

NOVEMBER, 1937

# LISTEN



A 6 Page Advertisement of the Radio Corporation of America

No. 4



**Typical Radio Magic**—Transmitting a picture electrically. Picture to be sent is contained within RCA Monoscope Tube similar to "A." Tube is then placed in transmitting chamber "B." Electronic activity causes image to appear at receiving station as on screen "C." This is transmission of a still picture—not television.

## IN THIS ISSUE



**ELECTRIC TUNING**  
Research scores a hit

PAGE 2



**CRYSTAL DAYS**  
12 years to Magic Voice

PAGE 3



**MAGIC KEY**  
It tunes in the world

PAGE 4



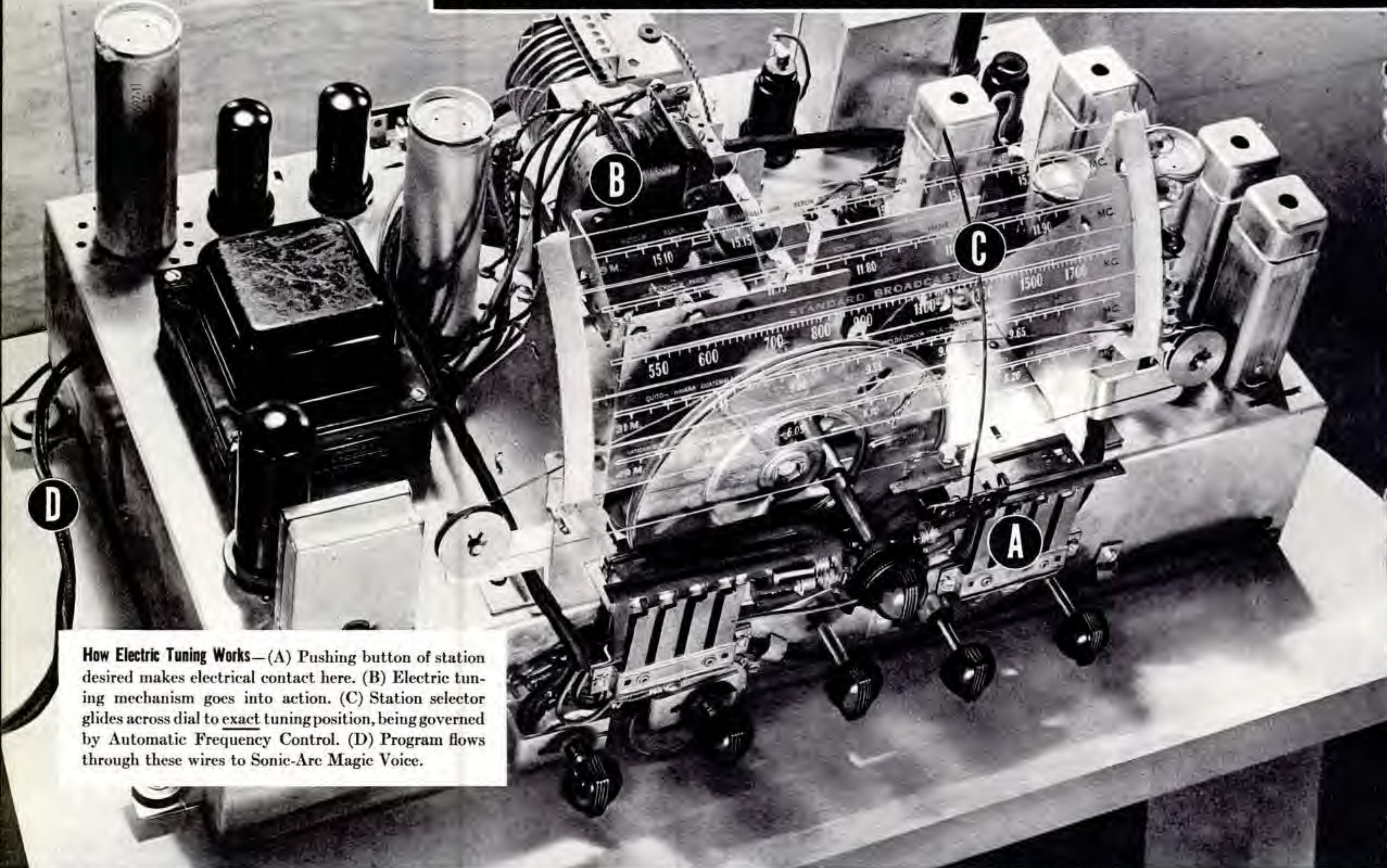
**RADIO'S HEART**  
It's all done with tubes

PAGE 5

## NEW MAGIC FROM RADIO'S "IDEA FACTORY"



# RADIO'S "IDEA FACTORY" PRODUCES TWO HITS—



**How Electric Tuning Works**—(A) Pushing button of station desired makes electrical contact here. (B) Electric tuning mechanism goes into action. (C) Station selector glides across dial to exact tuning position, being governed by Automatic Frequency Control. (D) Program flows through these wires to Sonic-Arc Magic Voice.

**Season's No. 1 radio idea draws crowds**—When dealers first displayed RCA Victor Electric Tuning crowds gathered before show windows. Listeners everywhere were fascinated by uncanny ease with which set tunes itself. Such scenes repeated throughout the country stamped this RCA development as season's number one radio idea. Tuning of early radio sets called for ingenious juggling of three dials. Then "idea factory" devised instruments using house electric current, and tuned with one dial.

Dials were then simplified, marked with figures corresponding to station frequencies, made more accurate. Next important advance was the RCA Victor Magic Eye, which made visual tuning more exact than that done by ear. But tuning still required care for good results. RCA engineers sought method of making tuning completely automatic. They found it in Electric Tuning, which is as automatic as pushing an electric light switch. Simplicity of operation is summed up in phrase—"push a button, there's your station."



"Dialing Doomed" was slogan as RCA engineers started to create fully automatic radio tuning. Picture above shows F. X. Rettenmeyer, Manager of Receiver Engineering, B. R. Carson, W. W. Dewhurst, W. E. Newman, and H. W. Doyle planning Electric Tuning, examining early Electric Tuning.



**Engineers' "Doodles"**—Great is the interest which has lately grown up concerning "doodles," the casual pencilings people make while thinking about or discussing some problem. Many an RCA invention has started from some such scrawls as the engineers' "doodles" shown above.



**It works**—Electric Tuning is an accomplished fact. Enthusiastic over solving this task RCA engineers facetiously referred to the new model as the "super whooper dooper." Picture shows research men D. D. Cole, G. G. Gerlach, and L. R. Kirkwood admiring finished job.



# ELECTRIC TUNING... AND A NEW MAGIC VOICE

Radio has taxed the brains and ingenuity of man as few other industries have. To cope with the mysteries which surround this science, in spite of its phenomenal progress, RCA years ago began assembling a staff of world famous radio engineers... joined forces with famed Victor Talking Machine sound experts. These men now work together in a veritable "idea factory."

The aim of this "idea factory" is first to find new fundamental principles—then discover their practical application. This way of going at the job is of prime importance to everyone who uses, or works with, radio. It means that ample time is devoted to pure research from which spring great ideas that each year make all radio better.

Let no one suppose that the RCA viewpoint on research has caused radio's "idea factory" to become a place devoted to impractical theories. Proof of substantial, down-to-earth results may be seen in a score of directions. You see it in tubes which make radio possible. You hear the proof in the programs of the National Broadcasting Company, for RCA research has created the equipment which makes broadcasting and networks possible. You may see another proof on the "lots" of famous motion picture producers who use RCA Photophone for recording sound. You may hear further proof in any of the thousands of motion picture theatres which use Photophone to reproduce sound. Ship-to-ship, ship-to-shore, the automatic SOS and international message service of Radiomarine and RCA Communications are further evidence of the practical nature of RCA research.

Latest product of the "idea factory" is radio's number one idea of the present season—Electric Tuning. Number two idea is the new Sonic-Arc Magic Voice (see pictures at right). Together these ideas bring a new conception of radio to thousands of homes, stimulate business in many a radio dealer's store. Today, thanks to the "idea factory," a radio instrument costing \$150 is far better than a \$600 set of a few years ago.

Although best known RCA activity is building radio sets, actually RCA and RCA research men are engaged constantly in every branch of radio communication—broadcast or directed, by voice or music or code or sight, on film or by facsimile. In all the world no other organization covers the field of radio so completely.



**Head man of the "idea factory"**—Dynamic Lewis M. Clement, Vice President in charge of Research and Engineering, directs RCA's creative engineers. Mr. Clement (shown above) makes frequent trips abroad. In this way RCA enjoys constant interchange of ideas with European radio experts.



1919

**THE EAR PHONE AGE**—The marvel of "wireless" music via crystal sets startles the world. All listeners must have ear phones. First RCA laboratory was established at Riverhead, L. I., in 1919.



1921

**THE TIN HORN AGE**—The loudspeaker and one dial tuning appear—a miracle, but an inexact one. The tone was often strident. Higher and low notes were missed.



1925

**THE DYNAMIC SPEAKER** was big forward step toward greater range of notes and volume without squawking. Picture above shows early example of this famed invention.



1930

**VOICE IMPROVES**—RCA research discovers more facts about acoustics of cabinets with built-in speakers. This construction produced better looking sets which approached studio tone.



1935

**THE BIRTH OF THE MAGIC VOICE**—Seeking for tone perfection RCA engineers seal speaker chamber and install group of tone pipes which trap "boom" and end distortion. Named **MAGIC VOICE**, this advance justifies its title under test by "Electric Tone Detective" shown above with 1938 model. More accurate than human ear this RCA-designed tester automatically records tone performance.



1937

**SEASON'S NO. 2 RADIO IDEA**—Now RCA engineers replace tone pipes with curved back for speaker chamber. This new form found its inspiration in the band-shells built for outdoor performances of orchestras and bands. Its carefully calculated curve is the Sonic-Arc patterned after "band-shell." Better performance obtained by this design makes RCA Victor's Sonic-Arc Magic Voice season's No. 2 radio idea.



**TELEVISION**—is still in the future. Long and patient research is required by its intricate technical and program problems. These are being studied through daily field tests by RCA and NBC engineers.



# "IN RADIO, IT'S RCA ALL THE WAY" — AS THE MAGIC KEY TURNS

For 112 consecutive Sundays (except during world series baseball games) the MAGIC KEY of RCA has delighted millions. At 2 P.M. eastern time, Ben Grauer's words, "In radio, it's RCA All the Way," start an hour of diversified, fascinating and timely entertainment. This unique program, with its many broadcasts from overseas, is made possible by the world-wide spread of RCA services, and the cooperation of the family of RCA.



1.

**Where it all begins**—Before the NBC microphone, Frank Black, Musical Director of NBC, lifts his baton and the Magic Key show gets under way. The virtuosity of Mr. Black, in conducting The NBC Symphony Orchestra, is an important factor in the constantly growing popularity of this program. An RCA designed and built NBC microphone is the starting point of the majority of network programs.



2.

**They are good mixers**—At the first note of this Magic Key program the masters go to work. Key sits in the control room surrounded by intricate RCA equipment. In studio jargon this is referred to as the "mixer," and control room operators are also called mixers. Here they are letting the soloist's voice and accompaniment go out on the air correctly "mixed."



3.

**The cross-roads of the air**—The artist's voice and Mr. Black's music are now ready for the NBC Blue Network. The entrance to this (and also to the Red Network) is through the giant switchboard shown above. The operators at this board turn their particular RCA Magic Keys and the Magic Key goes out to the NBC stations which carry it. A complete duplicate of this switchboard provides for emergencies.



4.

**The Magic Key turns**—to Geneva, where Frederick T. Birchall, European correspondent of the New York Times, and Pulitzer prize winner, is waiting to talk with journalist Linton Wells about the possibility of war in Europe. This and scores of other Magic Key foreign broadcasts are made possible by the facilities of RCA Communications, part of whose New York message room is shown above.



5.

**A boost along the way**—Now the music of the Magic Key artists has reached a station of the NBC Blue Network. It has traveled by wire from the giant switchboard. Before being broadcast it must be boosted up to greater strength. Above you see a battery of RCA power tubes which do this job. These tubes are costly. WJZ, famous NBC station, makes use of more than 60 tubes when it is on the air.



6.

**It's on the air**—At last the Magic Key is on the air, but the words "at last" are a figure of speech. So swiftly is the artist's song carried on wings of radio that it flashes around the world in the time that the swiftest airplane moves 70 feet. As each sound enters the microphone all of the intricate RCA equipment must function instantly, and perfectly. Above is mast of an NBC broadcasting station.



7.

**More Magic overhead**—Scenes like the above are beginning to disappear. RCA engineers recognized that the finest sets are often hampered by poorly arranged antenna. To overcome this they have created the Magic Wave antenna. This antenna can be used to pick up programs for any number of sets from one to sixteen. It filters out unwanted noise and man-made static, passes on what you want to hear.



8.

**The Magic reaches the fireside**—Here are Richard Crooks, famous tenor, and his family listening to the Magic Key. Picture shows the final link in the magic chain of an RCA Victor Electric Tuning instrument with Magic Voice, Magic Brain and Magic Eye. Like the broadcasting equipment, it is a product of RCA engineering. It completes the cycle and makes radio RCA All the Way.



## IT'S ALL DONE WITH TUBES



### TESTING THE HEART AND LIFE OF RADIO

Broadcasting could not exist without radio tubes. Tubes are essential to the life-like, full-volumed reception of modern radio sets for the home. Picture above shows a big RCA tube for a broadcasting station being tested under load far exceeding any it will ever have to carry. RCA tube research has developed tubes for every conceivable radio use in sending and receiving, as well as for television

and other experimental work. To supply tubes for new radios and for the 26,000,000 sets in use RCA produces millions of tubes yearly. Proportion of metal tubes is constantly increasing as these better, stronger tubes come into more general use. Radio tubes are based on the study of electronics, a subject so complex that only a handful of men have any real conception of it.



**Almost prehistoric**—Early experimenters made odd looking radio "valves" resembling freak light bulbs. Above is old-time "valve," a predecessor of modern tubes. Only about 25 years old, it is ancient in light of radio's progress.



**Metal Tubes take spotlight**—RCA Metal Tubes are revolutionizing the manufacture, and improving the performance of home radio sets. Stronger, quieter in action, and allowing more exact construction, millions of these metal tubes are now being used by radio set manufacturers.



**Why  
RCA ALL THE WAY  
means more for your money**

RCA engineers have continuous practical experience in every branch of radio. Through the National Broadcasting Company, RCA creates and broadcasts the majority of network programs. Through Victor, RCA has the benefit of 39 years' leadership in sound production. RCA engineering, NBC broadcasting skill, Victor mastery of tone are combined in every RCA Victor radio. They bring you radio that is RCA All the Way—an extra value that is yours only with an RCA Victor.



**RADIO CORPORATION OF AMERICA  
RADIO CITY, U.S.A.**

RCA MANUFACTURING CO., INC.  
RCA COMMUNICATIONS, INC.  
NATIONAL BROADCASTING CO. • RCA INSTITUTES, INC.  
RADIOMARINE CORP. OF AMERICA

This is the fourth number of Listen. The Radio Corporation of America publishes this new kind of advertising to bring you news and pictures about every branch of radio. Listen appears every four weeks in Life.

**Be sure to see the  
CHRISTMAS LISTEN  
in Life for Dec. 6th**



# RCA "IDEA FACTORY" PRESENTS SOME NEW DEVELOPMENTS



Supreme in Short Wave Reception is RCA Victor Electric Tuning Model 813K (above). A unique feature is the Overseas Dial on which foreign stations are clearly marked by name. This dial makes foreign stations as easy to tune for as domestic. Additional features of this 13-tube console are Sonic-Arc Magic Voice, Magic Brain, Magic Eye, RCA Metal Tubes, Beauty-Tone Cabinet and many others. Armchair Control optional. A down payment of about \$20 is all that is required.

See these

## RCA Victor Instruments

... each is

RCA ALL THE WAY

THE RCA "IDEA FACTORY" has devised amazing new instruments to bring you fresh thrills. Your RCA Victor dealer has these new radios and phonograph-radios ready for you to hear and see. RCA engineering, NBC broadcasting skill and Victor mastery of tone are combined in each of these superb instruments. They offer you performance that is RCA All the Way—an extra value that is yours only with an RCA Victor. Generous trade-in allowances and really easy terms make it easy for you to have NOW the instrument you have always wanted.



Electric Tuning is most popular of its many features—RCA Victor Model 811K (above) is a superb console which is already bringing new radio interest and excitement to thousands of homes. Besides Electric Tuning, it has the Sonic-Arc Magic Voice, Magic Brain, Magic Eye, Beauty-Tone Cabinet, RCA Metal Tubes and a wealth of other features. Armchair Control optional. Provides domestic and foreign reception, police, amateur and aviation calls. The down payment is approximately \$15.



Lowest priced MAGIC VOICE console. RCA Victor Model 810K1 (above). A 10-tube superheterodyne that is a short wave sensation... a superb performer on domestic stations. Its lovely Chippendale cabinet has unusual charm. Notable for its volume which is sufficient for the largest rooms.



Lowest priced console in RCA Victor history—Model 85K (above). Covers domestic and foreign broadcasts with good volume and fine tone. Illuminated dial, RCA tubes, Automatic Volume Control, Dynamic Speaker, and many important new features.... Only **\$39.95**



RCA Victor End Table Phonograph-Radio U102E (above)... Ultra-smart, ultra-convenient! Play Victor Records, get favorite foreign or domestic radio programs without moving from your chair. Cabinet has generous space for Victor Albums. End table models also available in straight radios.



RCA Victor Phonograph-Radio U103 (above). Beautiful Victor tone in the lowest-priced automatic console model phonograph-radio ever offered by RCA Victor! Automatically changes 10-inch records; automatically repeats 12-inch records. Fine domestic and foreign radio reception.

Model 86T (at right). Besides the convenience of its size, this chest type table model delivers volume equalling that of many console sets. Brings in foreign stations on six short wave bands. A fine instrument.



Model 85T (at left). One of RCA Victor's most popular chest type instruments. A five-tube superheterodyne with unusual performance characteristics. Beautiful cabinet has hand-rubbed lacquer finish.

You can buy RCA Victor Radios on C. I. T. Easy Payment Plan. Any radio is better with an RCA Antenna System. All prices f. o. b. Camden, N. J., subject to change without notice.



RCA metal tubes are stronger, quieter, create better performance, are the sign of a modern radio. Millions are now in use.

RCA's newest and finest portable Public Address System—PG-114, for fidelity reproduction. Ideal for orchestras, churches and auditoriums. For audiences up to 3,500.



RCA presents "Magic Key" Sundays 2 to 3 P. M., E. S. T., on NBC Blue Network

# RCA Victor

A SERVICE OF RADIO CORPORATION OF AMERICA

