases, this current is more than 10x its hot, operating current. Thermal shock can cause an immediate fracture but, more likely, the continual, rapid expansion and contraction of the metal filament on switch-on/switch-off weakens it and it may fail prematurely.

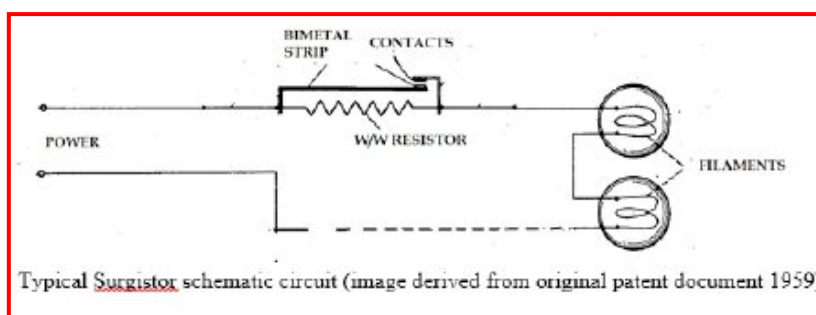
What was needed was a cheap device that would limit the initial inrush current and allow the filaments to warm up gently to attain their steady-state operating current. In modern times, we refer to this as **soft start** and it usually involves specialised semiconductors such as **NTC thermistors**, which have a negative temperature coefficient - opposite to PTC graphed above.

Before the rise of semiconductors, one solution was the **Surgistor**.

American **R.C. Wuerth** received his patent for the device, later marketed as Surgistor, in 1959. It is a simple device comprising only two main parts; a wire-wound (w/w) resistor in parallel with a bimetallic contact set.

How the Surgistor works:

1. Prior to the circuit being energised, the bimetallic contact set is open circuit and the w/w resistor is in series with the power supply.
2. When energised the w/w resistor limits the current to the circuit, in particular to the filaments, giving them the opportunity to warm up slowly. The w/w resistor also acts as a heater for the bimetallic contact set and it soon bends sufficiently to close the contact and bypass the w/w resistor.
3. The bimetallic contact set has some inherent resistance and it warms up enough to maintain closure without further heat from the w/w resistor. This obviates any "chatter" of the contacts.
4. When the circuit is de-energised, the bimetallic contact set cools and again becomes open circuit, leaving the w/w resistor in circuit, ready for next time.



Operating considerations for Surgistors:

1. Valve amplifier enthusiasts in online forums report that Surgistors also tend to protect some susceptible power supply transformers and other components.



L-R: Surgistor (image: <https://www.worthpoint.com>, In-situ (image: <https://people.ohio.edu/>)

2. Old, experienced technicians emphasised the importance of orientation of the Surgistor installed in a chassis. The bimetallic contact set must always be above the w/w resistor in service. This can be seen in the above in-situ (bottom view) image.

Hot air rises and, assumedly, reliable operation of the contact set depends on this. Servicing an amplifier chassis upside-down requires alternative protective measures such as a **Variac** on the power line.

3. The bimetallic contact set must be in good operating condition. A typical Surgistor has 100 ohm resistance and is rated at greater than 100W. If the contactor fails to close properly and bypass it, the w/w resistor will quickly burn out.

TV LIFESAVER

Prior to patenting his Surgistor, which was an individual component, Wuerth patented a similar plug-in unit, **System and Device for Prolonging the Life of Current Energized Filamentary Elements**.

One version was later marketed as the **TV Lifesaver**. It uses a device remarkably similar to his Surgistor but enclosed in a case, with input and output mains power connections. Included is an internal incandescent lamp visible through a lens aperture in the case. The lamp extinguishes when bi-metal strip contacts close.

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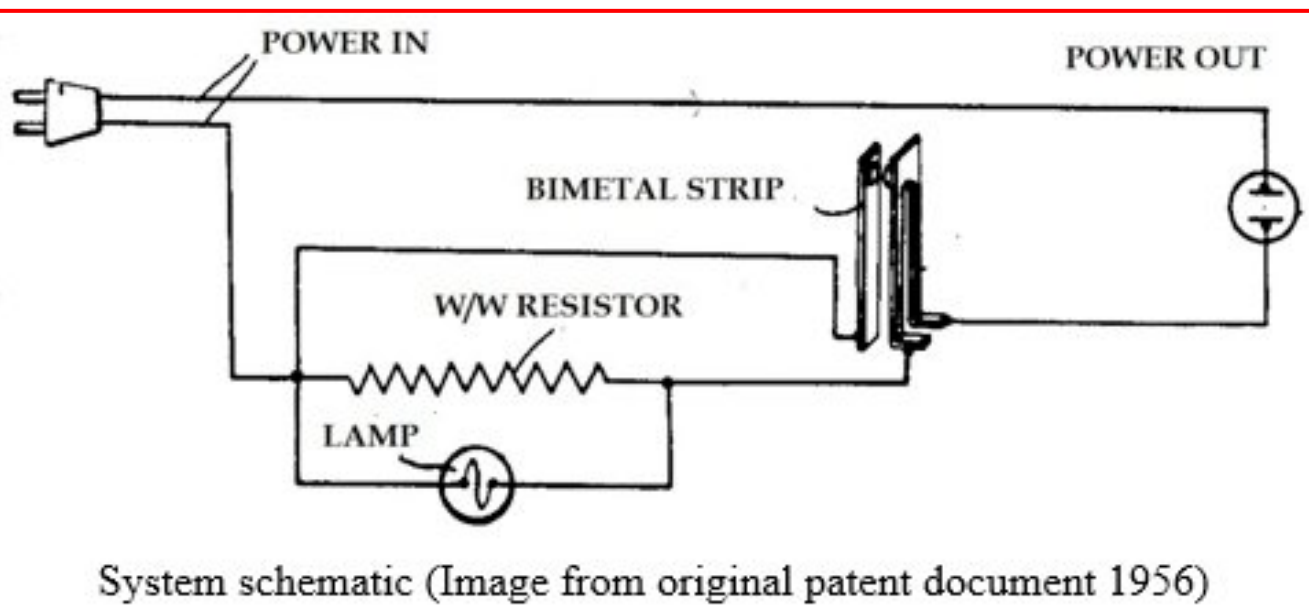
See your dealer or distributor today for these money saving, equipment saving Miracle Inventions. Or, send your order direct to us for prompt action.

WUERTH PRODUCTS CORP.
1949 Moffett St., Hollywood, Florida

Advertisement (Radio-Electronics 2/1962)

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<https://patents.google.com/patent/US2914637>
<https://patents.google.com/patent/US2756382>





Rod Edward

Back to Basics!

Note : This is a reprint of Rod's articles in Radio-Gram 2004-5

Rod's Crystal Set Corner

I hadn't expected the degree of interest expressed from the talk on Crystal sets at the July Meeting. I had promised to continue the theme on crystal sets in future (though not as long as the talk in July!). In addition I'll present something to do with crystal sets in this column, hopefully in each issue from now on. I hope it is of interest to some of you. [Rod, the Editor]
The following is an extract from some data that I have collected:

In the beginning of the era of radio, listeners received transmissions on a crystal set. This set consisted of an aerial, a tuned circuit, a detector and a earphone. (Figure 1.)

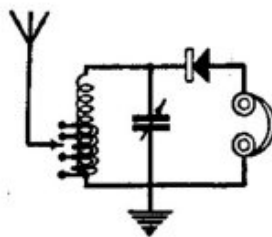


Fig 1. A classical crystal set..

The detector usually consisted of a anisotropic crystal of galena (lead sulphide), locked in a small cup. One or several flexible metallic wires (cat whiskers) made contact on the crystal. These wires where made of gold, brass, copper or steel ...This detector allowed an electric current to flow better in one way while jamming it in the other. One spoke of "unilateral conductivity". This allowed the rectification of a high frequency signal and the extracting of an audible or musical message.

The discovery of this rectifying property in certain crystals is credited to F. BRAUN in 1874.

This was put into application by Greenleaf Whittier Pickard (1877 - 1956)

In 1938 one was still not able to ascertain the manner in which this happened. There was a great lack of knowledge in molecular physics and in solid material chemistry. It was thought that some sort of thermo action took place or that it was also electrical. In the years 1920-1922, a lot of home research about this function went on in Russia and the U.S.A. But the evolution of radio electronics was to be swamped by the mighty and rapid progress made with vacuum tube valves. This revolution made nearly every one forget the results and knowledge of the early days.

It was only in 1945, that real research started up again resulting in the production of something that was going to turn into today's semiconductors. Among these : The invention of the point contact transistor by Bardeen, Brattain and Shockley. (Nobel prize in 1956) ; The discovery of the tunnel effect by Esaki. (Nobel Prize in 1973)

As to try and not totally forget all the work done on semiconductors before this recent period, we have attempted to list the description of materials used and the accomplishments made between 1920-1938. (This description is not exhaustive.) PTO>

DETECTORS:

Three kinds :

- Contact between a crystal and a conductive pin.
- Contact (or junction) between two identical crystals.
- Contact (or junction) between two non identical crystals.

Many crystals where tested:

- Bornite
- Carborundum (combination Carbon-Silicium)
- Cassiterite
- Cerussite
- Chalcopyrites
- Galena
- Ghane
- Graphite
- Hessite
- Hasmatite
- Hertzite
- Malachite
- Molybdenite
- Pyrites
- Silicium
- Bismuth sulphide
- Tellurium
- Ulmanite
- Zincite ...



The most popular combinations where :

Contacts :

- Galena - Copper (Brass, Silver)
- Molybdenite - Silver ribbon
- Iron Pyrite - Gold
- Carborundum - Steel
- Copper - Silicium
- Zincite - Steel



And the junction :

- Chalcopyrite- Zincite (known as Perikon)

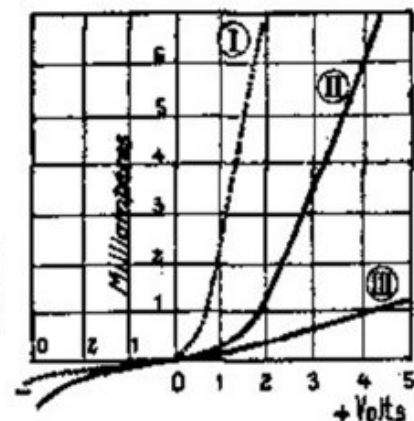
These devices made up, what are called today as **DIODES**.

The electrical and mechanical performances of these diodes depended upon the pressure of the contact (or junction) and of an eventual polarization voltage.

Examples of "prehistoric" characteristic curves are shown in Figure 2.

Fig 2.
I Contact Perikon (Zincite-Chalcopyrite)
II Contact Carborundum-Steel
III Contact Zincite-Steel

[To be Continued]



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