

SPECIAL NATIONAL RADIO PARTS SHOW EDITION



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RCA TELEVISION TO BE SHOWN AT CHICAGO

Television Makes Impressive Debut in New York

RCA Victor Receivers, NBC Telecasts Provide Complete Service

The day of April 30, 1939 was recorded in the annals of electronic development as a momentous date. On that day, coincidental with the first sale of RCA Victor Television Receivers for the homes of Mr. and Mrs. America, the Radio Corporation of America, as represented by the National Broadcasting Company, inaugurated the first series of scheduled telecasts. The giant antenna atop the Empire State Building in New York City started regular television broadcasts, an event comparable to the first radio broadcast in 1922.

Television as known today is recent, but in a more general sense was visualized almost one hundred years ago, for in 1847 a scientist named Bakewell proposed a copying telegraph in which scanning was to be employed. Although little actual research was carried on expressly in the interests of television in the next three-quarters of a century, many discoveries were considered as possibilities for that purpose. With the successful establishment of radio broadcasting in the last decade, however, television seemed less remote.

All Branches of RCA Enlisted

In 1928, RCA entered actively into television development and established a laboratory in New York

(Continued on page 3, column 4)

DeLuxe Television Console



For those desiring the finest in audio and video reception, RCA Victor has designed the TRK-12. The black and white pictures produced by the RCA 12-inch Kinescope are viewed indirectly through a mirror inside the hinged lid. For the accompanying sound, an RCA Victor high fidelity, three-band, 12-tube radio chassis is employed. A single station selector switch tunes in sight and its accompanying sound

F. D. R. TELEVISED!

When the opening day ceremonies of the New York World's Fair were telecast by NBC on April 30, Franklin D. Roosevelt was the first president ever to be televised. His image was viewed on television receivers in the New York area as it was relayed to the transmitter atop the Empire State Building and telecast to the surrounding area. The accompanying sound was broadcast to the entire nation over the NBC networks.

TIMELY THEMES MARK NEW RCA TUBE DISPLAYS

New Window Service Costs Subscribers Only \$3.00

The first units of the 1939 RCA Window Display Service for Radiotron, Cunningham, and RCA Victor receiving tubes are ready for immediate shipment. These new eye-catchers have been prepared for either window or counter use and each set centers around a theme of current interest. Lithographed in eight sparkling colors, each separate piece "packs a real wallop" in a minimum of space. At the very nominal cost of \$3.00 any tube dealer may purchase this service which includes three additional displays to be shipped to subscribers on May 1, August 1, and October 1. Also included are two attractive window streamers spotlighting service work, a quantity of World Series score sheets, and complete collegiate football schedules. These latter two items are for consumer distribution and will be sent to dealers at the beginning of their respective seasons.

Circus, Sports, Music

The theme of the RCA Radiotron displays colorfully depicts various circus activities, with a clever sales message worked into each one. The legendary kicking mule, the side-show barker, the strongman, and other characters familiar to circus-

(Continued on page 3, column 2)

LATEST MIRACLE OF ELECTRONICS TO BE FEATURED WEEK OF SHOW

Parts Show to Include Tubes, Accessories and Television and Radio Test Equipment

The RCA Manufacturing Company will feature an operating demonstration of high definition electronic Television transmission and reception at Chicago during the time the National Radio Parts Trade Show will be held at the Hotel Stevens.

This demonstration will show the complete RCA Electronic Television system with Iconoscope camera, commercial type receivers, and all the accessory equipment which brought this latest scientific miracle to the New York City area on April 30.

Special Antennas Are Designed For Video Reception

Based On Findings From Lengthy Field Tests

Recent announcement was made by RCA Victor of the development of three types of television antennas for use with RCA Victor Television Receivers. The new antennas are intended for five channel use where reflection is not encountered, for two channel reception where reflection is acute, and for two channel use where reflection is not a problem. These vital accessories have been supplied to dealers for installation with the first RCA Victor Television Receivers sold in the New York area starting April 30. In addition to their excellence in providing good video reception, the antennas also provide fine reception for the three-band radio chassis used with RCA Victor Television Consoles.

Antennas Important

With the inauguration of television, antennas have been restored to the high plane of importance they held in the early days of radio, when transmitter signal strength and receiver sensitivity were comparatively low. This is due to the characteristics of the ultra-high frequency waves used in television transmission. They are similar to and retain many of the properties of light waves. For example, they will reflect from buildings and hills, will not bend readily beyond the horizon, and may be affected by shadows caused by contact with buildings and hills. With these problems in view, RCA engineers spent many months making field tests under actual operating conditions in order to provide practical solutions. The experience and information gained through these tests is incorporated in the construction of the three RCA Victor Television Antenna types.

Provide Excellent Noise-Reduction

For locations not subject to reflection, the Stock No. 9871 is RCA Victor's finest television antenna,

(Continued on page 3, column 3)

At the Parts Show in addition to the many products to be displayed in an unusually attractive booth, a complete assortment of advertising and promotional material will be shown for dealers and radio service engineers.

Complete transmitting equipment, including a camera and a number of receivers, will be under the direct supervision of skilled engineers from the great Camden laboratories and scheduled lectures will be held for the purpose of explanation and instruction in the operation of the equipment used. While commercial Television will not be available in the Chicago area at this time, RCA executives feel that servicemen, dealers, distributors, and others should be afforded an opportunity to witness Television as it was introduced to the public in the New York area on April 30.

Also, at the National Radio Parts Trade Show a complete line of Television test equipment will be displayed. To stimulate interest of servicemen and amateurs RCA has made available many of the component parts to be used in the construction of experimental Television equipment.

The television industry is anticipating aid from these sources as was afforded the radio industry.

Cancels Echoes



The Model 77B is RCA's smallest and lightest uni-directional microphone. This double ribbon, cardioid pattern mike has a frequency range from 40 to 10,000 cycles and operates at output impedances of either 50 or 250 ohms. It easily cancels echoes in locations where acoustics are poor

New Setting For An Old Refrain



When the old Firehouse Quartette warms up from now on, they'll have to dress the part, for television demands reality. A new studio technique has resulted which borrows from Hollywood and sound broadcasting, but has many new principles developed by RCA-NBC engineers and studio experts. The Iconoscope is shown making the "take"

Win RCA Promotions



These members of the RCA Family were the central figures in a series of promotions and new assignments. Tom Joyce was made Vice-President and Advertising Director; Frank Walker, Vice-President in charge of all record activities; Dave Finn, Advertising Manager; Ed Butler, Manager of Radio and Victrola Division; Francis Engel, Television Coordinator; Jay Cook, Manager of the International Division; Shine Milling, Manager of the Small Radio Division; and Paul Richardson, Manager of Educational Sales Division

Joyce Elected To Vice-Presidency Of RCA Mfg. Co.

Frank Walker Made V.P. In Charge of Record Activities

Election by the Board of Directors of Thomas F. Joyce as Vice-President and Director of Advertising, and Frank B. Walker as Vice-President in charge of all record activities, was recently announced by George K. Throckmorton, President of the RCA Manufacturing Company.

Mr. Joyce, at 34, is the youngest vice-president in the history of the RCA Mfg. Co. His rapid ascent from meter calibrator in 1922 to his present elevation is indicative of his forceful and ever alert personality. Many RCA Victor Dealers throughout the country will remember Tom Joyce as an energetic and always interesting speaker.

A varied and colorful career has prefaced the election of Frank Walker to his present activities. Artistic, advertising, radio, and record experience, as well as a captaincy in the United States Army, and a lieutenantcy in the U. S. Navy, all had a part in the development of a highly interesting character.

D. J. Finn and E. W. Butler Promoted

David J. Finn, who succeeds Tom Joyce as Advertising and Sales Promotion Manager, has a solid background of advertising and promotional work. His connection with the Edison Lamp Works, and his duties as sales promotion chief of a large midwestern district for the RCA Radiotron Co. preceded his popular appointment.

Edward W. Butler has been made Manager of the Radio and Victrola Division. His technical and commercial radio experience has led him from coast to coast. His selling and administrative ability was recognized early in his career and has led to his present duties.

Other Promotions Announced

Announcement was also made of several other important major promotions and new assignments:

Jay D. Cook was made Manager of the International Division, into which all of RCA's activities in the export field, including subsidiaries in many foreign countries have been consolidated.

Paul C. Richardson, formerly Manager of Radio and Victrola Division, will head a new Educational Sales Division, with Ellsworth C. Dent remaining as Educational Director.

Francis H. Engel has been placed in charge of coordinating and planning development of television.

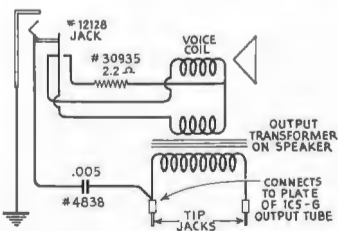
J. A. Milling has been named Manager of the Small Radio Division. Milling was formerly in charge of parts sales.

George Malsed, at Dallas, has been appointed District Manager, succeeding George Ewald who is taking over important new duties at Camden. At Kansas City, Harold Winters has replaced Dale Neiswander as District Manager. Mr. Neiswander has accepted the position of General Manager of the Interstate Supply Company, RCA Victor Distributor at St. Louis.

Headphones Add To Popularity of RCA Portables

Adaption of Pick-Me-Ups Easily Made; Material Cost Only \$2.00

Adaptation of the popular RCA Victor Pick-Me-Up portable radios for headphone use has been simplified by the release of data giving complete installation instructions. The easily obtainable parts neces-



sary for the adaptation include a resistor, a capacitor, and a telephone jack. Any standard 2000 or 3000 ohm headphones may be used.

This conversion feature adds significance to a recent statement by John C. Marden, Manager of RCA Victor Battery Set Sales. "The unusual performance and low operating cost of the Pick-Me-Up radio has taken a remarkable hold

RCA TUBE ADS PROVE WORTH; REPRINTS ASKED

Bulletin Of Dramatic Ads Necessitated By Dealer Demand

In response to a flood of requests from dealers for reprints of a series of RCA Radiotron tube ads depicting dramatic moments in radio's advance, the RCA Manufacturing Company has prepared a bulletin containing the whole series. The cleverly executed advertisements aroused such widespread interest among both the public and trade that requests were received long after the ads first appeared.

The nineteen page bulletin (Form No. 1A03), which may now be obtained from any RCA Radiotron distributor, also contains a chronological table of highlights in radio development. This comprehensive calendar of events starts with the discovery of electricity in 640 B. C., and traces the progress of electronic research and experiment in electricity, telegraphy, telephony, radio and television.

Real Sales Aids

These ads are typical of the service that is supplied to RCA tube dealers continually. Point of sale advertising, such as window and counter displays, is especially designed to move merchandise for any tube dealer. "We are constantly preparing aggressive selling tools for our dealers," stated Forrest E. Crain, Renewal Tube Advertising and Promotion. "And it is gratifying to learn that our efforts meet with their approval. We want them to know that we are willing to cooperate on any similar venture whenever there is sufficient demand."

on the public," stated Marden. "The market for this type of instrument seems unlimited, as new applications are discovered every day." Greater public acceptance by travellers in trains, buses, and planes, or in any place where use of a loudspeaker might inconvenience others, should result.

Has Dual Use

The suggested method of installation permits operation with headphone or loudspeaker, or both together, depending on the degree to which the plug is inserted into the jack. Partial insertion results in dual action, while pushing the plug all the way in disconnects the loudspeaker but leaves the headphones in operation. (A 2.2 ohm resistor is attached to automatically act as a dummy voice-coil load when the plug is inserted all the way).

The procedure is as follows:

1. Remove the back cover from the Pick-Me-Up.
2. Drill a 1/16 inch hole for the jack in the top of the cabinet at a point between the output tube (1C5-G) and the batteries. As the top of the cabinet is 1/8 of an inch in thickness it is necessary to chisel the inside of the cabinet (where the jack fits) to about 1/16 of an inch. Otherwise the plug cannot be inserted all the way into the jack.
3. Remove the batteries.
4. Make connections as shown in the diagram, leaving sufficient slack so that the batteries can be installed. Keep the leads grouped together and dressed away from the tubes.

Material Required

Stock No.	Unit List Price
12128—Telephone Jack....	\$1.45
30935—Resistor—2.2 Ohm Flexible Type.....	.30
4838—Capacitor—.005 Mfd.....	.25

Also one pair of radio headphones of standard "2000-ohm" or "3000-ohm" type, complete with plug.

These parts may be obtained from any RCA Parts Distributor.

Combats Reflection



The reflector on this RCA Double Di-Pole Television Antenna, Stock Nos. 9871 and 9872 gives improved reception from one direction and rejects signals from the other

Television Types To Increase RCA Renewal Tube Line

Distributors To Be Prepared for Growing Markets

According to a recent announcement by L. W. Teegarden, Manager of RCA Radio Tube Division, the RCA renewal tube line will be augmented by inclusion of the tube types currently employed not only in RCA Victor television receivers but also in the television receivers of other manufacturers. A renewal market for television tubes is now being created in the New York area. Markets in other areas will follow as television stations to serve them go into operation.

"So that all of our renewal tube distributors may be in a position to supply renewal television tube demand as the market develops," declared Teegarden, "we are adding these types to our line."

The television types to be added to the renewal line are as follows:

Type	Description	List Price
3AP4/906P4	3 inch Kinescope	\$18.25
5BP4/1802P4	5 inch Kinescope	27.50
9AP4/1804P4	9 inch Kinescope	62.50
12AP4/1803P4	12 inch Kinescope	75.00
2V3G	Half-Wave, High-Vacuum Rectifier	3.00
6AC7/1852	Television Amplifier Pentode	2.50
6AB7/1852	Television Amplifier Pentode	2.50
6AG7	Television Amplifier Pentode	2.75
879	Half-Wave, High-Vacuum Rectifier	2.00

Frequency Easily Checked by RCA Xtal Calibrator

Accuracy Better Than 0.05%—Temperature Correction Given

By H. J. SCHRADER
RCA Engineering Department



Recent rules of the F. C. C. require that the radio amateur periodically check his operating frequency to insure that it is within one of the assigned bands. This measurement must be made with equipment independent of the frequency control of the transmitter and of sufficient accuracy to always insure that he is operating within the assigned band. This accuracy may be quite readily obtained by employing the RCA Stock No. 9572 Piezo Electric Calibrator to check the accuracy of the amateur bandspread receiver or heterodyne frequency meter.

The Stock No. 9572 Piezo Electric Calibrator has a guaranteed accuracy of 0.05% and will maintain this accuracy over a wide range of temperatures. Still greater accuracy may be obtained by measuring the operating temperature of the unit and applying a temperature correction factor. Each instrument has been individually calibrated at the factory against frequency standard equipment having an accuracy of measurement of better than one part in a million.

Has Two Frequency Modes

The instrument has two fundamental modes of operation: one at 100 kcs., and the second at 1000 kcs. Either of the fundamental modes may be selected at will by means of a toggle switch located on the front of the instrument case. Because of the design of the associated tube circuit, an abundance of harmonics of either of these modes of oscillation are contained in the output of the instrument. With a normal receiver and operating on the 100 kc. mode, harmonics up to 18 mc. may be readily detected. The 1000 kc. connection provides harmonics well above 40 mc.

The measurement of the transmitter operating frequency is made by first calibrating the dial on the receiver or heterodyne frequency meter against the piezo electric calibrator at 100 kc. intervals and then

(Continued on page 5, column 5)

Helpful and Entertaining



A visit to the Golden Gate International Exposition will be made more enjoyable by the attentions of charming Kate Holliday, attractive hostess at the music room of the RCA Building. That Miss Holliday possesses good taste as well as charm is evidenced by her choice of travelling entertainment — one of the new RCA Victor Pick-Me-Up portable radios

New Superior Uni-Directional Mike Announced By RCA

Smaller With Increased Sensitivity and Output

An RCA Uni-Directional Microphone with performance characteristics unequalled in its type has been announced by W. L. Rothenberger, Manager of the RCA Commercial Sound Division. This new instrument is only half the size of its predecessor and carries a list price of \$130.00 as compared with \$190.00 for the earlier type. Increase of sensitivity to a marked degree is obtained in the new microphone by the use of Alnico type magnets, resulting in a much higher signal-to-noise ratio. The Type 77B as it is known is precision built to new high standards of accuracy. It has a frequency range of 40 to 10,000 cycles and operates at output impedances of either 50 or 250 ohms. "Complete indifference" to sounds emanating from the rear and from either side of the mike is its most outstanding feature, although it is scarcely larger than mikes of the ordinary type.

Cancels Echoes

The same RCA engineers who were responsible for the first uni-directional microphone have developed this new one. By discovering a method whereby the size might be reduced about 50%, greater acceptability has resulted, particularly by those who face a studio audience while broadcasting. The 77B is especially useful in large auditoriums as only the sound intended for the audience reaches the radio or public address system, all other noises being filtered out. Cancellation of echoes in locations where the acoustics are poor is easily accomplished by this remarkable instrument. It may be used to excellent advantage in small studios where space is at a premium, for it will function perfectly placed in a corner or against a wall.

The average operating level of the RCA Uni-Directional Microphone is minus-61 decibels with a ten-bar signal across an open circuit. Its reference level is .006 watts, and from the back has an average cancellation of minus-14 to minus-20 decibels. Temperature or pressure changes leave the 77B unaffected. Bullet shaped, the lower half is a durable black finish, while the top is a fine polished chrome screen. The whole is equipped with an extremely flexible adjustable mount, of gleaming chrome. For unrestricted movement it is supplied with a two-conductor shielded cable, measuring thirty feet in length.

RCA "Twin Power" Speaker Gives New Sound Quality

A new type of high fidelity "twin power" loudspeaker, originally designed to meet the exacting requirements of the New York and San Francisco Fairs for a sound reproducer of unsurpassed efficiency, has been announced for general use by the RCA Manufacturing Company.

Fifty-two of the "Twin Power" loudspeakers are in service at the Golden Gate Exposition, where they are used for providing background music, sound effects and announcements on the main grounds. Forty-five of them have been installed on the World's Fair grounds in New York for the same purposes. Twelve are in the famed Perisphere, where they will provide the music and sound effects for the "World of Tomorrow" theme show.

Named "Twin Power" because of the two permanent field dynamic sound reproducers built into its scientifically designed cabinet, one to reproduce sounds above 650 cycles and the other to handle those below that point, the new unit is ideal for use in stadia, band shells, theatres (for sound reinforcing), churches, auditoriums of all kinds, and any other location where exceptional sound quality with wide coverage is desired.

TIMELY THEMES MARK NEW RCA TUBE DISPLAYS

(Continued from page 1, column 3)

goers are all called upon to demonstrate Radiotron superiority. The Cunningham pieces illustrate balance, true performance, quick action, and other excellent qualities by means of graceful athletes pictured in actual participation of their chosen fields. Enterprising dealers may use the RCA Victor displays to capitalize on the popularity of four outstanding Victor recording artists; Benny Goodman, Gladys Swarthout, Hal Kemp, and Lily Pons. Full color reproductions of these current favorites are printed on four window cards. Also included with this set is a large centerpiece cut-out of the famous Victor dog.

Each set of these displays is so arranged that they may be used as a group showing or as individual "customer - attracters" placed at strategic intervals thruout the dealers' display rooms. The entire Window Display Service is always timely, well executed and inexpensive.

Special Antennas Are Designed For Video Reception

(Continued from page 1, column 4)

the list price being \$7.50. This double di-pole type covers all five of the television channels for which RCA Victor Television Receivers are designed and provides excellent signal strength and noise reduction on each. It consists of four antenna rods, a wooden mounting pole, and all the accessories needed for convenient erection. Numerous other accessories are available for increasing its height or for making special installations. All metal parts are corrosion proof.

Another RCA Victor Double Di-Pole Television Antenna is the combined Stock Nos. 9871 and 9872. This is similar to the Stock No. 9871 except that a reflector is included, which gives improved reception from one direction with rejection of signals from the opposite direction in the ratio of 3 to 1. Noise reduction is obtainable on only two television channels, from 44 to 50 mcs. and from 50 to 56 mcs. This antenna is designed for locations where the television signal travels two paths in arriving at the receiver, making reflection a disturbing factor. It is of simple construction, easy to install, and all metal parts are corrosion proof. The list price of the reflector is \$13.75.

The RCA Victor Stock No. 9870 is a popular priced (\$4.00 list) noise reducing antenna for use in localities where reflection is not a problem. It will function on the 44 to 50 mc. channel and the 50 to 56 mc. channel, both of which will be used by prominent stations in the New York City area. It is known as the "Double V Type" antenna and is packed completely assembled, needing only supports for either end. Included are a junction box and ninety feet of transmission line.

It is recommended that all RCA Victor Television Antennas be erected at as high a location as possible.

RCA Dealer Men Trained for Service Work in Television

125 Complete Courses Under Television Technicians

A special course of instruction to train members of RCA Victor distributor and dealer service organizations in the New York area to install and adjust television receivers and instruct purchasers in their operation has been completed by approximately 125 service men, according to Edward C. Cahill, RCA Service Manager.

The courses have been conducted by television service experts, from within the famed RCA Victor service organization at Camden, who have been studying and solving the problems of television receiver installation and servicing during the three years RCA Victor television instruments have been field tested in New York.

Have Good Working Knowledge

"Our distributor and key dealer service men now have a good working knowledge of the receivers and are qualified to set up, install, adjust and demonstrate them after having satisfactorily completed an intensive practical course of study," Mr. Cahill said.

In addition to the courses for service men, advanced studies in television have been made available for technicians at RCA Institutes, the oldest radio school in the United States, where a large number of service experts have been enrolled for further instruction.

"The training of these service and technical experts for our retail outlets is but another of RCA's services for television," Mr. Cahill said. "Within our own organization we now have a reserve of service experts who will be sent out to conduct dealer training courses in other localities as soon as television transmission facilities become available."

It's a Swell Set, Too!!



Pardon the interruption, gentlemen. We'd just like to mention that the object of the exceedingly charming young lady's attention is the new RCA Victor Armchair Model 96E2. Perhaps you already know that the 96E2 has continuously variable tone control, automatic tone compensation, magnetite "frequency-locking" I-F transformers, automatic volume control, Vernier tuning, a rubber floated tuning condenser, temperature compensated circuits, and Fire Underwriters' approval. If you were aware of these unusual features—then—Eyes Right!

Television Makes Impressive Debut in New York

(Continued from page 1, column 1)

City. By 1929 a television station—W2XBS—of 250-watt power was placed in operation, and by 1930 a six-foot black and white sixty-line projection was shown on the screen of a New York theatre. In that same year RCA television laboratories were set up in Camden, N. J., and transmitting equipment and studios were installed in the Empire State Building, using frequencies between 40 and 80 megacycles. By 1934 iconoscopes for scanning and kinescopes for reproduction presented a 343-line picture, and interlaced scanning was used with an electronic synchronizing generator. 1935 was an auspicious year, for it saw the beginning of elaborate field tests by RCA. By 1936 more than 100 experimental receivers were installed in the homes of RCA executives and employees in the vicinity of New York, and test periods of telecasting were begun. These field tests were continued for more than two years at an expenditure of over \$2,000,000. Some of the important developments resulting from these tests are listed.

Many Improvements

1. Simplification of operating controls—it was found that a number of controls at first thought necessary could be placed inside the cabinet and adjusted permanently at time of installation.
2. Changing the color of the image from green to white—thus more nearly simulating motion pictures.
3. Perfection of most feasible type of transmitting antenna.
4. Determination of the proper types of receiving antennas and successfully solving the problem of reflection.
5. Improved picture detail by increasing transmission lines from 343 to 441.
6. Organization of a field force—RCA field engineers were stationed in N. Y. C. to superintend the installation and operation of the experimental receivers. They became the nucleus of the group that is now handling this service.
7. Development of a studio technique that was of necessity different from any used in radio broadcasting.
8. Remote Pickup—mobile units for pickup of outdoor events and

their relay to the master transmitter and antenna.

Television Service

In reference to the future there are many questions being voiced. One of the most important is that regarding service for television receivers. These receivers are complicated and sensitive, demanding new service technique. Servicemen must be solidly grounded in the fundamentals of this technique before attempting installations, adjustments, replacements, or repairs. To this end RCA Victor is making arrangements with distributors to instruct their men. The facilities of RCA Institutes, the oldest radio school in the United States, will be used for this purpose.

All The Answers

QUESTIONS AND ANSWERS FOR RCA VICTOR RADIO DEALERS
RCA MANUFACTURING COMPANY, INC.
CAMDEN, NEW JERSEY, U. S. A.

This handy twenty-page booklet answers many of the questions most common to television. Illustrations, diagrams, and three full pages devoted to chronology and terms applied to the new industry make "Questions and Answers" very helpful and interesting. Copies may be obtained by writing directly to the RCA Manufacturing Company, Camden, New Jersey, and referring to the booklet by name

Help Sell RCA Tubes



The three individual displays shown are each a part of the new RCA Window Display service. These units center around themes of current interest and are cleverly constructed. Other themes capitalize on the popularity of Victor Record artists such as Lily Pons, Benny Goodman, Gladys Swarthout and Hal Kemp; and interest in athletes gracefully demonstrating their skill

Television Parts For Deflection Circuits Ready

Used With RCA 5-, 9-, and 12-Inch Kinescopes

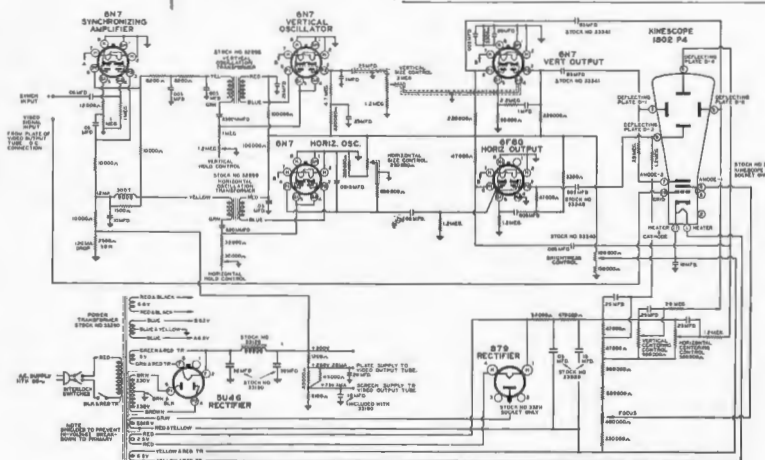
Many of the vital parts necessary in the construction of kinescope deflecting circuits are being featured by RCA Parts Distributors. There are nine parts required for use with the RCA 5-inch electrostatic-deflection type kinescope (RCA 1802-P4) and seven for use with the RCA 9- and 12-inch magnetic-deflection types (RCA 1804-P4 and 1803-P4). The items listed for the former include a rectifier socket, four capacitors, three transformers and a reactor. Parts for the 9- and 12-inch kinescope circuits are five transformers, a filter capacitor, and a deflecting yoke. The same engineers whose skill resulted in the efficient RCA Victor Television Receivers are responsible for the design of these component parts.

Extra Insulation Provided

All of these basic units have been put through rigorous tests to determine their qualities of insulation, length of service, and the voltages they will withstand. The high voltage units have been provided with insulation far in excess of their ratings to insure more than required protection. The following list contains parts, their specifications and prices, for the circuit used with the RCA 5-inch kinescope. Below is a typical deflection and power-supply circuit diagram using these parts.

Stock No.

- 33211 High Voltage Rectifier Socket—4 prong Molded of Bakelite—Eliminates corona and ionization—constructed with ample space between plate terminals and ground to prevent high-voltage breakdown. Designed to prevent dust collecting over contacts. List Price—\$1.00
- 33202 Two Section High Voltage Filter Capacitor (with bracket)
 - One section—.15 mfd. at 2500 volts
 - One section—.05 mfd. at 3000 volts
 List Price—\$2.65
- 33390 Power Transformer
 - Primary 117 volts
 - Secondaries
 - Low Voltage Plate—660 V. (330 each side) 0.14 A.
 - High Voltage Plate—2240 V. 0.002 Amp.
 - Low Voltage Windings—6.6 V., 0.3 Amp.; 6.3 V., 0.6 Amp.; 5.0 V., 3.0 Amp.; 2.5 V., 1.75 Amp.; 12.6 Volt (6.3 each side), 3.82 Amp.
 List Price—\$13.50
- 33340 Horizontal Coupling Capacitor (2 required)
 - 0.005 mfd. at 3000 volts
 - Withstands high humidity—has long life
 List Price—\$.50 each
- 33341 Vertical Coupling Capacitor (2 required)
 - 0.05 mfd. at 3000 volts
 - Long life—withstands high humidity
 List Price—\$.50 each
- 32899 Horizontal Oscillation Transformer
 - Designed for high frequency blocking oscillator circuits. High efficiency at frequency of 13,200 cycles.
 - Primary DC resistance—3.5 ohms
 - Secondary DC resistance—8.55 ohms
 - Ratio—1:2
 List Price—\$1.75
- 32898 Vertical Oscillation Transformer
 - Designed for low frequency blocking-oscillator circuit. Most efficient at 60 cycles.
 - Primary DC Resistance—670 ohms
 - Secondary DC Resistance—135 ohms
 - Ratio—4.16:1
 List Price—\$1.75
- 33190 Three-Section Electrolytic Filter Capacitor
 - Two Sections—30 mfd. at 470 volts
 - One Section—10 mfd. at 150 volts
 List Price—\$2.50
- 33120 Low Voltage Reactor
 - 8 Henries at 0.14 amp. DC
 - DC resistance—315 ohms
 List Price—\$3.25



Typical Deflection and Power Supply Circuits Using Above Parts

New Terminals?



"Well—for one thing—the programs don't end right!"

Many New Tubes Announced For Renewal Sales

Twenty-Seven Additional Types Added to RCA Line

Addition of twenty-seven new RCA receiving tubes to the renewal tube line was the text of a recent announcement by L. W. Teegarden, Manager of Renewal Tube Sales. According to Teegarden, most of these types are being employed in recent models of radio receivers. They include glass, metal and "G" type tubes.

The announced tubes are as follows:

Type	Description
GLASS TYPES	
6B5	Direct Coupled Power Amplifier
METAL TYPES	
6SA7	Pentagrid Converter
6SC7	Twin Triode Amplifier
12C8	Duplex-Diode Pentode
12SA7	Pentagrid Converter
12SC7	Twin Triode Amplifier
12SJ7	Triple-Grid Detector Amplifier
12SK7	Triple-Grid, Super-Control Amplifier
12SQ7	Duplex-Diode, High-Mu Triode
"G" AND "GT" TYPES	
1G4G	Detector Amplifier Triode
1G6G	Class B Twin Amplifier
6A8GT	Pentagrid Converter
6F5GT	High-Mu Triode
6J5GT	Detector Amplifier Triode
6J7GT	Triple-Grid Detector Amplifier
6K6GT	Power Amplifier Pentode
6K7GT	Triple-Grid Super Control Amplifier
6N6G	Direct-Coupled Power Amplifier
6Q7GT	Duplex-Diode High-Mu Triode
12A8GT	Pentagrid Converter
12J7GT	Triple-Grid Detector Amplifier
12K7GT	Triple-Grid Super Control Amplifier
12Q7GT	Duplex-Diode, High-Mu Triode
25L6GT	Beam Power Amplifier
25Z6GT	High-Vacuum Rectifier-Doubler
35L6GT	Beam Power Amplifier
35Z4GT	Half-Wave High-Vacuum Rectifier

Instant Recorders By RCA Have Wide Range Of Use

Low-Cost Portable and Deluxe Console Make High Quality Discs

Two recording and instantaneous play-back instruments that combine simplicity of operation with exceptional reproductive properties have been offered to the public by the Commercial Sound Division of the RCA Manufacturing Company. Each instrument is a completely self-contained unit with a reproducing pick-up, tone arm, loudspeaker, velocity microphone, recording head and amplifier. Of unusual import is the recently developed cutter head "Float Stabilizer." By means of this important improvement "flutter," as caused by microscopic variations in the texture of the lacquer coating on recording discs, is counteracted. This latter feature is standard equipment on the console recorder, which is designated as MI-12700 and sells for \$475.00, while the portable job MI-12701 is priced at \$179.00.



MI-12701 instantaneous recorder

The console instrument is one of the most versatile recorders ever produced. It will record and reproduce at speeds of 78 or 33 1/3 revolutions per minute, using 10, 12, or 16 inch records, either outside-in or inside-out. It has a Visual Indicator Meter to insure proper recording level, high-fidelity amplifier and loudspeaker, and volume and tone controls. A specially designed motor assembly for the turntable prevents "wows" in recording and playback. The portable model records and reproduces 10 or 12 inch at 78 R. P. M. using the outside in method. It is complete with amplifier, loudspeaker, and visual indicator. The frequency range of both instruments is more than sufficient to meet the most exacting requirements.

For Business or Family Use

"Applications for these instruments seem endless," remarked W. L. Rothenberger, RCA Victor Commercial Sound Division Manager. "Business houses will find use for them in sending personal messages from executives to employees operating in the field. Schools will find them invaluable in teaching voice-culture, dramatics and music. Doctors may study speech defects of their clients, while musicians, radio artists, public speakers, and others may check their performances at rehearsals, and for selling themselves to those who have never heard them. Other less professional members of society will find the new RCA recorders an excellent medium for recording the voices and vocal achievements of their families and friends." Already many servicemen have set themselves up in the recording business, either renting out the instruments or recording for those who might find ownership impractical.

In addition to these instantaneous recorders RCA is also making a portable 16 inch turntable assembly for reproducing recordings over public address systems. This turntable is also available with the recording attachment utilized by the console instrument, and will then record and reproduce at 78 or 33 1/3 R. P. M., accommodating 10, 12, or 16 inch records.

Spraying Cathodes For RCA Tubes



This operation is one of the many important phases of tube manufacture at RCA's Harrison, N. J. plant. Cathodes are suspended from horizontal bars at either side of the booth and coated with an electron emitting material. Despite the fact that spray-gun operators are highly trained, the tiny filaments are subjected to rigid inspection. This close supervision is typical of every operation in the production of RCA power and receiving tubes

Electric Carillons Presented by RCA At Low Cost

New Compact Units Ideal For Small Institutions

Churches, schools, banks, and other similar public buildings may now install carillon systems that are electrically operated, inexpensive, and efficient. This very recent development by RCA provides a five-note Westminster chime and a twenty-six note carillon system. The controls for each are housed in well styled cabinets of ordinary radio size and may be located at any place of convenience. It is possible to utilize an electrical time switch or clock to give the Westminster peal at fifteen minute intervals, with the hour note one octave lower than normal to assure good quality response.

Long Research Period

RCA engineers spent many years of research in perfecting these simplified electric carillons which produce clear, ringing bell-notes from slender metal reeds. Vibration of

the reeds, which are connected to magnetic coils, is actuated by tiny hammers controlled by the keyboard. This vibration induces in the coils a current which varies exactly with the undulations. The current of spinning electrons is passed on to the RCA radio tubes which amplify and conduct them to high quality loudspeakers for reproduction.

The RCA Carillons have been designed to provide dignified chime and musical presentation conveniently and economically. Necessity for building a special belfry and installation of heavy equipment has been eliminated. Compactness and ease of operation now permit small institutions as well as large to add the distinguishing feature of beautiful chime service.

Easy to Play

By striking the carillon keys in accordance with accompanying diagrams, many of the world's famous chime peals may be reproduced. The five-note system may be operated by anyone, no musical education being necessary, while a person with moderate musical knowledge may operate the twenty-six note carillon pleasingly.

Television Thrills Deaf Audience At San Francisco Fair

500 Students Visit RCA Exhibit

Silence paid eloquent tribute to the miracle of television sight-sound broadcasts when a program was presented recently to the most appreciative audience ever to attend the RCA Exhibit at San Francisco's Golden Gate Exposition—a group of people in whose experience radio had meant nothing until that moment.

Students From Berkeley School

The audience was composed of 500 students from the Berkeley School for the Deaf and the man who stood before the television camera was an Exposition guide who "spoke" to them in sign language via the television screen. They stood before the television receivers with wide-eyed attention as they watched the guide's fingers tell the story of television—their first experience in wireless transference of intelligence.

Special arrangements for command television performances for the students from the Berkeley School and other institutions for the deaf have been made by A. P. Matthews, manager of the RCA Exhibit.

Versatile



Helen Walpole, charming young NBC actress, came up from Birmingham, Alabama to wend her way to fame. Recently she turned writer, authoring the scripts of NBC's Adventure in Reading, only to discover that she was too busy writing them to act in them. She still acts for NBC, however—when others do the writing

Service Tips



Now you can win your choice of a handsome RCA Service Engineer's Pencil or any volume of RCA Victor Service Notes by sending tips to RCA Radio Service News, Camden, New Jersey. . . . Service Tips must be acceptable for either RCA Radio Service News or the RCA Radio Service Tip File. . . . All tips become the property of RCA to be used as they see fit. . . . Service Tips are our readers' ideas, not ours. While RCA Radio Service News believes they are worthwhile, we cannot be responsible for results.

Aligning Push-Button Sets

When aligning push-button sets I have found it advisable not to depend on the calibration of my signal generator, but rather to zero-beat the signal generator with the desired station. (Modulation control turned off.) In this way it is possible to obtain an exact peak, which is very essential. Otherwise reception on the push-button selected stations will be very poor.

George H. Koether
Saverna Park P. O.
Round Bay, Md.

"Automatic"

(This tip should be very applicable for inexpensive midget receivers. Editor)

In reference to an "Automatic"—This set was very noisy and to remedy this situation the 25L6G was replaced. The noise was effectively stopped but a beautiful "birdie whistle" appeared when the volume control was in middle position. Only a shield can over the 6Q7G would stop it. As the 25L6G and the 6Q7G were too close together, a metal tube was substituted and every thing was O. K. This gives added proof of the superiority of metal over glass. Of course RCA Metal Tubes were used.

Al. R. Dayes
1418-81st St.
Brooklyn, N. Y.

Philco Mystery Control

In some cases the volume control will operate all the time that the set is plugged into the wall. It may run to full volume or it may turn the set off and continue running. This is sometimes caused by the switching arm catching as it comes back, or at other times by small filings or scrapings getting between the contacts. If it is the former, file the contacts lightly, and if the latter, wash the contacts with carbon tetrachloride. Do not attempt to adjust the springs.

C. W. Doty
Linville Radio Electric
3228 Troost Ave.
Kansas City, Mo.

'39 Chevy Vibrator Hash

Excessive vibrator hash in the speakers of 1939 Chevrolet Auto sets can be overcome to a great extent by removing the mounting nuts on the push-pull input transformer and revolving it to cancel the hash. Remount the transformer with freshly drilled holes. Needless to say, failure to punch out fireboard holes behind the speaker leads to dangerous overheating as well as seriously sacrificed audio frequency response.

Merl Saxon
Pasadena, Texas

Emerson D-139 Noise

Owners of the Emerson Model D-139 complain of noise a few months after purchase. This is caused by a capacitor that is too near the bleeder, the heat from which causes melting. By replacing this capacitor the noisy condition can be remedied.

Nat Laster
Laster Radio Service
1050 Hoe Avenue
Bronx, N. Y. C.

Carbon Welder

A very efficient carbon welder or soldering tool usable with 2 volt or 6 volt batteries can be made from an ordinary hard carbon such as is used in the arcs of a theatre projector. It is constructed by connecting the carbon to the battery with ordinary lead-in wire and attaching a clip to each end. Size of wires and carbons should increase in proportion to the work to be done.

J. O. Roberts
Roberts' Radio Service
St. Louis, Mich.

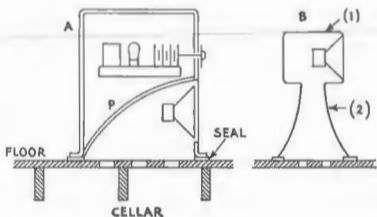
Ancient Vintage Crosleys

A great many Crosley (metal box) receivers of ancient vintage show up when the independent serviceman does a little trading. It is difficult to dispose of these sets now. It will be found profitable to dismantle them and salvage the screws, nuts and other standard parts. In dismantling the set, do not overlook the two insulators extending thru the variable or gang condenser (stationary portion). These insulators make excellent non-metallic screw drivers for alignment work. Tools of this sort are usually quite expensive, although very necessary. By dismantling old sets many items such as this may be discovered.

Emil J. Giara
Giara's Radio & Elect.
Service
Corbin, Kentucky

Magic Voice Principle

Here is an idea to employ the principle used in the installation of the "Magic Voice" speakers of RCA Victor auto sets in home receivers to get the benefits of a large baffle. The enclosure in back of the speaker is completely sealed up with the base resting on a felt (or some similar material) strip to seal the base to the floor acoustically. Several large holes are drilled in the floor as acoustic vents to relieve the sound pressure. It would be desirable to use a curved partition



(P) as the enclosure for the speaker, leaving the rear of the cabinet open for access to the chassis. It would be cheaper, perhaps, to have an enclosed rear wall cabinet. (Particularly for a small set.)

Diagram "B" is an alternative. A metal drum (1) speaker housing mounted on a hollow metal base (2) connecting the enclosed rear of the housing to the holes in the floor. Would be applicable for boat or train installations.

F. J. Harbaugh
Haddonfield, N. J.
(Editors Note—This looks good to us. What do you think?)

Dial "Jittering"

In areas where the prevailing line voltage varies from 120 to 128 volts A. C., "jittering" of the dial before centering on the desired station may be experienced with the RCA 1939 motor tuned sets. This sometimes occurs in spite of the most careful observance of the instructions in the service notes.

I find that all such troubles cease with the installation of a 25 watt dropping resistor in the A. C. line, of sufficient resistance (5 to 15 ohms) to limit the motor voltage to the required 24 volts. Care should be taken not to get the tube filament voltages below the rated 6.3.

H. B. Hodges, Service Mgr.
Queen Anne Radio and Electric Store
Queen Anne at West Caler
Seattle, Wash.

Use for Old Tubes

We have solved one of the most serious problems of our business. To dispose of our old tubes we place them in a box and save them for target practice. They make a fine "pop" when hit. We're now going to see what can be done about old razor blades.

Clifton S. Krumling
315 East Second St.
Blue Earth, Minn.

Intermittent Operation of Colonial 31 AC

Leads from the output transformer on top of the speaker are encased in a large piece of spaghetti. When this casing is sliced open the enclosed leads will usually be found in a cracked condition and consequently, shorting. The remedy is to either replace the three wires or to slip individual sections of spaghetti over the original cracked rubber covered wires.

Paul Ilowite
White Tech. Radio Service
1444 31st Ave.
Long Island City, N. Y.

Silvertone 1732X

Recently a Silvertone 1732X came into my shop for adjustment. This set calls for an 83V rectifier but some serviceman had installed an 83 Mercury rectifier. Since no provisions were made for the resultant R F hash, the set became very noisy. Replacement by an 83V (or a 523) completely eliminated the trouble. This solution may be applied to other sets in a similar condition.

Harvey H. Schock
311 West Windsor St.
Reading, Pa.

Scratching on GE F-107

A scratching sound on the General Electric F-107 may be attributed to friction of the flywheel which is coupled to the electric tuning motor by a belt. As the pointer moves toward the high frequency end of the dial there is generally no noise, but a scratching sound is evident when the low frequency end of the scale is approached. This is caused by the flywheel moving on its shaft and coming in contact with the chassis. Move the bracket next to it, which is the terminus of the shaft, so that sufficient spacing is afforded the flywheel for frictionless movement.

Willard Moody
403 West 205th St.
N. Y. C.

Motorola Auto Radio Model 75

If the set is dead and no plate voltage can be obtained from any tube, check both buffer condensers and the two 6 mfd., 450 volt filters. If these are found to be O. K., check the .25 mfd., 400 volt capacitor on the plate of the 78 R. F. stage. This small tubular capacitor is often overlooked. If the capacitor is shorted the ohm-meter reading will be 150 ohms from plate to ground.

H. H. Taylor
Jewell Radio Service
Arcade Building
St. Joseph, Mo.

Handy Tool

The handiest tool in my radio kit is a piece of spring steel ten (10) inches in length, one-sixteenth (1/16) of an inch in width, and five thousandths (.005) of an inch thick. One end is tapered to a razor edge and is used in cleaning the plates of tuning condensers. Another use of this tool is cleaning voice coil channels. This is done by holding it against the magnet of an old RCA Magnetic Speaker thereby collecting all metal shavings from a dead speaker.

Ralph K. Eaton's Service
P. O. Box 545
Madera, Cal.

RCA Victor 812-K

Here is a remedy for erratic tuning or inability to tune in other than powerful local stations on the broadcast band of the RCA 812-K. Replace the C-47, a molded bakelite fixed capacitor 690 (mmfd.), which is connected to the broadcast tap of the oscillator coil. It is used as a low frequency oscillator padder condenser.

J. Block
Block's Radio and Repair Shop
230 E. 51st St.
Brooklyn, N. Y.

RCA WAVE TRAP HELPS REDUCE INTERFERENCE

Has Magnetite Core Tuning and Frequency Range of 450 KC to 2100 KC

A new wide frequency range wave trap having many desirable features has just been announced by L. A. Goodwin, Jr., RCA Parts Sales Manager.

This new unit while only \$1.85 list features magnetite core tuning and has an average attenuation of 40 to 1 over the frequency range of 450 KC to 2100 KC.

"The trap was designed," said Goodwin, "for those receivers and locations that are troubled by interference or inadequate reception of certain stations. It is effectively shielded for protection against interference and reaction with receiver circuits." All RCA Parts Distributors are now featuring the RCA Multi-Range Wave Trap.



Stock No. 33033

High "Q" Circuit

Many new features make this small, easily installed wave trap an unusual value. It can be connected either as a "series" tuned or as a "parallel" tuned unit, with taps provided to make an ideal impedance match. Cumulative wound Litz wire gives a high "Q" circuit. Another important feature is the elimination of signal loss other than on the station to which it is tuned. This versatile unit has been designed for suppression of many types of interference that are often real problems to servicemen making installations in difficult locations. Blanketing, which is caused by a strong station overlapping a weaker station, heterodyning as evidenced by whistles or "birdies" when tuning in a station, and code signals caused by ship static, etc., can easily be remedied by the RCA Multi-Range Wave Trap. Distortion, as caused by overloading of the RF and IF stages, may be minimized by the wave trap.

New Applications

In addition to its general uses on the broadcast band reception, the new RCA Wave Trap makes an

Frequency Easily Checked by RCA Xtal Calibrator

(Continued from page 2, column 5)

using the receiver or frequency meter to measure the transmitter frequency. The receiver or frequency meter should, of course, have either a straight-line frequency tuning condenser or a dial calibrated in frequency which compensates for the plate shapes. Also, it must have sufficient bandwidth to read frequency to the required accuracy.

Recommends Frequent Checks

The majority of receivers and heterodyne frequency meters do not have sufficient stability with respect to changes in humidity and temperature to maintain accurate calibration over long intervals of time so the calibration should be made at frequent intervals, preferably before each measurement of the transmitter frequency. The calibration is readily accomplished by simply coupling the piezo electric calibrator to the antenna input of the receiver and tuning the receiver to the harmonic outputs of the unit. The



RCA Piezo-Electric Calibrator Stock No. 9572, \$29.95 Net Price

variation between the marked frequency and the actual tuning point should be noted and a dial correction curve plotted. Having done this, the amateur has available a frequency meter of greater accuracy than most commercial instruments.

excellent unit for the following applications:

1. On Receivers used aboard ships (many sets sold in Houston, Galveston, New Orleans, Mobile, New York, and all other major coastal cities).
2. To broadcast stations for use in curing "blanketing" conditions in their immediate vicinities.
3. To Amateurs (on 160 meter band).
4. Receiver owners living in close proximity to any broadcast, 1700 KC police, or commercial long wave station.



"The scent is exquisite—and the stopper makes a wonderful aerial insulator."



Television Receivers

E. W. Engstrom and R. S. Holmes

RCA Manufacturing Co., Inc.

(Continued from December Issue)

The impedance in the detector tuned circuit, while it is as large as can be used, is still very low compared to ordinary sound broadcast practice. The thermal agitation (hiss) in this circuit is consequently very low. Most of the hiss in the receiver is therefore caused by the shot effect in the plate circuit of the detector rather than thermal agitation in its grid circuit, as is usual in broadcast receivers. For this reason, great care must be used in choosing the type of tube to be used. Other things being equal, the hiss is a function of the plate current. The gain of the tube is a function of its transconductance. Therefore, a tube having a

these ultra high frequencies, and their plate current is high and transconductance low. It has been found that a sharp cutoff tube with separate oscillator excitation on its control grid operates very well as a

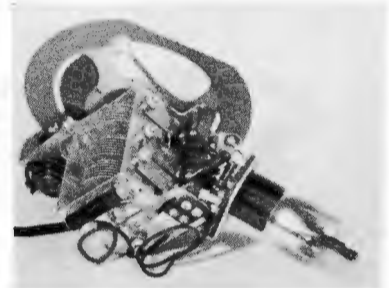


Figure 7

high ratio of transconductance to plate current should be used so that the signal-to-hiss ratio will be high. In sound receiver practice it is common to use one or more radio frequency amplifier stages ahead of the detector. In the case of television the gain possible with conventional receiver tubes is low. For example, with circuits whose wide bandwidth and tuning range reduce their impedance to 1000 ohms or less, a tube with transconductance of, say, 200 micromhos would give a gain of less than two. To make a radio stage feasible, either the circuit impedance must be increased by decreasing either the bandwidth or the tuning range, or a tube of higher than ordinary transconductance must be used. To obtain really effective radio frequency amplification with present receiving tubes, the tuning range would have to be reduced to where the receiver would tune to only a single television station. This would of course greatly impair the usefulness of the receiver. However, using tubes having a transconductance of the order of 5000 micromhos, a satisfactory and effective radio stage may be designed.

Oscillator and Detector Stage

Combination oscillator detector tubes do not oscillate readily at

heterodyne detector in a television receiver. In order to prevent the tube from drawing grid current, and to make the amount of oscillator excitation less critical, self bias on the detector, possibly in combination with AVC bias, has been found very satisfactory. If the detector tuned circuit is coupled to the oscillator circuit in a manner similar to that used in coupling it to the antenna circuit, the oscillator excitation remains reasonably constant over the tuning range.

The tuning unit of Figure 6 uses two sections of a three-section gang capacitor, with the tuning coils and oscillator tube mounted on the frame of the capacitor. Figure 7 is a photograph of this unit. The detector tuned circuit is in the center, so that it is coupled to both the oscillator and antenna circuit. The circuit of the oscillator in this unit, which has been found to be highly satisfactory in performance, is shown in Figure 8. This circuit is a more or less conventional grid leak biased oscillator, with the feature that the series condenser not only helps make the oscillator frequency track properly with the radio frequency circuit, but it is also placed in such a position in the circuit that the feedback coupling

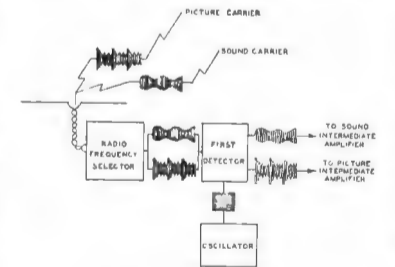


Figure 9

increases at the low frequency end of the range, due to the increasing ratio of reactance of the series capacitor to that of the tuning capacitor. This desirable effect helps to maintain uniform oscillation strength over the frequency range.

Must Have Low Frequency Drift

In addition to the requirement that the oscillator furnish uniform excitation to the detector grid circuit there is a rather stringent requirement that it have very small frequency drift. It has been found that a tuned plate oscillator has certain advantages in this respect over a tuned grid oscillator. Circuits which require that both sides of the tuning capacitor be at high ratio frequency potential are undesirable for this particular application for the simple reason that it is more convenient to use a common rotor at ground potential for all three capacitors.

The oscillator frequency is best made higher than that of the incoming carrier so that full advantage can be taken of the tuning range of the radio circuits, and to obtain the advantage of the series capacitors in the oscillator circuit.

With identical tuning capacitor and proper series and parallel trimming capacitor on the oscillator, very accurate tracking of the oscillator with the radio circuits can be obtained over the entire tuning fre-

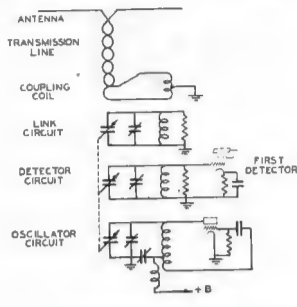


Figure 10

quency range. We have now reviewed the fundamental requirements of the antenna, radio frequency selector circuits, oscillator and input portions of the first detector circuit. In terms of the block diagram for the complete receiver shown in Figure 3, the portions reviewed are shown in Figure 9. In schematic form, these receiver input circuits are outlined in Figure 10.

With this issue, the current series of articles by Messrs. Engstrom and Holmes is concluded. From time to time RCA Radio Service News will present articles dealing with other phases of television as written by RCA engineers. You may look to this paper to keep posted on the latest developments in the Television Field.—Editor.

LOKTAL TUBES TESTED ON RCA TUBE CHECKER

Many Owners Comment On Ease Of Operation

By means of a small adaptor, available thru all RCA Parts Distributors, the popular new RCA Tube Tester will easily handle the correct testing of the new Loktal type tubes. Complete instructions for installation, as well as correct, up-to-the-minute test data are included with each of these Stock No. 9858 adaptors which are priced at only \$.50 net. For those preferring a built-in socket to an adaptor, the RCA Stock No. 9863 Loktal Socket Kit provides an easy means of change. Complete installation data is packed with the kit, which is designed for mounting in the space occupied by the spare socket. The list price is only \$.50. All RCA Tube Testers now being sold include this Loktal testing feature as well as many other important points of superiority. The Model 156 tester was first marketed in October of 1938. This tester is sold in two styles, one adapted for counter use, and the other for portable use. The former carries a list price of \$37.95 net, while the latter is only slightly higher at \$39.95 net.

Users Report Satisfaction

Users' comments substantiate the belief of RCA engineers that the compact, sturdy instrument would fill a long felt need in the service industry. Mr. Al Browdy, an independent serviceman of 1321 Bronx River Avenue, New York City, includes the following comments in a very interesting letter. "I purchased an RCA Tube Tester, Model 156, about two months ago. I am very pleased with its ease of operation and dependability of service." Mr. Browdy's letter is typical of many in a similar vein that have been received by RCA from servicemen in all parts of the country.

Many servicemen have found the instrument to be a powerful aid in convincing customers of the need for new tubes in their receivers. Its ease of operation enables the average set owner to test his own tubes and usually no other sales message is necessary.

TILT MOUNTING FEATURE OF RCA AUTO ANTENNAS

New '39 Accessories Eliminate Noise From Vibration

The complete line of low cost RCA Auto Antennas that are now being offered by all RCA Parts Distributors feature complete "soundproofing." New mechanical design eliminates all vibration and noise which in the past has been a source of annoyance to automobile radio users. With these new antennas, service engineers and radio dealers may assure their customers of the finest in auto antennas at a minimum of cost.

The new RCA Cowlenna No. 9855 in addition to its noise-proof feature also has shields over the mounting bolts to further eliminate electric noise pick up and assure undistorted reception. This stylish antenna is of the three-section telescopic type and has a high gloss chrome finish with chrome trim on the new ceramic insulators. Its net weight is only 17 ounces and its price is \$3.35 list.

Fits Car Contours

The new RCA Rodenna, No. 9856, is installed by merely removing the door hinge pin. Its special mounting bracket simplifies angular installation to fit the contour of any car. Another feature of this versatile unit is its length of 69 inches when fully extended. This gives increased pick-up which is necessary for remote or low signal strength areas. The list price is but \$3.00. Included with each of these outstanding values is a 36 inch shielded, low capacity cable with a bayonet fitting, and a template for easy mounting.

Other RCA Antennas

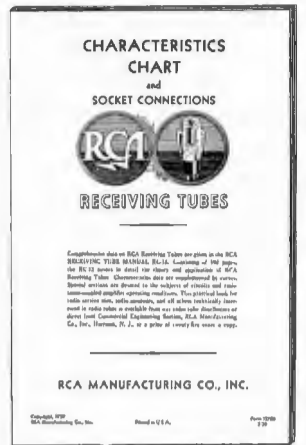
Stock No.	List Price
9825—RCA Cowlenna—Single Insulator — Two Section Type	\$2.95
9823—RCA Monogram Antenna (For car top mounting)	\$3.95
9605—RCA Di-Pole Antenna (For under car installation)	\$2.60
9827 RCA Rodenna — Two Section Telescopic — 29½ to 50½ inches.	\$2.25
9581—RCA Rodenna — Two Section Telescopic — 26 to 47½ inches.	\$1.95
9793—Single Piece Vanadium Steel Type	\$2.75

New Home For RCA Distributor



Jack and Elliot Wilkinson, RCA Parts and Radiotron Distributors for the Dallas territory, have moved their business into new and more spacious quarters at 2406-08 Ross Avenue. The Wilkinson Brothers' service is geared to supply servicemen and amateurs in five southwestern states by means of efficient, helpful salesmen and a big, profusely illustrated catalog

Here's the Dope



As welcome as the first robin is this latest revision of the RCA Receiving Tube Characteristics Chart. This booklet gives characteristics data on 191 RCA tubes including glass, glass-octal, GT, and metal types in numerical-alphabetical sequence. Socket connections with RMA designations (4B, 4C, etc.), are shown at the end of the pamphlet. To obtain a copy of this handy, up-to-date reference—1275-B contact your nearest RCA tube distributor or the Commercial Engineering Section, RCA Manufacturing Company, Harrison, N. J.

Nipper Will "Speak" at RCA Fair Exhibit

World Famous Dog to Visit N. Y. Fair

Once again this year the world's most famous dog—RCA Victor's Nipper—will attend a World's Fair. But more than this—Nipper, after years of listening to "His Master's Voice," becomes the only English-speaking canine when he goes to Fairs. Just as he did in Chicago several years ago, Nipper will talk to the many thousands who visit the RCA Exhibit at the New York World's Fair. Of course, everybody knows a dog can't really speak—English or any other language. But what most people don't know is that Nipper, with the aid of the RCA Magic Switch and a RCA Victor record-player, can put on a very good imitation. Nipper, a six-foot model of the world's best known trade-mark, will stand at the exit of the television exhibit in the RCA Building at the Fair. As visitors pass by, the invisible Magic Switch will automatically bid him to "speak."

Lucky Mike



This delightful young lady is Alice Reinhart, talented and very attractive NBC radio actress whose smile is unfortunately hidden from her listeners. Alice plays leading roles in several stories dramatized over the NBC networks

Functions At Twenty Feet



Pictured is the new RCA Victor Wireless Record Player in a typical setting. The walnut finish bakelite cabinet of the VA-20, styled in the functional manner, harmonizes with the furnishings of any room. A convenient screw-driver adjustment in the rear panel provides easy means for fixing its oscillator frequency at any point from 530 kilocycles to 650 kilocycles

New Wireless Record Player Proves Popular

Easily Adjusted to Range Between 530 KC and 650 KC

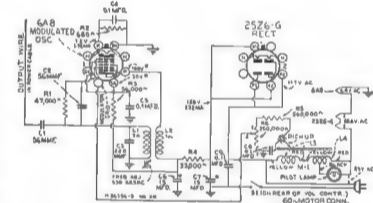
A new record player designed to meet the demands of millions of new record users is being marketed by RCA Victor. The Model VA-20 is built to operate with any radio receiver by merely plugging it into a wall socket and setting it to the desired frequency. Its trim bakelite cabinet was designed by RCA Victor's master stylist John Vassos. This latest addition to the RCA Victor line of record playing units carries the low net price of \$17.95 (F. O. B. Camden).

The crystal pick-up in the compact and efficient VA-20 is connected through a volume control to grid No. 1 of an RCA 6A8 tube, which functions as a modulated RF oscillator. The oscillator frequency can be adjusted to any point between 530 kilocycles and 650 kilo-

cycles by means of a magnetite core in the oscillator transformer. This is a convenient screw-driver adjustment set into the rear panel of the instrument. An output wire is connected to the grid circuit of the oscillator and is run parallel to the power cable. The other of the record-player's two tube complement is an RCA 25Z6-G which is a half-wave rectifier. The output of the VA-20 is sufficient to permit operation within approximately twenty feet of the radio receiver to be used.

Used As Oscillator

In localities where daytime reception is notoriously poor, or even impossible, the VA 20 may be used to perform the function of an oscillator. By setting the frequency of the wireless record player at a desired point and tuning in a receiver to that point, a determination of dial calibration may be made. A distinctive advantage over an



Schematic Diagram

oscillator for this purpose is that tonal qualities of the set may be checked at the same time that calibration is made. The VA-20 also performs effectively as a demonstrator in dealer's display rooms.

Electrical Specifications

Frequency Range—530 to 650

Sound Product Activities Of RCA Expanded

Rothenberger, Manager; Ewald, Sales Head Of Enlarged Dept.

Rapidly expanding markets for RCA sound and related products in existing fields, and developments of new markets through a widening scope of new applications has prompted the RCA Manufacturing Company to enlarge its commercial sound activities and formulate more extensive plans for promoting these products, according to an announcement by J. L. Schwank, Manager of Engineering Products Division.

Mr. Schwank said that additional personnel would augment the manpower now in the Sound Products Division. At the same time he made known the appointment of George Ewald, formerly District Manager at Dallas, as Sales Manager. W. L. Rothenberger remains as Manager of the division, with additional duties and responsibilities.

Wider Field for Service Indicated

"The market for commercial products may be divided broadly into two classifications," clarified Schwank. "One, the sale of products which lend themselves to distribution as packaged goods through our regular dealer-distributor channels. The other, in the ever broadening fields where sound reinforcement and related products are finding increased applications, as evidenced by the installations we have made at the New York's World's Fair and the Golden Gate International Exposition. Enlargement of the department handling these products should aid in developing the business possibilities in both classifications."

These statements are significant to servicemen in that as sound applications increase, so will the demands for competent service. Super-markets, department stores, and business houses of all description are modernizing with RCA Commercial Sound, as well as schools, churches, and other types of public buildings. For the serviceman that knows his sound—there should be opportunity for profitable enterprise.

Tube Complement—(1) RCA 6A8—Modulator-Oscillator

(1) RCA 25Z6-G Half-Wave Rectifier

Pick-up Impedance—100,000 Ohms at 1,000 cycles

Average Output Voltage—1½ Volts at 1,000 cycles with 250,000 Ohm Load

SHOP NOTES

FROM RCA SERVICE DIVISION

To keep the readers of Radio Service News posted on the latest changes in and additions to RCA Products and technical literature, the RCA Service Division will report changes in this column from time to time.

To get the most benefit from this column it is recommended that the readers of RCA Radio Service News transfer these changes and additions directly to their Service Notes on the particular model. By doing this, you are assured of always having the latest information handy.

Automatic Record Changer Adjustments, 1938-39 Victrolas

The following points should be given special attention when servicing automatic record changers in the field:

(1) Jamming of 10 inch records is generally related to adjustment of record separator knives. More satisfactory operation is obtainable by using a spacing of .058 inches for 10 inch records in lieu of the originally specified .055 inches. If adjustment does not give foolproof operation, replace the separator knives. The present type of separator—Stock No. 31126—has an edge corresponding to the right diagram below—



(2) Needle landing in 10 inch position on a 12 inch record may be caused by sluggish action of pickup locating lever (17). It is advisable, for such a case to increase the strength of the pickup locating lever tension spring, or replace it with spring Stock No. 31875.

(3) If the needle misses the record due to excessive vibration on landing, the locating lever (14) spring (No. 35 on U-125, No. 33 on others) should be made heavier, or replaced with Stock No. 32436. If difficulty persists, use spring Stock No. 31875.

(4) Bent guide posts on the motor mounting bracket may bind against the motor board causing mechanical hum or rumble. The posts may be removed from the bracket entirely by sawing, if care is exercised in centering motor in respect to turntable spindle and its coupling.

Reduction of Low Frequency Response, Model U-125

The low frequency response provided in Model U-125 may be lessened in a simple manner, where such a change is desired, by connecting a 500,000 ohm, ¼ watt resistor directly across the pickup circuit. This resistor may be installed at the terminals of the crystal cartridge under the pickup head.

Elimination of Audio Oscillation or Howl, Model 94BP4

Should the green lead from No. 8 pin (to volume control) of the 1C5-G socket be in too close proximity to the blue lead connected to the same socket, a high pitched audio oscillation is likely to result. The two leads should be spaced from each other as far as possible. It is also important that the green lead from tuning condenser to loop antenna be dressed between the 1C5-G and 1H5-G tubes.

Noisy Volume Controls

Volume controls are oftentimes unnecessarily replaced because of apparent noisy operation. Inasmuch as such noise is frequently due to excessive d-c grid current flowing in the volume control and first audio stage, it is good practice to replace or test the tube associated with the volume control to assure that any abnormal grid current condition does not exist; before exchanging the volume control.

Automatic Record Changer—'38 and '39 Victrolas. Friction Finger Adjustment

Erratic tripping action or premature tripping is generally caused by improper adjustment of the friction clutch mechanism. The friction should be just enough to prevent slippage and yet not too tight as to cause the needle to jump grooves from a lateral bind. In order to provide an ideally uniform surface of contact for friction, a stainless steel bushing is now incorporated on the trip lever friction finger Stock No. 31116. This lever

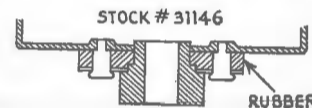
is identified as part number 7 in the record changer diagram of the Model U-125 Service Note. It is recommended that Stock No. 31116 be replaced wherever unstable friction adjustment has been encountered.

Output Tube Failure—Models 9T, 9K2 and 9K3

Replacement of 6L6 and 5Z4 tubes, power transformers and overheated electrolytic capacitors is sometimes occasioned by "leakage" of the audio coupling capacitor of the 6L6 grid circuit. Such leakage causes the 6L6 grid to assume a positive bias resulting in excess plate current, which in turn causes damage to the rectifier, filter and transformer. This source of failure should be carefully checked in cases where other causes are not definitely isolated; and the capacitor replaced if necessary.

Turntable Flutter or Wow Models U-125, U-128, U-130, Etc.

It has been found possible to prevent any flutter or ripple wow that may possibly be experienced on these Victrolas by use of a specially designed motor coupling assembly. This assembly has an auxiliary flexible rubber coupling which mechanically filters the higher frequency speed variations. The unit is covered by Stock No. 31146. It can



be used to remove "flutter" or "ripple" which is produced as wow or speed variations occurring several times (four to eight) per turntable revolution. Its effect on the more common type of "once around" wow is not appreciable. When installing motor using this coupling, first assemble motor support in cabinet with motor screws loose. Move motor around until the hub of coupling No. 31146 can be pushed up around turntable spindle sleeve as a centering pilot. Tighten motor mounting screws securely. Lower coupling No. 31146 on motor shaft to normal position and tighten set screws.

Overmodulation or Distortion—Model VA-20

On some records, and particularly with pickup units having relatively high voltage output, an occasional case may be encountered where distortion occurs at advanced volume control (VA-20) settings. This condition can be eliminated by effecting the following circuit changes:

Remove—Self bias resistor R-2 and associated bypass capacitor C-4 from cathode circuit of 6A8 modulator-oscillator stage.

- Install**—
- (1) Connection between 6A8 cathode (K) and shell (SH) (or chassis).
 - (2) A 10 megohm resistor Stock No. 13601 between "modulator grid" and cathode (K) on 6A8 socket (or chassis).
 - (3) A .0025 mfd capacitor Stock No. 5107 in series with green lead from arm of volume control to "modulator grid."
 - (4) A 120,000 ohm resistor Stock No. 13734 across the volume control from terminal 1 to terminal 3.

The overmodulation condition can also be avoided by operating the VA-20 volume control at a retarded position, and regulating volume by means of the receiver control. The above changes, however, effect a foolproof cure, and should be incorporated on any instruments being serviced.

About Books

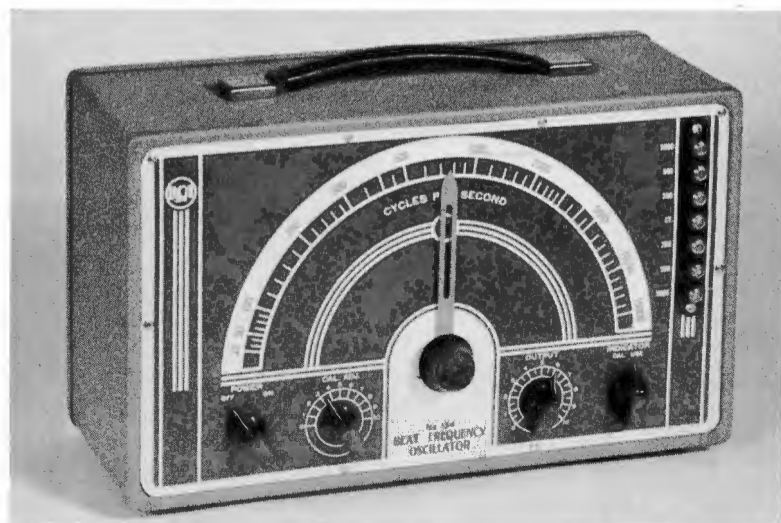
Radio Trouble Shooters' Handbook

By ALFRED A. GHIRARDI

Ghirardi's new book is a worthy successor to his previous volumes. It should prove of real value to all servicemen, especially to those recently entered into the field. Presenting good, sound, tried-and-true data in logical, orderly sequence, Radio Trouble Shooters' Handbook is a compendium of information.

The outstanding feature of its fifty-two sections is entitled "Case Histories," in which actual symptoms and remedies for common troubles for more than 3300 models of 177 different home and auto receivers are given. Containing charts, tables and illustrations in good measure, the book is suggested as a companion and assistant on all jobs, in the shop or afield. The author indicates a real knowledge of servicemen's needs, and while apparently aware that the average serviceman probably has some of this information available, he also knows that it is usually scattered about, and not in the right place at the right time. This volume is for the purpose of providing at one time and in one place much data necessary for service work.

Designed For Servicemen



The new RCA Beat Frequency Oscillator—Stock No. 154—combines an unusual number of exceptional qualities to make it a real value at any price but sells for only \$49.95. The sturdy, easily carried instrument has distortion of less than 5% rms. over its entire range, from 30 to 15,000 cycles! Weighing only fifteen pounds it is 9½ inches by 13¾ inches by 6½ inches. Ask your RCA Test Equipment Distributor for a convincing demonstration

RCA Television Creates Housing Problem at Fair

Opening Day Crowds Overflow RCA Building On Treasure Island

Intense interest shown by exposition visitors has created a housing problem at the RCA San Francisco Fair exhibit. All estimates of experts, who spent months in consideration of this very problem, have been exceeded. Approximately one out of every 12 persons in the opening day throngs of 150,000 saw this newest miracle of the electronic sciences. Opportunity to witness and take part in television demonstrations has indicated great public acceptance for commercial television.

Participants at the rate of 15 per minute for 12 hours were guided before the lens of the television camera. The images were projected into four receivers in the next room where the subjects were also visible thru a glass window.

Black and White Images

In the viewing room, the images are seen in black and white on the fluorescent surface of the Kinescope receiving tubes, either directly or as reflected on a mirrored surface. The Kinescope tubes are twelve inches in diameter and give a television image approximately 8 by 10 inches in size.

On the transmitting end, the Iconoscope or electric eye corresponds to the film in an ordinary camera, except that the Iconoscope converts optical images into electrical impulses.

Electron Bombardment

The camera lens focusses the subject onto a plate that has been coated with millions of miniature photo cells. These tiny light-sensitive elements store up or lose electrical charges that correspond exactly to the light and dark portions of the subject. At the other end of the Iconoscope tube is an electron gun, which directs a sharply focussed beam of electrons onto the plate in a rapid back and forth motion, a line at a time, until it has covered the entire surface of the plate converting the image into electrical impulses.

At the receiving end, the Kinescope tube reverses the transmitting process. Incoming signals are amplified and made to control the intensity of an electron beam which bombards the luminescent surface of the tube.

4500 Miles Per Hour

This bombardment builds up the picture by a back and forth motion a line at a time for 441 interlaced lines, at such a high rate of speed (4500 miles per hour) that the resultant picture looks complete to

Congratulations, Old Man!!



Larry LaHarr, RCA Sales Engineer on the Pacific Coast, and Art Schneider, RCA Sales Engineer for the New York district, have a real basis for their mutual congratulations. Larry was responsible for the installation of the RCA Amplification Equipment in use at the Golden Gate International Exposition, and Art was responsible for the same job at the New York World's Fair. The latest developments in sound amplifying have been incorporated in the complete RCA coverage at both sides of the continent. Many exhibitors other than the managements have contracted with RCA to insure effective presentation of their sales messages

RCA EQUIPMENT SUPPLIES SOUND FOR BOTH FAIRS

Many Exhibitors Contract For RCA Amplification

RCA Sound Amplification Equipment is destined to play the leading role at each of the 1939 World's Fairs. Visitors to Treasure Island on the Pacific coast, and to the New York World's Fair, will be given entertainment, education and guidance thru the medium of RCA Sound. The most recent developments in sound amplifying are incorporated in the elaborate systems which will completely cover these events. Many exhibits other than those sponsored by the management of the fairs, such as the California State and the Hawaiian buildings at Treasure Island, and The American

the human eye at any given moment.

A similar exhibition at the New York World's Fair will also include reception of actual programs, as early in May, NBC studios in New York began regular scheduled television broadcasts.

Tobacco Company, the Roumanian Government, and the Westinghouse Manufacturing Company buildings at New York, depend on RCA Sound Equipment to strengthen their effectiveness.

World's Largest Radio Studio

The controls for the spider-web of RCA public address systems and studios will be housed in a magnificent \$500,000 edifice on Treasure Island. Included is an auditorium capable of seating 3200 people. This, the largest radio studio in the world, is outfitted with RCA Super Fidelity Sound Reinforcing. A 15 microphone stage has been set up for radio broadcasting.

100 Foot Speaker

RCA will utilize the Trylon and Perisphere, symbols of the New York World's Fair, as integral units of the amplification equipment for the New York "World of Tomorrow." A battery of 36 high and low frequency sound reproducers will be installed in a large concrete chamber below ground level at the base of the Perisphere. Entirely concealed from view, this chamber will effectively couple the reproducers to the horn created by the Perisphere and the surrounding ground surface. In that manner a horizontal 360 degree circular speaker is formed.

Audible sound ranges from 20 to 10,000 cycles will be covered by this massive unit. Sounds so low that they will be felt rather than heard will be issued.

Fisher Describes System

Describing the amplification system, Mr. Alexander Fisher, President of Commercial Radio-Sound Corp. (RCA's New York sound distributing company) explained—"This huge speaker will be capable of reproducing sound with unusual fidelity. A range never before realized on commercial outdoor speakers will be covered. No comparable unit has ever been built because such a large sphere has never before been available. This 200 foot ball, approximately 4 feet above the ground, gives us a circular horn 100 feet in depth, 4 feet at the throat, and 100 feet at the mouth opening. The system will be capable of reproducing the low notes of the largest pipe organ and a tone equivalent to that of a cast bell 30 feet in diameter."

In addition to outdoor sound coverage, RCA is readying a novel arrangement for the Theme Show to be held inside the Perisphere. Twelve especially designed 36 inch high fidelity loudspeakers will be mounted near the top of the ball shaped interior. Sound will be projected onto a revolving platform from which spectators will view "The World of Tomorrow." Music and sound effects from the amplification system will be synchronized with the picture action.

SELLING TIPS

Selling Tips are our readers' contributions for selling their services or products. All readers of RCA Radio Service News are invited to submit their ideas for increasing business. All Selling Tips printed will win one of the new RCA Service Engineer's Pencils. Let's have yours.

Clean Soldering Makes Good Connections

To maintain or restore the fine craftsmanship of the manufacturers' neatness and completeness of assembly, pay particular attention to good, neat, and permanent soldering. It will result in repeat jobs. The essentials of good soldering are as follows:

1. Use a good quality iron with a nickel coated tip.
2. Keep it well tinned and the tip free of burned rosin.
3. Use a good grade of rosin-core solder.
4. By the use of tweezers or long nosed pliers remove all pieces of wire that may remain in the soldering terminals.
5. Before permanently attaching the part or wire to any terminal, brush all excess solder onto a piece of cloth to prevent its falling into the chassis. A penny mucilage brush will suffice for this purpose.
6. Bend the end of the wire to be soldered around the terminal, then solder.
7. Be sure to remove any debris that may have fallen into the chassis.

Alex Brzuck, Service Mgr.
Martin's Auto Supply
2639 East Forest at Chene
Detroit, Mich.

Worthy of His Hire

It seems to me that the time has come for the public to realize that labor charges are an important factor in radio repair work. Generally speaking, dealers are prone to "up" the prices of material when rendering bills and to list labor at a very nominal charge, usually at one or two dollars.

I think that these low estimates of time and labor have led the general public to put a low standard on the radio service business. The lowest paid workman makes nearly a dollar an hour yet the majority of service dealers seem afraid to quote these charges. Why?

I am in hopes that my opinion will stimulate others to consider and perhaps remedy this problem.

Lee Fassett
Lee's Radio Shop
3945 Balboa St.
San Francisco, Cal.

Tube Tester Sells Tubes

We have printed in large letters on the outside of our tube tester case—"WEAK TUBES MAY CAUSE DAMAGE TO YOUR RADIO." Upon entering a customer's home we try to set the tester where it is sure to attract attention. The customer usually asks for an explanation and we really give him one. We mention the danger of a tube shorting and burning out a power transformer. A comparison of the replacement costs of a set of tubes versus a power transformer is a very effective selling point. This, plus the normal tone and performance improvements to be expected with new tubes, will nine times out of ten create a sale.

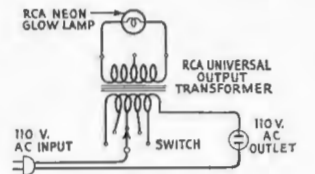
Al's Radio Service
140 Main Street
Tonawanda, N. Y.

An RCA Pilot and Current Indicating Glow Lamp

Here is an idea concerning the use of an RCA Neon Glow Lamp and an RCA Universal Output Transformer. The tapped voice coil winding of the transformer is used in series on one side of the 110 volt AC line. The neon glow lamp connects to what is the primary of this output transformer. A rotary switch allows more or less turns of the winding in the 110 volt AC line to be used. Any current drawing device when connected to the outlet and turned on, completes the circuit, causing current to flow through the tapped windings of the transformer. This current flow will cause a voltage step-up in accordance to the current being

drawn and the number of turns on the transformer which are being used. This will then determine the brilliancy of the neon glow lamp.

This allows a rough check on the amount of current being drawn by the radio or appliance in use. It is also a very efficient pilot lamp when mounted over the service bench,



as its glow indicates that something on the line is drawing current. This lessens the chance of one leaving test instruments turned on.

Tests have shown this circuit to be efficient on from 25 to approximately 550 watts current drain. Because of the small drain of the lamp there is very little voltage drop. This lamp will by its action attract the attention of the customer and open the way for an RCA Victor sales talk.

P. M. Ohlinger
Portsmouth, Iowa

Jack Sells It

I always carry a bottle of RCA Furniture Polish when making a service call or an installation. After completing the job, I give the cabinet a treatment. This always results in favorable comments by the customer, thus making an opening for a sales message. Invariably this has resulted in a sale and another satisfied customer.

Jack Multz
Thor Radio Co.
60 Dey St.
N. Y. C.

Ben Gives It

When I finish a job I give the customer's radio a polishing. Then I present the owner with a small sample bottle of the RCA Furniture Polish. The bottle has a small label on which my name, address, and other information serve as a reminder of my business to the customer. A small polishing cloth with the same message on it is also a good souvenir of my call. A repeat job is usually the result.

Ben Wolf
Ben's Radio
372 Tremont St.
Boston

Good Choice



Before shipping the RCA Sound Equipment to Treasure Island, the smiling Larry LaHarr accompanied Les Hewitt, in charge of all sound installations for the San Francisco Fair, on an inspection tour of RCA's Indianapolis plant. There the equipment to be used was carefully checked and approved by Hewitt

RCA Exhibit at Golden Gate



In this beautiful building, visitors to the Golden Gate International Exhibition at San Francisco will view high definition television as well as many other phases of radio art. Although the RCA Exhibit was carefully planned to accommodate great numbers of people, attendance so far indicates that early space estimates were too conservative. The inset shows a section of the viewing room with the television camera and transmitting room in the background. In another section of the building is a spacious and comfortable lounge where visitors may relax to the strains of soothing music thru the medium of RCA Amplification Equipment