A NEW era has dawned in education. The radio—a modern miracle—in less than a decade has taken its place as a major method for quickly imparting knowledge to millions. This new medium is at the immediate service of educators to bring the finest thought, the greatest minds to every school.

Radio has added to the plan of teaching a third dimension through which it may project a living personality into the school room or allow the student to seemingly be present at the enactment of an historical event. It may instantly transport the student to any part of the world, where, as in a great laboratory, he may know and share the thrill of discovery and the satisfaction of achievement. It has made modern education a newly vitalized force, its instruction glowing with reality.

Through the radio, a course in music appreciation by a world famous musician may be brought to the children of a distant school where, perhaps, there was no music at all before. A prominent government official may tell of the function of his department in the affairs of state or discuss the problems of the day. The distinguished scientist may explain the advance made in the treatment of disease or in the utilization of natural resources. The famous explorer may describe his experiences from the far outposts of civilization. School today has become a place of communion with the greatest personalities of the age.

Education by radio is fast leaving the embryonic stage when all methods and all subjects have been accepted in the schools because of their novelty, and is becoming stabilized into a real and valuable service. Teachers are selecting radio programs for their adaptability to regular class work. Some master teachers are developing rapidly. Many of our best educators have accepted radio as a most valuable part of the regular plan of instruction.
NEW perspectives have opened up in education through the advent of the radio. In a radio lesson, the student must receive his stimulus through hearing alone—the eye is no longer supreme. Effective radio contacts are dependent upon his ability to listen. Definite ear training has become the major necessity, rather than visual aids. The schools must make adjustment to these new conditions in a revision of the technic of presentation.

Music Appreciation is also the one subject to which radio brings its most practical application. “Music in the Air” provides the precise opportunity toward which the entire music course has been pointed—viz. intelligent listening to good music. The radio program, superimposed upon the appreciation study, marks the flowering of all the teacher’s effort. It is the finest training possible for learning to listen and for listening to learn.

The very nature of radio has brought new class situations. The instructor is here an unseen identity, without personal contact with his students. There is opportunity for occasional spontaneous oral response, but not for discussion, during the broadcast period. But... the radio creates people as human figures and backgrounds as vivid pictures, not merely names in a book or a line drawing. It attracts active interest through its inclusion of the listener as a participant in the enactment of an event.

The effective realization of the ultimate goal in broadcasting for schools is possible only through the amalgamation of the ideas and the ideals inherent in both radio and education. First of all, the educator must determine what he wishes to achieve or to obtain through the radio, then he must let the broadcaster—the executive, the creative author, and the artist—from experience with this new medium, apply his art to attain that objective. A well known broadcast executive recently said, “If the educator is going to educate by radio, he must grasp the essential fact that he must use showmanship to do the job effectively.” Showmanship, in a modified degree, is vital whether it be exemplified in the dramatization of an historical event or in the subtle infusion of the enthusiasm of the instructor to the class.

Radio instruction demands special qualifications and rigid training from its teachers. He who would teach by radio must first be a master of his subject so that he may speak naturally and with authority. The technic of presentation requires that he have a pleasing quality of voice with
Walter Damrosch, the eminent conductor, through the Music Appreciation Hour, which he conceived and directs, last year brought the message of good music to an audience estimated at five million children in the schools of America. Dr. Damrosch and his National Orchestra are again presenting a course of symphonic music for the schools each Friday at 11:00 and 11:30 A. M.

The Chicago Public School Program is broadcast each morning at 9:10 and 9:55 over station WMAQ of Chicago, presenting a comprehensive series of lessons in music, geography, science, literature, history and art. The faculty is chosen from the teaching staff of the Chicago Public Schools through the co-operation of the Board of Education.

From the University of Pittsburgh studios of KDKA and through the co-operation of the Pittsburgh Public Schools, a series of broadcasts of actual class recitations will be on the air beginning about November 1st.

Here are the towers of WRUF, the University of Florida, from which station a program of music appreciation based upon the state adopted course of study is broadcast. The lesson for primary grades is presented on Monday, for junior high grades on Tuesday, and for senior high schools on Wednesday at 9:00 A. M.

Courses in French and Spanish, for high schools, are on the air each day except Tuesday at 9:00 A. M. from WEAO, the Ohio State University. Native instructors from the university faculty are presenting these lessons.
The Standard School Broadcast, heard over a Pacific Coast network each Thursday morning, consists of two periods, elementary and advanced, in which a complete outline of music appreciation, history, and theory is given in preparation for the Standard Symphony Hour of the San Francisco Symphony and Los Angeles Philharmonic orchestras. These school programs are under the supervision of Arthur S. Garbett, who is originator of the plan and author of all the lessons, programs, and continuities.

Vocational guidance for high school students is featured in the Pacific Coast School of the Air which is directed by Paul M. Pitman, Educational Director of station KPO. Other features included in the broadcast are current events, social sciences, and material for high school assembly periods.

The Ohio School of the Air is the first broadcast for schools being conducted under a special appropriation from a state legislature and with its director a member of the State Department of Education. This broadcast is heard every afternoon from 2:00 until 3:00 o’clock. The curriculum includes seventeen subjects in addition to special Parent-Teacher and teachers’ meetings. B. H. Darrow, Uncle Ben to thousands of Ohio school children, is director of the Ohio School of the Air.

Continued from page three

perfect production of tone, freedom from speech defects or local dialect, and a clarity and purity of enunciation. Above all, he must be able to project his enthusiasm and his personality over the microphone.

The teacher in the school room has also a vital influence in the success of radio classes. She must advise and guide the student at all times, but especially in preparation with salient facts for quick perception of points heard. She will see her own enthusiasm reflected in the class.

The ultimate procedure for school broadcasting is not yet apparent. The full extent to which radio may function in education is still to be determined. Research and experience will dictate superior methods. The educator must be the guiding influence in the development.
Procedure

All effective education depends upon the completion of three fundamental steps of procedure. Education by radio must embody these principles, no less. When followed, the radio recitation is a vital, impelling force; when ignored, the broadcast period becomes at once a mere entertainment, unworthy of the expenditure of valuable school time.

Preparation. The success of any recitation rests squarely on an adequate and thorough preparation by the student. The very fleeting nature of radio—here but a moment, then gone—makes imperative a most careful preparation for the broadcast lesson. The creation of the historical background, the association of dependent facts, the marshalling of elementary information about the subject to be presented, all must be accomplished before the actual broadcast. The music appreciation lesson must be preceded by a study of themes, of instruments, structure, mood, rhythms and other pertinent information. The records furnish the basis of this study. Other subjects must have like preparation through advance classes and assigned reading.

Participation. Radio education is activity, glowing yet restrained. Its value rests in its power to create a very definite response to and interest in the subject matter of the lesson. The usual classroom methods of securing pupil reaction, through question and answer, or through discussion, are impossible. Participation will therefore be found in a mental stimulation through recognition of known or perceived fact or fancy. The intellect and the imagination must be challenged by the instructor. The student reacts with concentration and alertness to the problem or subject.

Permanence. In order that the facts presented during the radio lesson be permanently retained and properly classified in the minds of the students, a review period or a discussion hour is valuable. The themes of music heard, the instrumentation of the ensemble, the new points brought out by the instructor must be recalled and evaluated. If the program has beer music, again the record will prove invaluable. When the student has thus made his preparation, has participated in actively listening and responding to the broadcast, and has clinched his facts in a discussion of material heard, then the lesson will have become a permanent part of his life, and the purposes of education will have been achieved.
Radiola 86

Embodies latest improved Radiola Super-Heterodyne circuit combined with Electric phonograph and Home Recording. Constant speed induction disc motor, new "inertia" pick-up and automatic stop. Improved Electro-dynamic speaker. Illuminated and Magnified Tuning Dial. Volume control of unique design providing smooth distortionless control. Improved filter which completely eliminates AC hum. Tone color control. Handsome console cabinet with attractive doors and panels and five-ply Walnut veneer finish throughout. It stands 46 inches high, 27½ inches wide, and its depth is 18⅞ inches. Nine Radiotrons four of which are the Screen-Grid type. List price $285.00 less Radiotrons.

Add to the new Radiola Super-Heterodyne, with its incomparable features, the surprisingly improved, latest type electric phonograph—and—Radiola Eighty-six is the result. In this instrument are the latest improvements—immediately distinguishable as great steps forward. As an instance, this new combination model employs, with the Super-Heterodyne circuit, the justly famous Screen-Grid principle—and Tone Color Control. The phonograph of the Eighty-six also is an achievement that must instantly impress its excellence upon any listener. Electric, thoroughly modern, with the revolutionary "inertia" pick-up, it provides the last word in reproduction of radio and recorded music.

For the schools Radiola Eighty-six furnishes a complete instrument, assuring the highest degree of service.
Radiola 82

Improved Radiola Super-Heterodyne circuit with same features as Radiola 80 (see p. 17)—plus Tone Color Control. Electro-dynamic speaker embodies latest refinements of design; acoustics of the cabinet are scientifically matched to it. Improved filter design, combined with push-pull amplification, results in complete elimination of AC hum. Cabinet combines charm and grace. It is 48 inches high, 27\(\frac{3}{4}\) inches wide, 17\(\frac{3}{16}\) inches deep. Most exacting workmanship is apparent in the attractive doors and tasteful panels and decorations. The cabinet is of five-ply walnut veneer. Nine Radiotrons including four Screen-Grid. List price $179.50 less Radiotrons.

In Radiola Eighty-two are to be found all the improvements of seven years' experience in developing the Radiola Super-Heterodyne, plus the advantages of Screen-Grid—and Tone Color Control. This remarkable new feature, Tone Color Control, permits the listener to choose at will the full flood of all musical tones or to adjust the balance of bass and treble register to the individual liking. Thus is a new enchantment given to certain types of music.

Improved Electro-dynamic speaker; push-pull amplifier giving ample volume for any program or occasion; improved filter design resulting in complete elimination of AC hum; volume control providing smooth, distortionless regulation with maximum clarity at any degree of sound intensity; a strikingly beautiful cabinet which has been scientifically designed to enhance the acoustical properties of the instrument—these are some of the features which make the Radiola Eighty-two an outstanding instrument.

Continued on page thirteen
Admiral Richard E. Byrd addressing the radio audience upon his return from the South Pole.

Commodore Nicolaus Johnsen, skipper of the "Europa," new "Mistress of the Seas," tells the American and German radio audience about his vessel's record crossing of the Atlantic in four days, sixteen hours and six minutes on her maiden voyage.

The United States Capitol during preparation for the broadcasting of Herbert Hoover's inaugural address.

The yacht "Electra," floating home of Senator Guglielmo Marconi, from whom the inventor of radio spoke to America by short wave from the Mediterranean Sea. The conversation was held for thirty minutes.

Listening in at NBC headquarters while Karl Bickel, President of the United Press, interviewed Marconi in Italy by radio. Present are M. H. Aylesworth, President of the National Broadcasting Company; David Sarnoff, President of the Radio Corporation of America; C. W. Horn, O. B. Hanson, and Phillips Carlin also of NBC.

President Herbert Hoover delivering his stirring Memorial Day plea for World peace at the historic Civil War battlefield at Gettysburg.
HISTORY. Many broadcasts are built about or allude to historical events. These may stimulate the class to learn the background of people and circumstances which led to the event, and also to study the results of the episode upon later history.

LITERATURE. In advance of a music program, it will be interesting to study the poem or story which may have inspired the composer to write his music... as in "Narcissus" or "Danse Macabre." Similarly, poems or stories which have been written about historical events, described on the radio, should be read.

MUSIC APPRECIATION. The many musical programs on the air provide unlimited material for active listening. This may be directed to recognition of themes, analysis of form, classification of rhythms, or discovery of mood. A study of the themes of the compositions to be heard should be made in advance when possible.

SPELLING. It is sometimes desirable to learn to spell the terms used in music or the names of composers of numbers to be heard. Lessons in poetry and literature may also contain names or unusual words which should be learned before the broadcast.

NOTE BOOK WORK. Scrap books are a most popular type of activity when used with radio lessons. Pictures showing the events of the broadcast, of stories heard, or of musical subjects; illustrations of instruments heard in the ensemble; or scenes which convey to the student an identical mood may be used. Original compositions telling the story of the broadcast or giving critical comment will furnish interesting material. The making of a note book may involve several activities and so provide opportunity for utilizing various allied subjects.

OPEN FORUM. Valuable training in oral English and expression will result from a discussion period following the radio lesson. This discussion may be extemporaneous or each student may prepare a talk on some phase of the broadcast.

SPECIAL PROJECTS. Many types of activity may be stimulated by a radio program. Maps may be made on which to trace the routes of exploration or to show areas affected by events mentioned during the lesson.

SEWING. Models of the costumes which characters in a play should wear or in the mode of a period mentioned may be designed and made by the class in sewing and textiles. A doll may be dressed in the native costume of the country visited in a radio trip or cruise.

THEME WRITING. As in oral English, educational programs provide an abundance of subjects for theme writing, covering the stories of the scenes depicted, the critical analysis of the material, or the assignement of such subjects as "What I Learned from Today's Lesson." Subjects suggested during the program may be augmented by further study to provide material for a term paper.

GEOGRAPHY. The frequency with which foreign countries are mentioned on the radio may be used as the basis for a cruise or airplane trip to visit these nations. As each country is visited its customs, resources, industries, physical characteristics, folk and art music may be noted.

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Possibilities

THROUGH its power to stimulate the imagination, to kindle enthusiasm, and to open up new vistas, the radio has conclusively demonstrated its great value to education. It has immeasurably quickened class interest in many ways. In music—where the imagination may take full flight—has the educational broadcaster found his best material for school programs. In many such music broadcasts, noted artists and orchestras have contributed much to the appreciation and advancement of the art. Many other subjects have likewise been found valuable in supplementing the school curriculum.

Radio in education is so new and its possibilities so untied that even yet much of its value is overlooked in too closely confining the broadcast material to the exact subject matter of the lesson. Greater results may be expected when the facts of the lesson may be discovered by the student to have application in some other subject in the curriculum. A Music Appreciation period will take on new significance if it can be correlated with Geography or History. Similarly, many broadcasts which are not a part of a course but which have educational value, may open new lines of thought leading to activity in many other subjects.

Some ways in which a greater use may be made of the educational broadcast are suggested in the following correlations.

ART. The creation of pictures or the making of posters which apply to certain programs offers many opportunities to the alert teacher. Drawings of the scene in which an event took place, sketches of the characters portrayed, or original conceptions of the meaning of a musical composition may be worked out by the students.

CIVICS. The appearance of many officials of state and national governments before the microphone may well be followed by a study of the office of the speaker and its place in the function of government. Current events periods are especially rich in material for such correlation.

DRAMATIZATION. The field of dramatics offers many opportunities to enact and interpret stories or to produce scenes mentioned in the program. The stories of musical compositions, episodes in history, or scenes depicting the customs of the time and place of an event provide excellent opportunity for individual and class expression, especially when made a part of the preparation for a radio lesson.

Continued on page twelve
Radiola 80

Improved Radiola Super-Heterodyne circuit employing nine tuned circuits. Exceptional selectivity and sensitivity throughout entire tuning range. Improved Electrodynamic speaker. Very accurately calibrated in kilocycles, illuminated and magnified tuning dial. Local-Distance switch to make the most of the broadcast programs. Beautiful cabinet of five-ply walnut veneer, with an artistic decorative motif, 43 inches high, 27\(\frac{3}{4}\) inches wide, 13\(\frac{3}{4}\) inches deep. Nine Radiotrons four of which are Screen-Grid. List price $142.50 less Radiotrons.

Continued from page eight

The producers of RCA Radiola, who sponsored and developed the Super-Heterodyne circuit since its introduction for broadcast reception, have developed this famous circuit still further. It embodies all the fine features that have made Super-Heterodyne so outstanding in performance—and includes numerous features which assure an even higher standard of dependability and performance. Radiola Eighty is an epoch-making instrument for it combines both Super-Heterodyne and Screen-Grid—an advantage which will be instantly appreciated, providing the ultimate degree of selectivity and sensitivity.

A new Local-Distance switch permits, in the Local position, the passage of a band of frequencies sufficiently wide to make the utmost of the broadcast program. In the DISTANT position the sensitivity is greatly increased to enable clean separation of local from distant stations.
Radiola 48

Latest Screen-Grid circuit. Illuminated and magnified tuning dial ... horizontal position permits large clear markings. New compound type volume control regulates from maximum to minimum without impairment of tone quality. Improved Electro-Dynamic speaker. Cabinet of selected walnut veneer ... early English, showing Jacobean influence ... 34½ inches high, 20½ inches wide, 17½ inches deep. Seven Radiotrons. List price $112.50 less Radiotrons.

The Radiola 48, latest product of the RCA engineering laboratories, is better in design, more versatile in performance, than most instruments which sell at a much higher figure. It combines all the fine features which have characterized Screen-Grid reception, with many new features. It has high sensitivity, assuring just the station desired, from near or far; and selectivity which assures the reception of that station despite interference. The tone is full and round with a warm, vibrant, living quality. The console ... conveniently small and compact ... has been designed and constructed to match the acoustical properties of the improved electro-dynamic speaker. In this instrument, because of larger resources, of increased facilities, of new exclusive methods of manufacture, is embodied expert workmanship and quality to be found in no other instrument at its price.
At the Service of Education

With its greatly expanded facilities, RCA Victor now offers a complete service to schools in the full utilization of music and radio in education. Never before have the resources of so great an organization been directed toward education's work. For years the Victor Talking Machine Company's achievements have contributed to the solving of the problems of music educators. It has ever been in the van in educational theory and practice. Victor's immense library of music, recorded especially for educational purposes, is familiar to hundreds of thousands of educators and is an integral part of practically all courses in music and music appreciation. The courses of study, as outlined by Victor and presented in text form, are accepted and taught in thousands of schools throughout the country. The school world, in fact, has come to look to Victor to produce and supply material and equipment for its musical needs.

The reorganization and unification program which brought into being the RCA Victor Company has vested in its Educational Division every material requirement to meet education's demands. There has been added the great resources of the Radiola Division, the Centralized Radio, the undiscovered richness of promise of the photophone and the coming television. The same splendid representatives are in the field, and others added. Augmented record and text material is constantly being supplied. And now, every type of sound reproducing equipment—from the single radio instrument to the largest centralized installation—is available. New devices—such as home recording—and new instruments—as the Theremin—may also be had.

A greatly enlarged field of service is now realized through the relationship and close co-operation of the Radio Corporation of America and its subsidiary companies. In visual education, where, with the production of sound films, radio and pictures become closely united, many new subjects of high educational value are in prospect. In the theater, too, long thought a menace to education, there will now be provided children's hours of educational as well as entertainment value. The Educational Division will assist in all these developments.

Evening radio programs of highest merit will be broadcast each week under the sponsorship of the RCA Victor Company. These will feature many outstanding artists and orchestras, performing some of the greatest masterpieces of music. Through the Educational Division, and for those schools which will use these programs in connection with music assignments, annotations and analyses of the compositions will be furnished on request, in advance of the programs.

Thus, with records, texts, instruments, programs, and teaching aids—and, in addition, with co-operation in every other field of sound production—the Educational Division comes to the schools. Only RCA Victor resources and RCA Victor educational experience could provide so complete a service.
Centralized Radio Equipment

In many buildings Centralized equipment for the reception of radio programs is being installed with little expense. This modern equipment makes possible the reception, control, and distribution of radio programs from a single point, located in a place convenient for supervision by the proper authorities.

In the control panel is incorporated a receiving set of the latest design, a device which may be set to automatically turn on or shut off a program in the absence of the operator, amplifying apparatus, and a switchboard through which the various speakers are connected. This panel may be built in flush with the wall or may be installed in a special closet which may be locked.

In addition a special electric phonograph unit may be had. This unit is self-contained, portable, and may be attached to the control panel or conveniently located on a table. From the central control panel the program is relayed to the loudspeakers located in the various classrooms, in the auditorium, the gymnasium, or lunch room. These speakers are installed in special receptacles, flush with the walls, which are inconspicuous and which are safe from tampering. Either dynamic or magnetic speakers may be supplied. Each speaker may be turned on or off at the central control panel.

Provision can be made for as many as four channels, thus making four separate programs available for as many
different groups of students. RCA Centralized Equipment is simple to operate, provides radio programs under ideal school conditions. Any particular group or class may listen to a specific program selected for it without disrupting schedules to bring the pupils to the auditorium. All listening can be done in the classroom under normal class conditions and control. Supervision of programs received may be maintained at all times.

Each installation of RCA Centralized Radio is specially designed and built to fit the needs of the particular building in which it is to be used. Every demand of the school can be adequately met in this equipment. List of installations, full information, and an estimate of the cost of this apparatus may be obtained on request from the Educational Division or from the nearest RCA Victor Centralized Radio office.

Camden, New Jersey
Front & Cooper Streets
Chicago
100 W. Monroe Street

New York
216 Fifth Avenue
San Francisco
235 Montgomery Street

Representatives in all principal cities

Classroom with loudspeaker located above the blackboard and in back of the teacher's desk.

Physical education class of Oyster Bay (Long Island, N. Y.) High School exercising to music supplied through speakers suspended from girders.
CONCERT Electrola equipment is designed to meet the musical requirements of the finer auditoriums, large classrooms, etc., providing both record and radio entertainment with the full volume of an orchestra or band, with no distortion. The quality of this reproduction is the finest known to the art. The cabinet which contains the automatic mechanisms, radio, special amplifiers, etc., may be concealed and operated from a remote location.

Special sound projectors may be mounted on the auditorium platform or concealed by an appropriate grille. Additional projectors may be added and operated directly from the basic operating unit.

Each installation of Concert Electrola is designed and built for the school in which it is to operate, the size of auditorium, the location of units, and the type of service required determining the equipment necessary and also the cost. To those schools which desire the ultimate in musical equipment, the Engineering Products Division will be pleased to furnish information and estimate of cost. The “Mobile” type of this instrument (mounted on truck) is ideal for city parks, recreation and playground centers — available at will for service in any desired place — delightful for street dances — folk dance festivals and community concerts on various streets, parks, and open places.
The New Theremin

The Theremin is an instrument which produces musical sound by exclusively electrical means. It employs RCA Radiotrons, two metal bars as antennae, and a loud speaker. One antenna—a straight perpendicular bar—controls pitch. The other antenna—a looped horizontal bar—controls volume. As the hand approaches the vertical antenna, the pitch of sounds becomes higher; as the hand is withdrawn, the pitch becomes lower. As the hand approaches the horizontal antenna, the power of the Theremin's voice is lessened; as the hand is moved away from the antenna, the power is increased. Thus the playing of this incredible instrument resolves itself into nothing more complicated than waving the hands in the air.

Tone colors of exquisite beauty are produced on the Theremin. In its range of three and a half octaves the entire string choir may be heard. In the lowest register the tone resembles the bassoon; further up the cello is recognized; still further up the viola and violin are closely approximated.

To schools the Theremin offers at once a musical instrument on which any student, with a fair sense of pitch, may play regardless of his previous musical training. It provides a short cut to performance, without the drudgery of years of practice. It enables the student to draw upon his own artistic sense in interpreting beautiful music. It affords opportunity for self expression of the highest order.

Special Discount to Schools

To make it possible for every school to fully participate in the tremendous advantages offered by the new education through radio, the RCA Victor Company will grant a 30% discount on all Radios, Radiodias, Victor Combination instruments or Victrolas purchased for bonafide school use. On all records and texts the discount is 20% off list. Centralized Radio and Concert Electrola installations are not subject to this discount since each unit is specially built to meet the specific requirements of the individual building in which it is to be used. Every school may now secure the latest, most modern radio or combination radio-phonograph equipment, also RECORDS and texts at a price far below that which the public must pay.
What it Means to Own an RCA Victor Instrument

The RCA Victor Company has been formed for the orderly, progressive, and economical development of radio and its allied sciences.

The group of engineers, who have given to radio nearly all its major developments, has been concentrated in the RCA Victor laboratories in Camden. This plant is by far the largest of its kind in the world. No other engineering group, equal in talent or number, devoted solely to radio products, exists in the world today.

The entire RCA Victor enterprise is under the direction of a group of men whose names are synonymous with leadership in American industry and finance, and are in themselves a guarantee of the soundness and progressiveness of the Company with which they are associated.

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