Happy Thanksgiving and Merry Christma from the NMRCC editor/publisher

12 | Vol-23 | 2018

1944 Zenith 7H820 AM & FM both the old and present FM bands

NEW MEXICO RADIO COLLECTORS CLUB

2A3

Next NMRCC Meeting December 9th Holiday Party

This gentleman walks into our MN Radio Collectors Club meeting Sunday and tells the members there, that he's just a visitor but has a radio he wants to sell. The meeting starts with about 15 members and this fellow says he wants to talk about selling this radio, he has four photographs and tells us it's a big Zenith console from the '40's. When the pictures get to me, I see it's a Zenith with three speakers, the amplifier-power supply is at the bottom of the cabinet, the receiver chassis is about the size and shape of the 12-tuber series and it has a record changer. At the bottom of one picture he wrote' I need to get $250 for this radio'.

The 1942 BA-Zenith 22H699 Console Radio by Richard Majestic

I hand the pictures to our president and tell him; you need to buy this radio, he has a Zenith Stratosphere 1000z. He says maybe it's for you, no I say. That night driving home, which takes 3-hours I thought about it. A few years ago, while in Minneapolis I stopped at Alan Jesperson's store and he showed me the same radio, he tried to sell me the radio, what a beast. The next morning, I called the seller, he was in ABQ and told him I wanted the radio, can I pick it up Tuesday, yes was the answer.

It was March of 1942 and Zenith was told to shut down consumer product production because of the war effort, WWII was going on and the US was about to enter it.. It was the end of an era of real performance AM receivers, EH Scott was building chrome plated highly performing AM radios, McMurdo Silver produced it's last USA made radio, the Master Piece VI in 1939 and Zenith had finally out sold Philco and I might add out performed Philco too. 22H699 had FM but it was the old band, that Hazeltine had fought to get the FCC to standardize on while RCA bullied there way it is getting the FCC to support the 88-108 MHz band with 200KHz channel spacing as the standard. So, what did Zenith do, they had table radios with 42-50MHz tuning. But in the 22H699 or 22B1 chassis they put the band 42-50 in the middle of the FM dial and had markings up to 99MHz. but plenty of dial room for 108MHz. Zenith had some of the poorest engineering and put in a fix-frequency narrow bandwidth RF amplifier that only works well in the middle of 42-50MHz band. Without retuning that fixed RF amplifier stage even 90MHz was not usable, but they made the coils and slugs so that 100MHz could be tuned. The FM was tuned with a cam that moved a slug in and out of the LO coil. They called this RF amplifier design the "Outer Circle R.F. Circuit".

They offered or included a remote speaker, the model S9005, it used longwave frequency 240KHz with FM. Modulated by the large bi-amplifier system, so anything the 22H699 was playing could be heard on the remote speaker, including the record player, but the volume was controlled by the radio listening level. Zenith collectors found that only 50 of these S9005 FM-amplified remote

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NMRCC Report: Meeting November 11th

The pre-meeting auction was fairly large with several very nice radios and pieces of test equipment. Donation items brought in $243 in proceeds to the club.

Because of the large number of items in the auction, President Wilson suggested we skip our normal 2-minute roundtable. The meeting had 23 attendees with 4 visitors: Charles Fullerton is an amateur radio operator who just moved to Albuquerque from the East Coast where he was involved in building escape rooms; Jamie Jeter just retired from the Air Force, is now working at Sandia, likes tube amps and is working on a Silvertone radio; Hopper Chu just moved back to Albuquerque, likes tube amps and wants to learn more about repairing electronics; and Rus McNear who I unfortunately did not get any information for.

The monthly theme was test equipment. John Estock brought in a beautiful 1930's Hickok model 47 tube tester that goes in between the tube socket of a radio and the tube so you can read all the voltages and currents for the set's operation of the tube. He also brought in a Heathkit RF generator (that looked like very similar to a IG-102 I built when was 18) as well as a Heathkit IT-28 capacitor checker that he said were getting high prices on eBay. Richard Majestic brought in a neat 1950's NRI 33 signal tracer that has a four-band TRF radio with 2 tuned stages and an audio amplifier. The set can be used as a radio with reception of 170 KHz through 11.4 MHz which Richard demonstrated. It has an eye tube which kicked off a discussion of recent prices of eye tubes and that many of the Japanese 6E5's have problems. Richard also discussed the design and operation of a military Supreme made I-177 tube tester with a MX-949 tube socket adapter kit that were donated for the club auction. Ray Trujillo brought in a Supreme 35 tube tester which was the first tube tester he ever owned. Prior to having it, he would take his tubes to Jim Steuber to test. When he bought the Supreme, Jim checked it out for him. Don Menning brought in several radiation testers including a complete New-In-the-Box CD V-777-1 radiation detector set and a Everline model 4B geiger counter that was made by a company based in Santa Fe. Chuck Burch showed a Radio Shack mini-amplifier that he uses with either a 2K resistor, a .01uf capacitor or a 1N34 diode to act as a portable signal tracer which together with a volt-ohm meter forms the test equipment for his traveling workbench that allows him to track down many of the typical problems one sees in non-working radios. Steve Shepard demonstrated a Huntron Tracker characteristic curve generator on various components like a diode, transistor, LED and capacitor. He also showed a function generator made by Southwest Technical Products which was a competitor to Albuquerque-based MITS who made the famous Altair personal computers and is where Steve was an employee. John Hannahs showed a HP-5325 frequency counter in operation. Les Davidson had a what-is-it which looked like a very precision-made security key. Steve Shepard was selected for the Best-of-Show award.

The club Christmas party was discussed. It will be on December 9th from noon to 3 at Mark and Lynn Toppo's house at 2512 Chessman Drive in Rio Rancho. Volunteers for bringing food were :John Hannahs-ham, John Estock- chicken, Randy Gray-brisket, Rick Harris-soft drinks, and Ray Trujillo-desert. Everyone is welcomed to bring additional items including booze. Weather permitting, we will have an auction on the patio like last year.

John Anthes reported that the club web sites produces numerous requests for names of people who can repair their radios. We discussed who would want their names listed as contacts for repairing radios. It was viewed it was best that people bring their radio to a club meeting to verify it was reasonably repairable and discuss the repair with potential repairmen.

The nomination of club officers for 2019 was discussed. The current slate of nominees are: President-John Anthes, Vice President-David Wilson, Treasurer- Richard Majestic, Secretary- joint position by Chuck Burch and John Hannahs as they both travel a lot, Membership-Randy Gray, and Board Directors-Mark Toppo, Ray Trujillo Tony Marshal and Don Menning. Anyone wanting to be a candidate for any of these positions can be added to the voting list at the Christmas party where the voting will occur.

Richard Majestic announced that he needs articles for the newsletter. Chuck Burch volunteered to write an article for January as did David Wilson for February. Richard also announced that club member Dale Farlow in Florida has a list radios he plans to sell which will be sent out as an email to club members. It was announced that the Winter Ham Tailgate will be January 26th near San Pedro and Holly, just north of Del Norte High School. The hope is for mild weather, but I have been to some rather cold tailgates in January.

Hope to see everyone at the Christmas party.

Chuck Burch—Secretary

NMRCC 2018 MEETING DATES

January 14th Old loudspeakers and microphones
February 11th Pre-1930 radios
March 11th Early FM Stereo receivers, amplifiers, and other vintage audio equipment
April 15th Homebuilt crystal, tube, and transistor sets
May 20th National Museum of Nuclear Science & History
June 10th Atwater Kent tube radio sets
July 8th Store-branded radio sets (Airline, Trutone, Airchief, Silvertone and etc
August 12th Wild Card Sunday
September 9th One-tube radios
October 13th War Eagles Aviation Museum and lunch at GASP Steak House
November 11th Old test equipment, tube testers, RF signal generators, oscilloscopes, bridges, meters and etc
December 9th Holiday Party

NMRCC Officers for 2018

- *David Wilson: President*
- *Mark Toppo: Vice President*
- *Richard Majestic: Treasurer*
- *Secretary: Chuck Burch*
- *Membership: John Anthes*
- *Ron Monty Director*
- *Ray Truijillo Director*
- *Open - Director*
- *Richard Majestic: Newsletter Editor (President pro-tem)*

FROM THE PRESIDENT'S DESK

I want to thank everybody for their support for the past two years that I've served as your NMRCC president. I've enjoyed serving and getting to know members a little better. As I get ready to hand the gavel over to our next president I hope everyone will support and participate in the club activities the way you have for me an the other officers.

It's been exciting to see the club grow in different ways over the past two years. Our membership has grown thanks to hard work of many of our members! A lot goes into our website, newsletters, club auctions other meeting activities that all add up to a great radio club experience for our members! It's one of the keys to keep our club fun and growing for years to come.

I hope to see you all at our annual Christmas party at the Toppo's in few weeks; it's always a great event and a great time to bring you spouse or friend!

Have a great and safe Holiday Season!

David Wilson

Old test equipment meeting theme; a Superior tube tester from '30s, a NRI signal tracer from the '50s and some Geiger counters from the '50s too

Auction sale items: a few radios, some with knobs, two isolation transformers, a Superior 1-177 tube tester with adapter sold for $130.00

Whats it

The 1942 Zenith 22H699 Console Radio by Richard Majestic

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speakers were made.

Zenith produced about 1,167,000 receivers for the 1942 model line, in that build was about 500 - 22B1 chassis built. Zenith also raised prices to cover the 5.5% to 10% increase in taxes being charged radio manufacturer's. the Robot Dial all but went away in 1942, and the 22B1 only had three shutter dials, one for the Broadcast band, 550-1,600KHz, the only short-wave band, 5.6-18.5MHz and the FM band, 42-50MHz. they also stuck with Radiorgan tone control switches. One nice feature of the 22H698 and 22H699 models was the Stratosphere like three speaker system, but unlike the Stratosphere it was bi-amplified with a 50Watt push-pull parallel four 6A3 power amplifier that drove two 12" woofers and 20Watt push-pull two 6A3 power amplifier that drove a 6" upper mid-high range audio. The amplifier and its power supply is on a separate chassis in the bottom of the cabinet.

Another feature of the 22B1 was the 240KHz FM transmitter to be used a for extension speaker used in another room. The choice of the long-wave frequency is interesting since I've never seen advertised an amplified speaker using that frequency and FM. My dad had a 10S690 and it came with an 'Oscillator' Zenith called it, that broadcast the radio's audio to another radio, in another room using the broadcast frequencies and the modulations was AM. The S9001 and S9002 wireless phonograph used the same "Oscillator' circuit.

Another feature of the 22H698 and 22H699 was the record changer, Zenith used the high-end Webster model 41. It was a slicer type changer, you put 7-9 10" or 12" records on the three post slicer shelves and the changer dropped the records one at a time on the turntable. The crystal cartridges by Astatic with the Webster logo were featured. Not high fidelity yet.

The receiver chassis is what Zenith calls the giant chassis, it was used for other models that contained the power amplifier and radio receiver electronics. The 22B1 chassis featured the now common 1942 tone control 'Radiorgan', the push button preset broadcast band tuning, the 'Microstatic' FM push button preset tuning, the three shutter Robot dials, with ugly large gold -plated dial pointers, a tuning meter and imfamous rubber covered wire.

The Repair Issues

The rubber covered wire which dries out and becomes brittle and falls off if the wire wass flexed. One tedist job for rubber insulated wire Zenith's is replacing all the wiring with color coded non-plastic insulated 22AWG solid wire. I was lucky in that most of the rubber wiring had been replaced by a previous owner. Zenith must have had stock in the tube company that Philco used to make Loc-tal tubes, the converter, the FM IF , the detector and all audio tubes are 8-pin Loctals, AM and FM RF amplifiers are 8-pin Octals but not 6SK7s but 6SD7s pentode also used for the combined AM and FM 1st IF amplifiers. They used 7N7 dual triode for the meter amplifier and AM detector, they stole the McMurdo Silver AM detector design of the 15-17 receiver and had noticeable lower distortion than other Zenith radios. Three 7A4 single triodes are used for 1st audio and for the low frequency and mid-hi audio driver circuits, transformers. More about how the coupled the triodes to the power amplifier. The AM circuits for the broadcast and short wave uses a 6SD7 RF amplifier, a 7S7 pentagrid converter, one 6SD7 455KHz IF amplifier and the 7N7 triode 2nd detector. The tuning is done by a three-gang tuning capacitor and preset push buttons selecting oscillator coils and one compression capacitor. The FM portion uses one 6SD7 fixed band-width RF amplifier, a cam driven oscillator tuning coil for the 7S7 pentagrid converter, one combined 6SD7 455KHz/8.3MHz IF amplifier, three 7C7 2nd IF amplifiers followed by two 7C7 limiter stages and followed by 7A6 dual diode discriminator. The receiver chassis has its own power supply, with a large power transformer and 5X4G rectifier. The 22B1 also has a phono input and the 22H698/699 uses a Webster 41 record changer.

The amplifier chassis contains the power supply for just the two power amplifiesr and six 6A3 triode output tubes. It has two 5X4G rectifiers. The radio I have has been worked on before and all 5X4G tubes have been changed to 5U4G rectifiers, I might have changed the 5X4Gs too, they are expensive and hard to find. The 6A3s are driven by two transformers fed by mid-hi coupling capacitors and full range coupling capacitors. The full range amplifier uses four 6A3 triodes in push-pull parallel. The mid-hi amplifier uses two 6A3 triodes in push-pull. Also, on the amplifier chassis is a 250KHz FM RF transmitter using one 6AD7G oscillator/ modulator.

All speakers are field coil types and the 12" speakers were made by Utah but used cones much like the Jensen A12 speakers, felt content was high, cone shape the same, voice coils 1.5" and the spiders made from flat linen Bakelite sheet. The 6" mid-hi speaker is the common 6"

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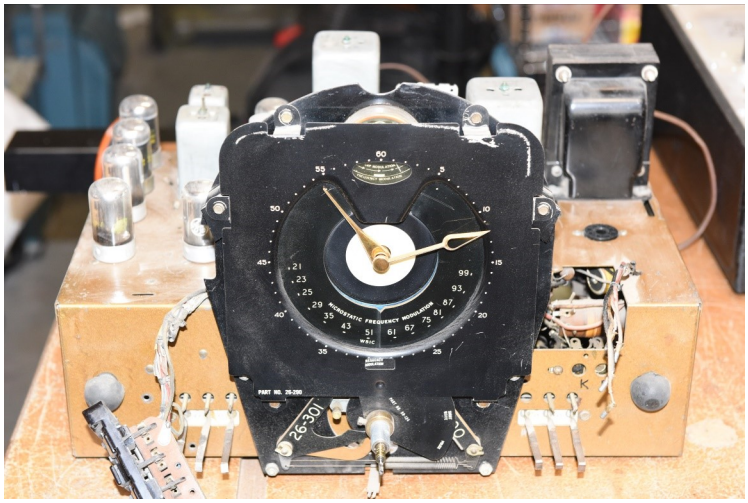
Utah but with more felt in the paper/felt cone.

Repair of this radio was necessary, the FM didn't work, the audio distortion was very high and the audio output was limited. I tested and replaced most of the tubes, that didn't help. I was lucky, the 6A3s were all good, they are the same as 2A3 but with a 6 Volt heater and harder to find at less than $100 each. Since this radio was already a Franken-Zenith I would have put in 2A3 tubes and 2.5VAC filament transformer if the 6A3s were bad. The speakers were all good, just one thumb rip in the one of 12" speakers. Next step was to replace the film capacitors not already changed and just as all large chassis Zenith's are built, the parts around the pentagrid convertor are almost impossible to replace professionally. Zenith didn't design these radios, including the 1000Z Stratosphere to be repaired. Next step is to measure all the resistors and replace all that are 10% or more out of tolerance. All of the audio tube plate loads were way above value, one 100k resistor was 3.9megs. the distorted sound it caused was so bad I think I'll make a distortion box for electric guitar amplifiers.

The final steps include alignment of the AM IF strip, broadcast oscillator dial settings, RF peaking and to the FM section. Because the 42-50MHz FM band is a conquered General Sarnoff band, there is nothing there off-air. With my RF oscillator I was able find that the previous owner had disconnected the B+ to the band switch that switched B+ to the FM limiters, the guy laced the cut-off wire into the harness. I hope the guy has a bad weekend. And typical of the early FM sets, if you don't align the limiter/detector stages first, the 8.3MHz if stage will oscillate because there is no shielding under the chassis for the FM F. Keep the impedances low or shield the IF wiring, Zenith and others never bothered. With our strong local KRWG FM 97.3MHz I was able to hear their signal clearly. Tuning the broadband RF might make some of the present FM band usable, but I'll make another block convertor for the old FM band.

The cabinet needs a lot of work and I found a nice Webster 61 record changer, close to the period and I'll have a fine example of a fine radio from Zenith from 1942. I have to say that the sound from this radio is very good and might be very close to my 1936 EH Scott All-wave 23. The 22H699 is a fine example of what Zenith was capable of building, as I said, an era of making okay designed and okay built radio receivers ended as we went into war and then bought component high fidelity systems with well-designed FM tuners.

~ Richard Majestic



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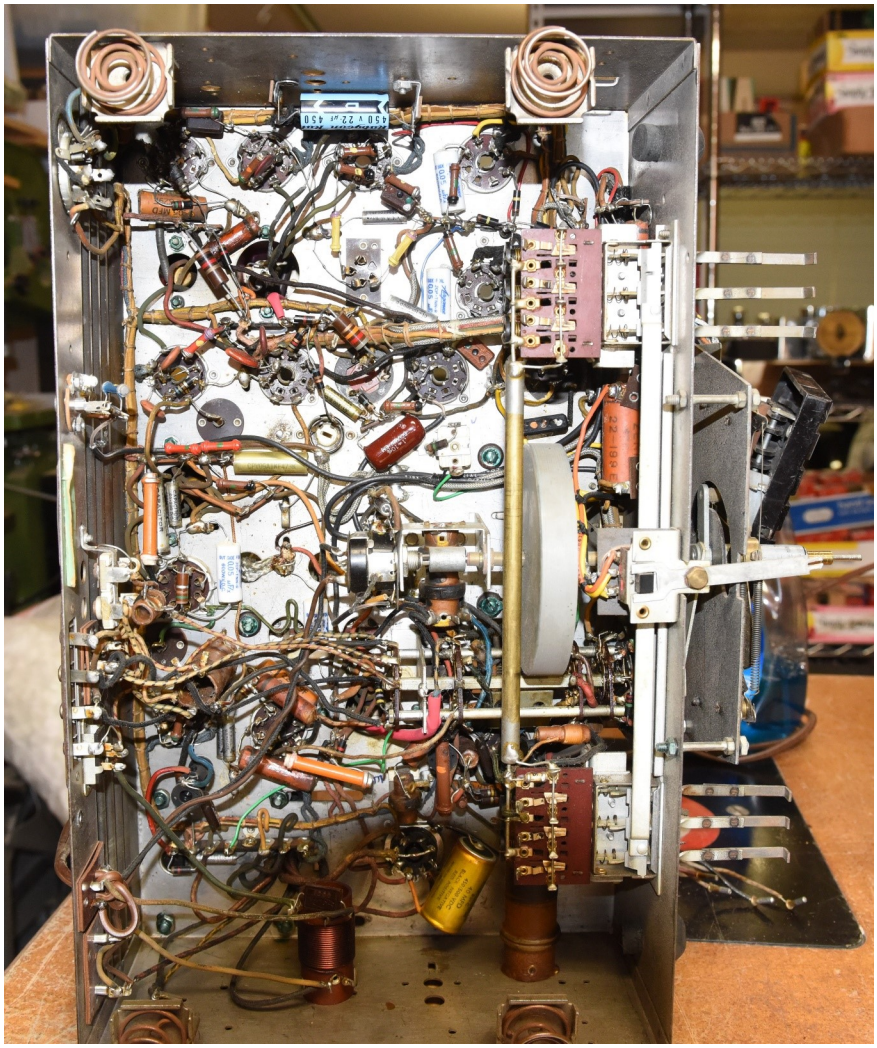

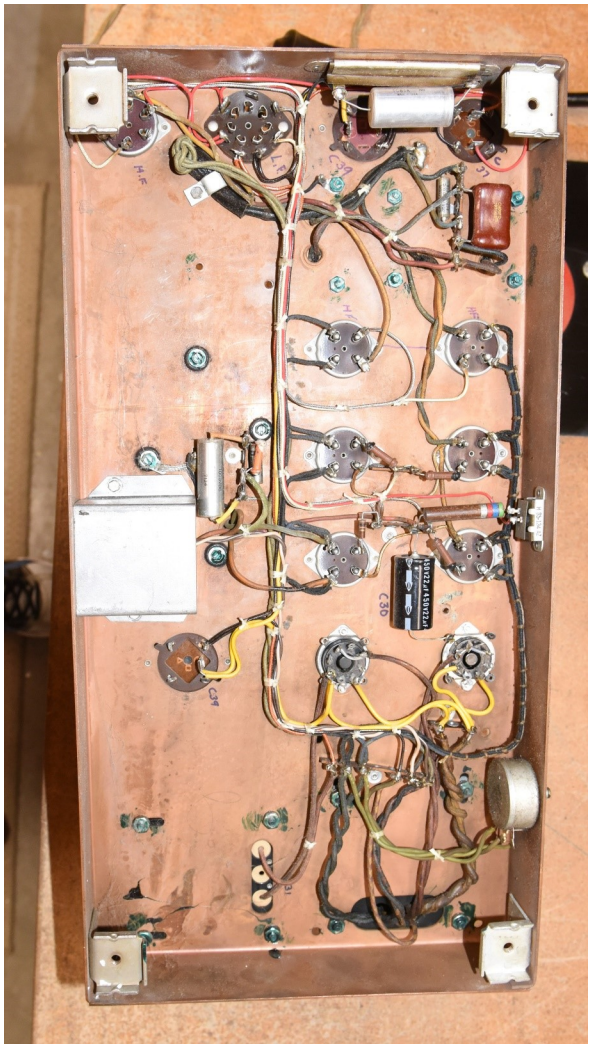

RADIORGAN, MULTI-RANGE SPEAKER SYSTEM, PUSH-PULL AMPLIFICATION, SPECIAL LOW PRESSURE PICK-UP WITH SAPPHIRE LIFETIME NEEDLE, GENUINE ZENITH-ARMSTRONG F.M. RECEPTION AND REMOTE SPEAKER OPERATION

Only Zenith Has All These Tested Selling Features:

THREE GANG CONDENSER: Sharply increased selectivity made possible by this triple gain condenser. The Zenith triple gain 3-gang condenser insures: increased selectivity, increased sensitivity and increased rejection of unwanted noises.
ZENITH TRIPLE BUILT-IN ANTENNA EQUIPMENT: With a **SPECIAL** F.M. aerial for F.M. reception without outside antenna where desired.
ZENITH DOUBLE LIMITER: Another extraneous noise reducing device which helps contribute to the QUIETNESS of reception.
ZENITH F.M. BETWEEN STATIONS SILENCER: F.M. is so unbelievably free of extra noises when tuned on a station—that Zenith engineers have taken out most of the noise BETWEEN STATIONS also—making the receiver ENTIRELY QUIET. COMPARE WITH OTHER MAKES!
ZENITH DISCRIMINATOR: Super-sensitive—the watchman! Does just what the name implies—lets in only F.M. signals. Keeps out all others.
ZENITH SUPER-EFFICIENT TUBES: Heretofore used only for television—used here for the first time for F.M.
GREATER SENSITIVITY ON WEAK SIGNALS: ONLY GENUINE ARMSTRONG F.M. CIRCUITS, SPECIAL F.M. line antenna, SPECIAL TELEVISION TUBES, SPECIAL SPEAKER . . . all contribute.
ZENITH CYLINDER-CONSTRUCTION F.M. MANUAL TUNING: Even manual tuning on Zenith F.M. has been improved to provide a simpler, quieter, more direct method of tuning in F.M. reception.
SHOCK PROOF CONSTRUCTION: Chassis, condenser, etc., floated on resilient rubber and springs.
TWO HIGH GAIN INTERMEDIATE FREQUENCY STAGES at 8.3 M.C. insure freedom from spurious response.
AUDIO AMPLIFICATION SPECIALLY COMPENSATED to provide uniform overall microphone-to-speaker frequency response from 20 to 15,000 cycles.
CRITICAL RADIO FREQUENCY CIRCUITS are temperature compensated and protected against variations in humidity. Details like this mean the difference between poor and superior F.M. reception.
RADIORGAN TONE COLOR DEVICE: Six feather-touch organ type stops permit 64 distinct and different tonal combinations on both F.M. and A.M. and phonograph reception.
FAMOUS "YEAR AHEAD" A.M. FEATURES: Super-Goliath Chassis, Outer Circle R.F. Circuit, Electrostatically Shielded Rotor Wavemagnet, Built-in Short Wave Aerial, Push-Pull Amplification, Built-in Wave Trap, Robot Dial with Spinner Tuning and others.
POWER OUTPUT: 50 watts undistorted.
GENUINE SAPPHIRE LIFETIME NEEDLE: With normal usage and proper care this needle will last for years.
SPECIAL LIGHTWEIGHT TONE ARM: Approximately one ounce pressure perpetuates tone quality and life of records.
TUBES: 22 Tubes including 3 rectifiers and 3 double purpose tubes yielding 25 tube operation.
CIRCUITS: Outer Circle R.F. with 8 tuned circuits for A.M. Zenith-Armstrong F.M. radio incorporating 13 tuned circuits.
A.M. AND F.M. TUNING METER: For perfection of tone and signal response this visual assistance is given the listener.
SPEAKERS: Two 12-inch super Electrodynamic speakers and one High Frequency "Tweeter."
WAVE BANDS: 540 to 1620 K.C. on standard broadcast; 5.6 to 18.5 M.C. on shortwave and 42 to 50 M.C. on frequency modulation.
CABINET: The fine traditions of Hepplewhite have been faithfully reproduced in this fine hand rubbed and polished mahogany cabinet.
Height 39 ⅛ inches. Width 42½ inches. Depth 20½ inches.
AUTOMATIC TUNING: (Broadcast) 6 buttons, separate circuits with extended ranges. (F.M.) 5 buttons and one "dial" control button.
DELUXE AUTOMATIC PHONOGRAPH WITH INTERMIXING DEVICE: Automatically plays and changes sixteen 10 inch records or twelve 12 inch records. This automatic record changer also has the new intermixing device which permits the playing of fourteen records of mixed sizes at one loading. Shuts off automatically after playing last record. 3-post support . . . single control with reject button. Bushings available for 50 cycle operation.
REMOTE "PHANTOM" SPEAKER OPERATION: Zenith "Phantom Speakers" are available as extra equipment.
UNDERWRITER APPROVED.

Radiorgan

The display window of Birkel-Richardson Music Company in Los Angeles, highlighting the Trans-Oceanic. Displayed is the very early sailboat model as well as the Commander mandated "bomber." *Courtesy of Zenith.*

The Concord 22H699 model from 1942

NEW MEXICO RADIO COLLECTORS CLUB

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FOR INFORMATION CHECK THE INTERNET
http://www.newmexicoradiocollectorsclub.com/

The New Mexico Radio Collectors Club is a non-profit organization founded in 1994 in order to enhance the enjoyment of collecting and preservation of radios for all its members.

NMRCC meets the second Sunday of the month at The Quelab at 680 Haines Ave NW , Albuquerque NM ,1:00PM meetings start. Visitors Always Welcomed.

NMRCC NEWSLETTER

THIS PUBLICATION IS THE MONTHLY NEWSLETTER OF THE NEW MEXICO RADIO COLLECTORS CLUB. INPUT FROM ALL MEMBERS ARE SOLICITED AND WELCOME ON 20TH OF THE PRECEDING MONTH. RICHARD MAJESTIC PRO-TEMP NEWSLETTER EDITOR, SEND ALL SUBMISSIONS IN WORD FORMAT, PICTURES IN *.JPG FORMAT TO: RMAJESTIC@MSN.COM

USPS Stamp