

# LISTEN



A 4 Page Advertisement of the Radio Corporation of America

No. 7



**Greatest Puzzle of the Ages  
THE BUILDING BLOCKS  
OF THE UNIVERSE**

No one has ever seen an ELECTRON...yet these tiny particles of electricity are the basis of radio and television. They are believed to be the stuff from which suns and planets are made.

**Footprints of the invisible.** Electrons in radio tubes were first put to work on radio communication. Now they have hundreds of applications, including television and fields entirely unconnected with radio. RCA engineers devised the machine above to study electrons in motion. The spiral lines in the picture at left above are a photograph of the luminous trail made by electrons moving through a small amount of helium injected into an RCA vacuum tube.

**Electronic rehearsal.** To see on large scale how electrons travel inside a radio tube, RCA engineers have recently devised the above scheme of a rubber sheet stretched over metal forms representing the interior construction of a tube. A small steel ball rolling on this elastic surface follows path like that of an electron in a tube of corresponding design. This 1/4-inch ball is trillions of times larger than the mysterious, invisible electron it represents.



**This may influence your whole life.** Above is the super-Iconoscope tube and Dr. V. K. Zworykin, RCA research engineer, inventor of the Iconoscope. This tube combines the Iconoscope, the "eye" of television with the newly discovered RCA image tube. Possibilities of image tubes are far more extensive than their use in television. Their principles indicate discoveries that stagger the imagination. The future of all mankind may be greatly benefited by developments from image tubes in such fields as biology, chemistry and medicine.



**Engineers' helper**—RCA engineers make thousands of experimental radio tubes in their search for better ways to put electronic activity to work. Electronic tubes make possible all broadcasting, and the reception of broadcasts. The life-like quality of Victor Records is achieved through the use of special RCA tubes that help to create Victor Higher Fidelity recording. RCA Metal Tubes are generally used in home receiving sets. The nimble-fingered girl shown above is putting together the complicated "innards" of an RCA experimental tube.

**TRY SOME RESEARCH YOURSELF**  
Everyone Wins a Prize

**RCA Victor Electric Tuning Radio FREE  
for Best Set of Answers**

All contestants will receive Free copy of Hendrik Willem Van Loon's new booklet, "A Short Wave Journey of Discovery." If you read LISTEN, and know what "RCA All the Way" means, these questions will be as easy as Electric Tuning. Answer them. You will win a prize. It may be a big new RCA Victor Electric Tuning Radio.

- Radio's Idea Factory devises such things as—  
 Ideas for radio gag men.  Electric Tuning Radios.  Training courses for radio announcers.
- NBC broadcasts 35 hours daily. It does this by—  
 Inflating time.  Having a fast clock.  Having two networks working at once.
- P. T. Barnum called his circus the greatest show on earth. Today's G.S.O.E. is—  
 The programs of NBC networks.  A snow train load of ski novices trying a steep hill.  The Rose Bowl Football Game.
- The total number of stations on NBC Red and Blue Networks is 94-144-68-101.
- Complete the following famous saying—  
 "The world's greatest artists are on....."
- The signal for fine radio entertainment is— A fanfare of trumpets.  NBC chimes.  Flourishes and ruffles.
- Are sales of phonograph records  increasing— decreasing—  
 Why?.....

**SEE RULES ON PAGE 3**

**MODERN EXPLORERS WHO SEEK HUMANITY'S ADVANCEMENT**

# RADIO RESEARCH GOES AHEAD ON MANY FRONTS



**Sharpest eye.** The light of a candle flame 10 miles distant is no less than the light this machine can see, and analyze as to its color. Its practical application is in the search for chemical combinations used in making the screen surfaces on which television pictures appear. The color of such images depends on the colors given off when electrons strike the screen. The machine shown above is used by RCA engineers in working out the right combinations for the experimental television work now going on from National Broadcasting Company studios at Radio City, New York.



**Keenest ear.** Photographed on the roof of RCA laboratory is the newest of the many developments in microphones. This one, the ultra-directional microphone, makes it possible to pick out the sounds that are wanted even in the midst of interfering nearby noises. This new and keenest ear will be of particular value in connection with RCA Photophone, where it will permit greater freedom in arranging motion picture sets. NBC will also use it for broadcasting work and television.



**Granddaddy of television tubes.** Don't expect to have a television tube like this in your home some day. It weighs about 600 pounds, costs more dollars, and needs a lot of space. But in the RCA laboratories this tube permits study of giant-size television pictures, and facilitates planning improved accuracy. Because this is a vacuum tube, air presses on the surface of its big glass top with a weight of more than six tons. After being sealed a pump needs 48 hours to exhaust the air and create a vacuum in this tube.



**Meet "Mike's" cousin "Art."** NBC microphones, as well as aspirants for jobs in front of them, must take voice tests. This girl in RCA research laboratories is standing beside the Artificial Voice, known for short as "Art." Microphones under test hear a sound of perfect pitch from "Art." How well they pass it on is shown by sound analyzing instruments. Voices can be compared to "Art's" tone and measured in a similar way. Elaborate sound-proofing of room with felt pads prevents echoes and bounding sounds.



**New uses for radio tubes.** New ways are constantly being found by which electronic principles can be applied to other than radio uses. The picture above shows use of an "electric eye" and RCA Radio Tubes by the United Drug Company to measure the Vitamin A content of cod-liver and halibut oils. Hundreds of other non-radio uses of electron tubes cover subjects ranging from judging a coffee flavor and the tempering of automobile parts, to the quick, convenient diagnosis of obscure human ailments.

The average person will probably gain little advantage from further exploration of the remote corners of the world. But you may well profit greatly in health, or opportunity, or enjoyment of life, or in other ways from the explorations now going on in the vast uncharted realms of radio science. And because of the exploring yet to be done, radio research offers young men opportunities greater than those of any bygone romantic age. Many a young man has started on the road to success as a radio engineer or research man through courses offered by RCA Institutes.

Already radio exploration has produced numerous exciting, startling, vital things. You listen to many hours of broadcasts from the 144 NBC stations. But great as is the importance of radio entertainment, it is but a part of what radio does today—a still smaller part of what radio may do.

The actual uses of radio ideas, so far developed, are amazing, yet a start has scarcely been made. Today's radio research men are like explorers camped on the edge of a vast and unknown continent. Nearby lies the work they have accomplished to date. But beyond are unexplored reaches which are a challenge and an inspiration. As these mysteries become clear the welfare of mankind will be greatly advanced. Indeed, so vigorous among sciences are radio, and its associated art of electronics, that their future possibilities cannot be estimated.



**Another radio frontier.** Recent television tests suggest that its satisfactory broadcasting may be limited to a radius of about 40 miles. But RCA engineers, always impatient with apparent limitations, are determined to investigate this matter further. They built the super-sensitive receiver shown above. This was connected with a special antenna at Riverhead, Long Island. The sound signals from television programs in London are clearly heard on some occasions. So far, no pictures have been caught. What these experiments may mean in the future of television no one can say as yet, but they well illustrate the constant endeavor of RCA engineers to push the frontier of radio knowledge farther forward.

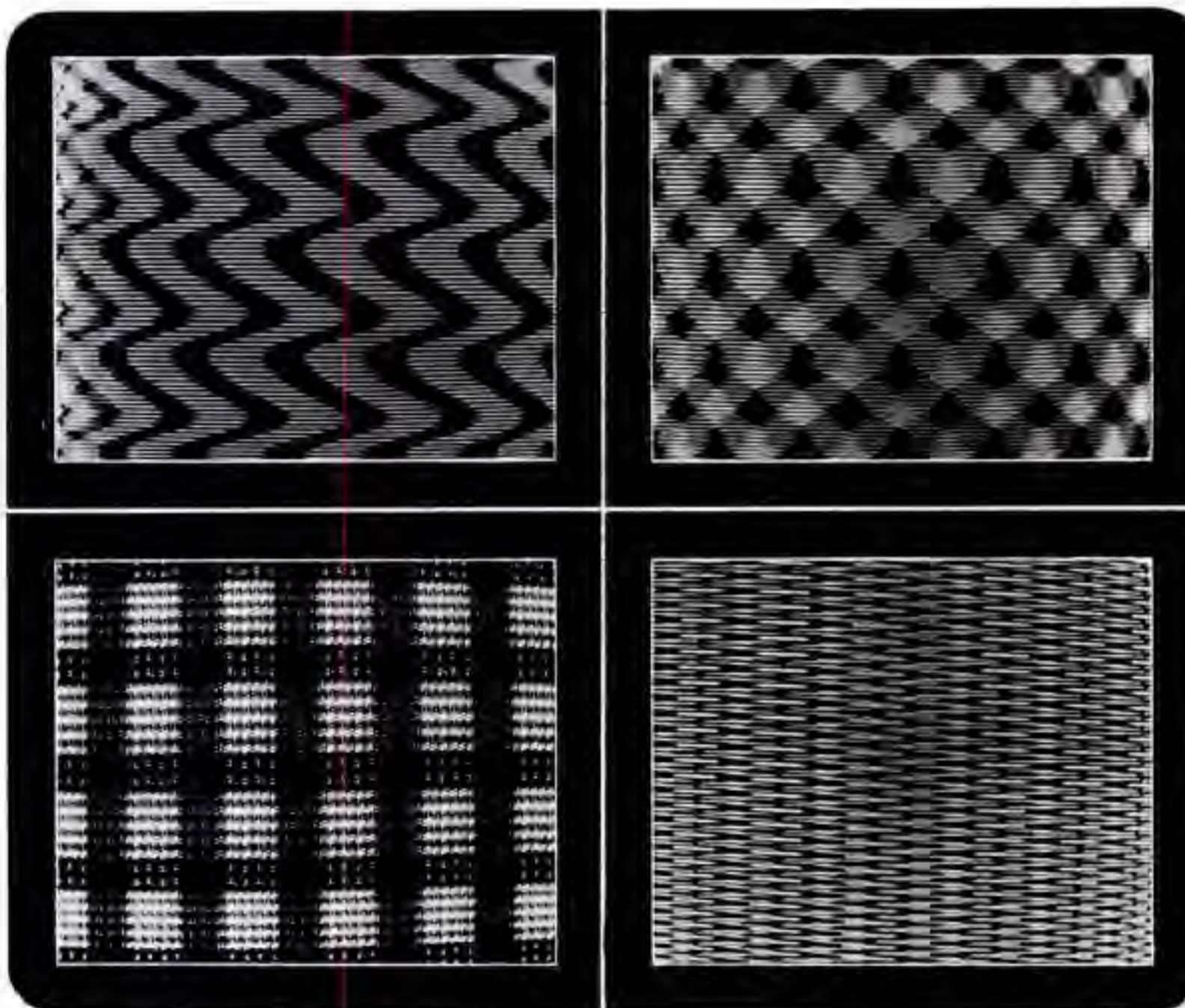
## FACSIMILE FOR THE HOME



**Broadcasting words and pictures.** RCA facsimile equipment is now being used experimentally to broadcast exact reproductions of pictures, news bulletins or text matter of any kind. Photo shows "scanner" in act of sending.



**Receiving words and pictures.** RCA facsimile receiver is about the size of an RCA Victor radio console. Such a receiver is shown here. It will print on a roll of paper the matter being sent out from the scanner.



**Electrical patterns.** By juggling of voltages and other manipulation of currents RCA research men have found that they can cause light to produce an endless variety of patterns on the screen

of a television tube, known as a Kinescope. Many who have seen them believe such patterns will be widely used by paper and textile mills. Here is a mixture of several of these electrical designs.

### CONTEST RULES

**A CONTEST WITH A PRIZE FOR EVERYONE!**  
**SEE 2nd PRECEDING PAGE**  
**RCA Victor Electric Tuning Radio FREE!**

Following are the rules for the contest printed on the first page of this issue of LISTEN. The first prize will be an RCA Victor Electric Tuning Radio Model 87K1 delivered to the winner's home. This instrument is shown and described on the next page. As additional prizes every contestant will receive a copy of "A Short Wave Journey of Discovery," the recently published booklet written by Hendrik Willem Van Loon. Contest is open to everyone in the United States except em-

ployees of RCA, its subsidiaries or its advertising agents. The judges will be RCA officials. The decision of the judges will be final. No entries will be returned, and all become the property of RCA. If you wish you can check your answers on question list, tear it out and mail it, but note that one question requires a written answer. This may require use of another sheet of paper. Be sure to include name and address. To be eligible replies must be received not later than February 21. Address your answers to RCA-LISTEN Contest, Room 1301, 247 Park Avenue, New York.

Your nearest RCA Victor dealer will be glad to help you with the contest questions, and to demonstrate Model 87K1. Answers will appear in LISTEN, March 7.



**RADIO CORPORATION OF AMERICA** RADIO CITY, N. Y.  
 NATIONAL BROADCASTING CO. • RCA INSTITUTES, INC. • RCA COMMUNICATIONS, INC.  
 RCA MANUFACTURING CO., INC. • RADIOMARINE CORP. OF AMERICA

**RCA RESEARCH  
CREATES NEW  
VALUE FOR YOU**

... in this sensational  
**ELECTRIC  
TUNING**

**RCA Victor  
Radio**

RCA Victor Model 87K1.  
Tunes any one of six stations instantly. Push a button — there's your station. Magic Eye, Straight-Line Dial, RCA Metal Tubes, Beauty-Tone Cabinet. A fine 7-tube superheterodyne instrument with really automatic Electric Tuning. Price only \$89.95\*

FOR ONLY  
**\$89.95\***



**W**HEN you see and hear this new RCA Victor Electric Tuning radio, you will agree that research pays. Electric Tuning, most popular radio idea in years, is only part of what this great set offers. You will also find a wealth of fine modern radio features built into a big, handsome, hand-finished cabinet.

Yes . . . here is proof a-plenty that RCA research pays you . . . in extra value. Only research that discovers new ideas and that gets right down into every phase of radio could create such value as this RCA Victor Model 87K1.

**BIG TRADE-IN ALLOWANCES MAKE BUYING EASY**  
And to make your money go even farther, RCA Victor dealers are offering extra big trade-in allowances all through this month. Go to an RCA Victor dealer. See this Electric Tuning model. Get his offer on your present set. Then your family can start at once to enjoy the newest, most thrilling feature in radio.

**THIS AND YOUR RADIO  
PLAY VICTOR RECORDS**  
RCA Victor Record Player, R-93A, changes any modern AC radio into an electric phonograph-radio. Plays 10" and 12" Victor Records.  
Price \$19.95\*



RCA presents the "Magic Key" every Sunday, 2 to 3 p.m., E. S. T., on the NBC Blue Network.  
When buying radio tubes, say "RCA"! First in Metal—Foremost in Glass—Finest in Tone.  
You can buy RCA Victor Radios on C. I. T. easy payment plan. Any radio instrument is better with an RCA Antenna System. \*All prices f. o. b. Camden, N. J., subject to change without notice.

**RCA Victor**  
A SERVICE OF RADIO CORPORATION OF AMERICA