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TELEVISION IN Education

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Foreword

EDUCATIONAL TELEVISION has made great strides in the five years which have elapsed since the Federal Communications Commission set aside television channels for the exclusive use of education. Such stations are located in 29 communities of the United States, representing large cities, university centers and, in several instances, serving entire States through multiple stations or multiple studios. The investment in educational television now totals over fifty million dollars.

In the past two years, closed-circuit television, serving many school buildings or an entire university campus, has been introduced, a complement to the service already extended by open-circuit broadcasting over noncommercially-licensed educational stations.

It is too early to predict what may be the effect of television on education in general, but its ability to bridge the gap existing in our country, in educational services to the people, is already established. It is bringing educational programs to many preschool children, to the handicapped, to our shut-in children, to the old and feeble, to the person who has for some reason missed an education, to the ambitious who work for a living and can only attend school at odd hours and frequently only with great personal sacrifice, to the dropout in our high schools who out of some necessity has not been able to get his high school diploma, to those seeking advanced standing in college accomplishment, and to the intellectually curious who will never complete their lifelong interest in knowledge with the gifts and satisfactions such knowledge brings.

As a means of supplementing the regular classroom work of our schools, it possesses a great potential in thus aiding the teacher in her task of instruction. This great development in the area of mass communication has already been the means of more adequately informing our citizenry of what is happening in the world today. With the newspaper, the magazine, the motion picture, and the radio, we live in the instantaneous present. With our schools, our libraries, our museums, our books, we find the means of integrating the present with the immediate past as well as with the rich glories of antiquity. Television serves to bring us both the dramatized past and the thrilling experiences of the present.

We should take advantage of its service.

LAWRENCE G. DERTHICK,
Commissioner of Education.

Introduction

THERE IS a long history of accomplishment in the use of radio by our colleges, universities, and school systems. It began at the dawn of radio by the establishment of Station WHA, University of Wisconsin, in 1921, actually the first station to broadcast educational programs in the United States. WHA has continued as key station of an educational network, now covering the entire State of Wisconsin. Other colleges and universities soon followed, and today there are over 160 educational radio stations operating in either the AM or FM band (or both) in this country. They are still growing in number.

Educators were among the first also to recognize the potential of television as an educational medium. Between 1932 and 1934, the University of Iowa, Purdue University, and Kansas State College (Manhattan, Kansas) actually produced experimental teaching programs using the scanning-disk method. In 1936, by means of the present Iconoscope system, New York University put on programs over NBC's transmitter atop the Empire State Building in New York. The University has continued to experiment until today it grants credit for regular courses.

World War II interrupted the development of television, so it was not until 1946 that regular programming was resumed and a coaxial cable began to stretch itself across the Nation to connect up local stations with network-originated programs. In a short space of 4 years much experimentation was accomplished which verified earlier results. WOI-TV, Iowa State College at Ames, became the first licensee of a station to be located at a school of higher learning beginning operations on February 21, 1950.

On October 16, 1950, a meeting was called at the U. S. Office of Education to organize the educational forces of the Nation in a unified group for the protection of television channels to be used exclusively for education, the U. S. Commissioner of Education

having already requested the Federal Communications Commission to set aside such channels on a nationwide basis.

At this meeting, the Joint Committee on Educational Television was formed, representative of all educational interests, to present at the forthcoming hearings of the Federal Communications Commission, the claims of education, with, at first, a reservation of 242 channels, which was later increased to 256.

The Ford Foundation, through its Fund for Adult Education, subsidized the operations of the Joint Committee on Educational Television in 1951, made extensive grants for experimental programs at WOI-TV in the same year and announced in the fall of 1952, a total grant of $5 million for educational television. Three million five hundred thousand dollars was used for matching funds on a 1-to-2 basis for the construction of educational stations, and $1,500,000 for the establishment of a central television and radio program center, now set up at Ann Arbor, Mich. Since then, the Ford Foundation has made an additional grant of $6 million to the center, covering its operation until January 1, 1960.

The establishment of the National Citizens Committee for Educational Television, under a separate grant of $500,000, came about in the same year under the joint chairmanship of Dr. Milton Eisenhower, president of Johns Hopkins University, and Marion B. Folsom, presently Secretary of Health, Education, and Welfare. This organization had the task of promoting educational community stations to the public while the Joint Committee on Educational Television (now, the Joint Council) operates directly in the university, college, and school field. The Office of Education of the U. S. Department of Health, Education, and Welfare cooperates with these and other organizations concerned with educational television, conducts research, issues directories of university courses and school participation, provides bibliographies, listings and other direct services to applicants for educational channels, advises on organization and finance, and reviews the results of educational uses of television.

The first Office of Education publication, TELEVISION IN OUR SCHOOLS, issued in 1951, was revised in 1953 and again in a current edition in 1956. This bulletin, therefore, represents the second publication in the field of television and endeavors to present an over-all view of TV, as applied to education in 1957.

FRANKLIN DUNHAM,
Chief of Radio-Television.

Part I. What Is Being Done In Educational Television

EDUCATIONAL TELEVISION is a two-way street. The success of a program actually rests upon the ingenuity and capability of the viewer as much as it does upon the producer. If the producer can deliver a program which attracts and holds interest, the viewer has an obligation, also. It is necessary that the viewer retain the impressions made by the program either for immediate or future use. In this sense, every program we watch becomes an educational experience whether or not it makes a positive or a negative impression.

Since education is commonly believed to possess at least three characteristics — (1) acquiring of knowledge, (2) training of skills, and/or (3) influencing of attitudes — it is important that we stress the positive rather than the negative approach in dealing with television. This requires the cooperation of the producer and the viewer in the devising of a program. If the producer merely goes along on the principle "give the people what they want" rather than what they should have, he relinquishes his responsibility to the viewer. If he neglects the first principle entirely, he sacrifices his audience. If he takes the viewer into his confidence and tries to discover what the viewer *really* wants to satisfy his *needs*, he discovers what the audience should have.

This, then, is the commonsense philosophy of approach to programming discovered through 30 years of radio experience in this country. "Give the audience not only what it wants, but what it would want if it only knew about it." So radio developed a consuming love for good music, a gripping interest in fine drama, an intimate knowledge of currently important events, a sense of participation in public issues, an instantaneous contact with the news, a unifying spirit of sympathy for the problems of other

sections of our own country, the same spirit of sympathy for countries other than our own — and has developed, along with the newspaper, the magazine, and the good book, an *informed* citizenry, unequalled in the history of mankind. Whenever radio has been used in this way, its influence has been in exact ratio to the size of its audience.

Education's Own Stations

When television programming began on a regular basis in 1946 and later, when coaxial cables stretching across the land made it possible to serve national audiences, educators began to sit up and take notice of this remarkable medium of communication. Thirty years of experience with radio by sound alone, had been a heart-warming experience, fed every so often by the cold blast of inadequacy — the lack of sight. Educational sound motion pictures had proved themselves worthwhile teaching tools. But the expense of preparation, the risk of obsolescence, and the expenditure-dollars for prints, presented problems. Now, with television, we could have both sight and sound, available at the turn of a switch, flexible enough to fit any learning situation, immediate enough to attract and hold interest, inexpensive enough to experiment with, on a deservedly longtime basis.

It soon became apparent that if this job was to be done, education would need its own stations. Experience with radio had proved that. In the early days of educational broadcasting of sound, a few hours a week provided about all the air time the average city school system or college could use to advantage. Over the years, however, increasing acquaintance of educators with the educational potential of radio brought the development of educational FM. There are now 160 educational radio stations — and their number is increasing.

Educators want to produce more and more programs with specific content, beamed at particular audiences, for special purposes; at the same time, commercial stations are confronted with increasingly sharp competition for audience. Educators also want to be able to present series of broadcasts which are integrated with and express an over-all educational plan and purpose. In radio, the managers and owners of commercial stations had, quite naturally, exhibited some reluctance to meet the increasing demands of education for broadcast time on stations commercially owned and operated. The better the programs were in serving specific educational purposes, the more likely they were to jeopard-

ize the sales value of the commercial station's time by limiting audience appeal.

Inevitably, educators and commercial producers have pursued conflicting and increasingly incompatible interests in programming, with the result that, as educational demand for time increases when educators come to know how to use the medium effectively, the time available for educational broadcasts on commercial stations decreases because owners and managers need good audience ratings to sell advertising. Only the opening up of the Frequency Modulation band permitted an easing of this situation with a provisionally acceptable answer to the dilemma through the reservation of a series of channels in the FM Band exclusively for educational broadcasting purposes.

So, when the Federal Communications Commission, after extensive hearings, set aside 242 (later 256) channels for the exclusive use of noncommercial educational broadcasting on April 14, 1952[1], education was ready to move.

Iowa State College had already been broadcasting under a regular commercial license with call letters, WOI-TV, since February 21, 1950, directed by Richard B. Hull. It provided the only example of TV in education, when the FCC gave education the green light under a special set of rules, regulating the operations of noncommercial educational television. In the 242 channels originally designated (listing available in Appendix), every college and university center, as well as large cities in the Nation, was provided with either a VHF (very high frequency) or UHF (ultra high frequency) channel for indefinite or permanent use.

By 1954, 45 applications had been filed, representing every section of the United States (or about 20 percent of available frequencies pre-empted), 29 construction permits had been granted and three stations in addition to WOI-TV were on the air.

Construction permits had been granted to:

KTHE, Allan Hancock Foundation at the University of Southern California, Los Angeles
KQED, The Bay Area TV Association at San Francisco
KRMA-TV, the Denver Public Schools, Denver, Colo.
WCBE, the State Board of Education at Bridgeport, Conn.
WCHF, the State Board of Education at Hartford, Conn.
WCNE, the State Board of Education at Norwich, Conn.
WTHS-TV, Dade County Board of Public Instruction, Miami, Fla.
WTLC, the University of Illinois, Urbana, Ill.
WTTW, Chicago Educational TV Association, Chicago, Ill.

[1] Sixth report and order, Federal Communications Commission, April 14, 1952.

KSAC-TV, Kansas State College, Manhattan, Kans.
WGBH-TV, WBGH Educational Foundation, Boston, Mass.
WUOM-TV, University of Michigan, Ann Arbor, Mich.
WKAR-TV, Michigan State University, East Lansing, Mich.
WTLV, State Department of Education, New Brunswick, N. J.
KETC, St. Louis Education TV Commission; St. Louis, Mo.
WTVA, State Board of Regents, Albany, N. Y.
WTVF, State Board of Regents, Buffalo, N. Y.
WIET, State Board of Regents, Ithaca, N. Y.
WGTV, State Board of Regents, New York, N. Y.
WROH, State Board of Regents, Rochester, N. Y.
WHTV, State Board of Regents, Syracuse, N. Y.
WUNC-TV, Consolidated University of North Carolina, at Chapel Hill, Raleigh, and Greensboro, N. C.
WCET, Greater Cincinnati TV Foundation, Cincinnati, Ohio
WOSU-TV, The Ohio State University, Columbus, Ohio
KQED, Oklahoma TV Authority, Oklahoma City and Norman, Okla.
WQED, Metropolitan Pittsburgh Educational TV Station, Pittsburgh, Pa.
KUHT, University of Houston and the Houston School District, Houston, Tex.
KCTS-TV, University of Washington, Seattle, Wash.
WHA-TV, Wisconsin State Radio Council, Madison, Wis.

Of these stations, KUHT, Houston, directed by John B. Schwarzwalder; KTHE, Los Angeles, directed by William H. Sener; WKAR-TV, East Lansing, Mich., directed by Armand Hunter; and WQED, Pittsburgh, directed by William H. Wood, were on the air, as well as WOI-TV, at Ames, Iowa. KUHT began broadcasting in June 1953, KTHE in November 1954, WKAR-TV in January 1954, and WQED in April 1954.

KUHT, Houston, programmed for a 5-day week, Monday to Friday, inclusive, 6-hour schedule; KTHE programmed for a 7-day week, with a modest beginning of a 2½ hour a day, plus additional time for special events; WKAR-TV programmed also for a 7-day week but provided a schedule of 6 hours a day, as well. WQED began with 3¼ hours a day for a 5-day week.

Programs for Education

Bearing in mind that educational television is a two-way street, these stations took the viewer into consideration, as a partner in their enterprise. Programs were devised to meet needs, after exploring with advisory groups, community organizations, schools and many individuals what their needs were. In this manner, they produced tailormade programs for specific audiences which were appealing enough to attract the interest of a wider general audience as well.

Although there were 16 telecourses on KUHT, Houston, there were also programs of news "in focus," portrait photography, household chemistry, and music understanding. An experimental theater and a university forum was also included. WOI-TV at Ames, Iowa, did a complete series of daily programs for in-school viewing called "Schooltime" as well as special programs on agriculture helps, home economics, health and welfare. KTHE, Los Angeles, startled the community with a remarkable children's participation program called "Let's Play Like," to develop creative dramatic skills in youngsters. WKAR-TV, in a 6-hour daily schedule, presented a new idea in interpretive reporting of the general news, including a program on campus news highlights for the benefit of the entire "extended" campus audience. There were also programs for the farmer, the businessman, the housewife, the youthful audience, and the art and music lover, as well as the gadgeteer, who wished to improve his home, develop his hobbies, and continue his education. The trend moved definitely toward the practical in the public needs and evaluating response. Thomas Wolfe, when he was a professor at New York University, called this "utility culture," but later on, admitted its practical value.

The trend in school programming became definitely directed toward a close tie-in with the curriculum. In San Diego, for example, where there is no educational station as yet, the school programs were all planned to fit curriculum needs and were worked out under the supervision of Robert Burgert, the Director of Instructional Materials, as director and coordinator of all programs reaching pupils in the schools. The 3-way lesson of preparation, viewing, and followup, is a prescribed practice taken over from the radio and motion-picture lesson techniques. On WOI-TV's SCHOOLTIME, subjects included health (jr. high), science (elementary), social studies (grades 5, 6, 7,) guidance (high school), Iowa history (grades 5–8), and art (elementary).

A philosophy of approach and practice was slowly being evolved by educational television. There were two meetings (national), one at Lincoln Lodge, Wis., and the other at Gunflint Lodge, Minn., in the summer of 1953 to help develop such thinking, both sponsored by the Fund for Adult Education of the Ford Foundation and the National Association of Educational Broadcasters, with the cooperation of the Joint Committee on Educational Television. However, the "proof of the pudding is in the eating thereof," and so ideas were translated into live programs. The Ford Foundation has now given $6 million in subvention of funds through the Educational Television and Radio Center at Ann Arbor for the produc-

KETC, St. Louis

Graphic background for "Old Men of the Sea" in a series done by Brown University faculty for Ann Arbor Center.

tion of programs until 1960. This is the beginning of help which must be given to translate ideas into programs. The NAEB, through its "Jefferson Heritage" and "Ways of Mankind" series for radio, demonstrated it could do this job well; therefore, much is expected in tailormade programs for television produced in cooperation with the Ann Arbor Program Center. The National Broadcasting Co. now delivers five half-hour programs a week exclusively tailored to educational station needs.

The New Stations

Although 242 television channels were originally set aside exclusively for the use of education by the FCC and made firm by June 1953, 16 more station areas have, of necessity, already been added, the first one at the Amherst, Mass., center for University of Massachusetts and Amherst College, another at North Adams, Mass., for the Williams College area, a third at Bowling Green, Ohio, where the Bowling Green State University is located, with 10 more designated. There are now 83 applications which have been filed with the FCC for educational channels, covering all areas of the United States. Of these, 49 construction permits have been granted, 29 stations are already on the air, and 8 applications are pending.

Of those on the air, 23 are in the VHF band and 6 are in the UHF band and, therefore, are limited to reception by new-type receivers or UHF adapters. Although this may appear to be a disadvantage at first glance, it may easily prove to be a blessing, since both schools and individuals now finding attractive programs available for their use will equip with the best and most modern sets while programs can be beamed especially for this selective audience.

Listing these stations chronologically, the noncommercial educational stations now on the air include:

KUHT, Houston, Tex.
WKAR-TV, East Lansing, Mich.
WQED, Pittsburgh, Penn.
WHA-TV, Madison, Wis.
KQED, San Francisco, Calif.
WCET, Cincinnati, Ohio
KETC, St. Louis, Mo.
KUON-TV, Lincoln, Nebr.
KCTS, Seattle, Wash.
WTIQ, Munford, Ala.
WUNC-TV, Chapel Hill, N. C.
WBIQ, Birmingham, Ala.
WGBH-TV, Boston, Mass.
WILL-TV, Champaign-Urbana, Ill.
WTHS, Miami, Fla.
WTTW, Chicago, Ill.
WTVS, Detroit, Mich.
KRMA-TV, Denver, Colo.
WOSU-TV, Columbus, Ohio
KETA-TV, Oklahoma City, Okla.
KLSE, Monroe, La.
WLMP-TV, Memphis, Tenn.
WAIQ, Andalusia, Ala.
WHYY-TV, Philadelphia, Pa.
WYES-TV, New Orleans, La.
WETV, Atlanta, Ga.
WMVS-TV, Milwaukee, Wis.
KTCA, Minneapolis-St. Paul, Minn.
KOAC-TV, Corvallis, Oreg.

This is a happy picture for educational television, but it is by no means an adequate one for universal use of television in the classroom, nor even for adult education. It will take the use of all the 256 channel assignments to accomplish the objective and possibly more. Already more than 100 of our universities are putting

TV programs on the air, and some 79 school systems are preparing programs which are received daily in the schools from standard commercial stations. More than half of all the programs originating from schools in 1957 were for the purposes of showing the public what was happening in their schools. These will not diminish but will rather be supplemented by many more teaching programs, both to be viewed in the classroom and the home.

WCET, Cincinnati

Cincinnati public schools equip a central studio with laboratory apparatus and teacher for telecasting to all Southern Ohio.

Great Programs

Great growth of educational stations will occur in the years ahead but even greater growth should take place in programming for essential needs. The TV networks have also sensed this and are adding many new programs of high quality for adult listening and viewing in the fields of art, science, the literatures of the drama, news comment, forum discussions and direct adult education. Performances like "Hedda Gabler" and "Richard II" (2 hours duration with Maurice Evans in the title role), the dramatization of Dreiser's American Tragedy, "A Place in the Sun", the drama-

tization of history, such as the "Autobiography of Benjamin Franklin", the "Trial of Marie Antoinette", the "Ordeal of Tom Paine", have all been found on "You are There!" (a Sunday evening series on CBS). "American Inventory", sponsored by the Alfred P. Sloan Foundation, an inventory of what is happening in our country in general culture, and "Adventure", a natural history series from the Museum of Natural History, New York, present programs for both young and old alike, on Sunday afternoons. "Odyssey", another youth program on the Columbia Broadcasting System, with Charles Collingwood as guide, comes earlier in the afternoon, followed by "Omnibus", and the Ford Foundation "Cultural variety show" in the evening. Education has been spoofed by "Mr. Peepers" and "Our Miss Brooks," complicated by "Meet Mr. Mc Nutley," and dignified again by "Halls of Ivy," with Ronald Colman. Bishop Fulton J. Sheen on Mondays, "Robert Montgomery Presents," also on Mondays, along with "Studio One," "See it Now," with Edward R. Murrow, and another clever Murrow program, "Person to Person," on Fridays, leave Saturday night the only night free of intentional education for enlightenment of adults. The "brainy Sunday afternoon" is available rain or shine on television with programs heretofore described. This is the network contribution to adult education.

In California, a series by Professor Frank Baxter on Shakespeare over KECA-TV developed an outstanding audience, and from Chicago, "Zoo Parade" and "Mr. Wizard" hold vast TV audience appeal almost as great as "Ding Dong School" has held for preschool youngsters and their mothers every weekday morning. These, then, have been the principal educational programs over commercial stations available to the public that has now purchased nearly 40 million TV receivers.

Telecourses

Educational TV stations opening this year will bring many new and different programs to the viewer. In the first place, many "Telecourses" in university extension, either for credit toward a degree or for certification in the field of psychology, philosophy, art, music, history, economics, anthropology, languages, and literature, have been added.

Universities and colleges pioneering in granting credit toward degrees by TV were: Western Reserve, Cleveland, Ohio; University of Michigan, Ann Arbor, Mich.; Michigan State College, East Lansing, Mich.; Wayne State University, Detroit; Butler Univer-

sity, Indianapolis; University of Toledo; University of Washington; New York University; Quincy College, Quincy, Ill.; Iowa State College, Ames; University of Houston, Texas; University of Iowa; University of Wisconsin; Illinois Tech, Chicago; University of Bridgeport, Connecticut; Indiana University; James Millikin University, Decatur, Ill.; University of Georgia; San Diego State College, and the University of Kansas City.

One of the earliest pioneers was Western Reserve University which offered courses at 9 o'clock in the morning over the local station, WEWS, in 1951. This came as a result of experience with television begun in 1942, and carried on intermittently during the war years. Literature was a 2-point course and psychology a 3-point course. Three types of student audience were envisaged — credit students, who would take the same examinations as the students on campus at the conclusion of the semester and who paid $16 per point, the regular university fee; noncredit students who paid $5 for the books and guides; and general auditors who made up the rest of the TV audience.

WEWS, Cleveland

Credit telecourse in American Speech at Western Reserve University illustrated with cartoon-type chart.

In the very first series 109 students enrolled for credit, and 674 paid $5 each for the materials. It was estimated that no less than 50,000 people tuned into the broadcasts. With the station donating facilities, even this registration more than paid all expenses. Quickly followed, child psychology and physical geography, then general economics and music appreciation, and out of their success, a new word for it was coined — "Telecourses" from Western Reserve. The most remarkable part of the story came in the examinations conducted at the university (or even at home for shut-ins). The TV students finished higher in their marks than the average college student. The comparative light registrations may easily have been due to the inconvenient hour for workers.

Other universities have tested evening hours with comparatively better results, but the outstanding fact remains that effective teaching can be accomplished by television and that television potentially can be as effective as the classroom (by the lecture demonstration method, at least). Western Reserve has gone on strengthening its curriculum so that today five morning courses are given — also a University Theater (on either Sundays or evenings) and many other programs such as documentary dramatizations, conversational Spanish (popular all over the United States), and laboratory features, such as "Chemistry in Modern Life," "Physics in Modern Life," embryology, and many others in the physical sciences. "How to" programs are given over WXEL, another Cleveland station, on "Understanding the Visual Arts," "How to Think," "How to Live Within a Budget," "Making the Most of Your Job," and other practical homebound subjects. Altogether, some 600 subjects have been presented to date over television.

Barclay Leatham, director of TV, is also the director of theater arts at Western Reserve and believes in supplementing programs by a variety of visual aids and dramatic sequences when deemed desirable. Professors say, after reducing a 50-minute lecture to 28 minutes and using visual aids charts, moveable blocks, maps, blackboard illustrations, and flannel-board variable symbols, that they have found a new asset in teaching — *visually illustrated exposition*. Every one who uses this method on television, takes the idea home to use in his classroom. Every television program, originally planned, takes an average of 10 hours of preparation, so that the university teaching load is relieved to that extent. When the multiplied student body is considered this becomes an economical use of teacher man-hours for such instruction.

The University of Michigan, with Garnet Garrison as TV Direc-

KUON-TV, University of Nebraska

Serving high schools of the area with supplementary materials for mathematics course.

tor, began at just about the same time as Western Reserve but proceeded more cautiously. Their telecourses on Sunday afternoons over WWJ-TV Detroit actually preceded Western Reserve by a whole year but they did not at first offer credit. A full hour divided itself into three segments: (1) A 20-minute period telecourse; (2) picturization of work being done at the university, such as the hearing laboratory; (3) a teletour of the university itself. It was later divided into half-hours: One 30-minute telecourse; and one 30-minute demonstration. Enrollments are taken for certificates ($2 for 14 weeks, $1 for 7). This pays for the materials with reference bibliographies but includes no books. Fifteen hundred people registered the first semester; by the second year 2,200 registered. Successful passing of an examination is required in order to get a certificate. Popular subjects are: The physical sciences, psychology, history and, of course, photography, and the ever-engrossing subject of the universe, astronomy.

The University of Houston, the University of Omaha, Wayne University at Detroit, Butler University at Indianapolis, University of Toledo, the University of Washington, Michigan State University, Iowa State College, the University of Iowa, University of

Nebraska, University of Wisconsin, the University of Southern California, the University of California at Berkeley, Illinois Tech, the University of Bridgeport, the University of Alabama, Tulane University and New York University all now give telecourses for credit.

Participation in Programs

Yale, Harvard, Princeton, Cornell and Columbia are not, by any means, unresponsive to television. Yale developed a closed-circuit TV station, WTRU-TV, heard only on the campus, as the first student-operated station in the United States, providing entertainment as well as education, and the school of drama, whose graduates are in leading positions in professional TV, soon developed full-length plays which were given "first nights" as early as the spring of 1954 as products of its television drama course. The Gesell Institute at Yale, in its study of child development, regularly puts on programs for WBZ, Boston. Harvard University, a member of the Lowell Institute Broadcasting Council of Boston, operating radio station WGBH and licensee of WGBH-TV, has presented programs in literature and in music appreciation as well as analytical discussions of issues and current events. In cooperation with the National Broadcasting Co., Princeton University for 2 years conducted an experimental series of weekly programs devised and presented by faculty members from their own areas of competence. The Educational Testing Service at Princeton University conducts tests and measurements for TV teaching effectiveness. Cornell University makes films for television and carries on a closed-circuit TV operation in its science courses. Columbia University, through its Communication Center, has provided many programs for television, notably the series over the ABC network titled "Seminar," a spontaneous discussion between a sociology professor and his class. Llewellyn White, in his book, "American Radio," asserted that the development of educational radio had been hampered by the lack of response from the Ivy League colleges. No such situation exists in television.

Rollcall of Colleges

A national rollcall by States of campuses extended to the people by noncommercial TV is given in Appendix K. These are in addition to the campuses operating their own TV facilities on their own budgets.

The usual procedure is to try noncredit courses for the first and

second years, then proceed to give full credit toward degress after that. Invariably, examinations similar in every respect to those given for classroom instruction are required and credit is granted on the basis of term-paper and examination. The 1957 junior college TV enrollment in Chicago was estimated to be 4,000 in all required courses covering the 2-year curriculum. It was thus possible to carry on formal education under the Chicago Board of Education for the 2 years beyond high school and prepare students for junior-year standing in any accredited college or university throughout the country.

Some institutions have preferred to give special courses attracting viewers for work outside the regular curriculum. Some have carried on courses through TV only within campus limits, by means of closed-circuit transmission to the general university area. Receivers are set up in classrooms, libraries, reading and recreation rooms, college resident halls, and other convenient places to facilitate undivided attention and clear reception. The fact that television may be received in lighted rooms makes it much easier to take notes and use supplementary materials while the program is in progress.

Types of Programs

Two types of programming have been advanced at these institutions. The first includes practical courses, the result of university research in such fields as economics, agriculture, engineering, government, child welfare, health, geriatrics, home building and school construction, all close to "where people live." Such programs give direct service to the people of the extended campus at a time when need is paramount. The other type of course is in University Extension wherein people may continue their education wherever it left off, receiving credit for their efforts, going on to acquire undergraduate degrees.

Graduate work has not yet been attempted but it appears to be an important field of exploration, since thousands of people engaged in business and the professions might continue their work for such a degree if they could only return to the campuses of their youthful preparatory days in college. Television now makes it possible to do this, conveniently, one or two evenings a week or on Saturday mornings, when time is often available. The university is not averse to extending itself to its alumni, in fact, one of its major problems has been to find an effective means of

University of Miami

"Economics of the Sea" in a dry-run rehearsal showing how air currents aided Columbus in 1492 (program created for Ann Arbor Center).

so doing. Television for professional people such as doctors, lawyers, or teachers, or business folk themselves is already being provided by "refresher courses."

Part II. What Can Be Done With Educational Television for Adults

PROFESSIONAL TELEVISION productions of great beauty and high quality have pointed the way to similar accomplishments in educational television. A good illustration is found in the field of opera. Great as the cultural impact of opera on radio was, it can be even more effective on television. Televising the Metropolitan Opera in the Opera House presents great technical difficulties, but Carmen was superbly done "on stage." However, the television studio production of Menotti's "Amahl and the Night Visitors," the beautiful story of Epiphany, the original production of "The Parrot," a short opera by Darell Peter, and the Mozart operas "Figaro" and "Cosi fan Tutte" (written for small stage) are outstanding examples of what has been done effectively on a studio small stage by National Broadcasting Co.

Great writers of American drama like Robert E. Sherwood, James Thurber, Maxwell Anderson, Thornton Wilder, Eugene O'Neil, with T. S. Eliot, Christopher Fry, and Somerset Maugham as British compatriots, have all had television bring their works to millions, rather than thousands. The stage has given great performances by Charles Laughton, Alec Guinness, Helen Hayes, Ethel Barrymore, Maurice Evans, and many others by television, contributing to the expansion of American culture in a manner never before possible in the history of our Nation.

What educators can do with television is suggested by the outstanding performance of Claude Rains as Mr. Jefferson in "The Jeffersonian Heritage," produced by radio under a Ford grant by the National Association of Educational Broadcasters.

The recurring example of Bishop Fulton J. Sheen, seen every week in "Life is Worth Living," a one-man show with a chalk-

board, reliving his Philosophy 1 course from Catholic University, presents a performance of a great teacher, in a cogent well-prepared discourse. Professor Frank Baxter's course on Shakespeare, from the University of Southern California, shows the same kind of careful preparation for an entirely extemporaneous telecourse, enjoying a local popularity comparable to Bishop Sheen's national audience. The Baxter courses are now kinescoped and are available at the National Television and Radio Center at Ann Arbor.

Planning Programs

Educational television possesses, however, great advantages over other workers in the TV vineyard. As Professor Richard R. Willey and F. J. Van Bortel point out,[1] "Television of any type swallows scripts, ideas, production facilities, and talent at a staggering rate. Fortunately, the educational and cultural centers of the country are in immediate possession of the only endless supply of raw materials for television programming, namely the arts and sciences of our civilization. These centers possess virtually infinite numbers of ideas for effective programming, if it is once recognized that the viewing audience of average Americans is, by nature, inquisitive about the world and the society in which they live. This assumption is supported by the public response to experimental educational programs that have been presented already."

The same authors have drawn up a "theoretical" framework for educational programming that deserves treatment here. Such a framework, they say, should:

1. Provide a quick and efficient system of classifying program materials.
2. Make it possible to specify the character and quality of materials needed to balance an existing program schedule.
3. Provide stimuli for the creation of new and original programming ideas.
4. Facilitate program evaluation by clearly established dimensions of program presentation in the terms of the objectives of the station. This is to say, it should provide a means *whereby audience response can be measured and evaluated in the same terms, as those employed in the concept of the program.*

[1] Willey, Richard R., *and* Van Bortel, F. J., A Conceptual Framework for Programming Educational Television. *A-V Communication Review*, Fall 1953.

The Meaning Behind the Program

Thus, as psychologists point out, a great deal of thinking must be put into programming far in advance of actual production. The effect of television on the mass audience for special events cannot be discounted. The World's Series, the Inauguration of the President, the election of a Pope, the Coronation of a Queen, the Congressional hearings are important matters of public interest; the elections, the revolution in Hungary, the discovery of a cure for polio, the reports on world-shaking events, all possess another side — *meaning*. The *meaning and understanding* of the significance of these events call for expertness of scholarship present on the faculties of American colleges and universities. Thus educational television can and will supply intimate interviews as NBC has done so well in Edward Stanley's visits to homes of great poets, philosophers, and artists, including Robert Frost, Carl Sandburg, Bertrand Russell, Frank Lloyd Wright, and Jacques Maritain, and in the lighter versions of "Person to Person" interviews with Edward R. Murrow. This all points to programs, originating at educational stations, of a vast number of the world's most interesting personalities, well-known on the campuses of America, many of whom are like "lights hiding under a bushel," so far as the general public is now concerned.

Charting the Program Structure

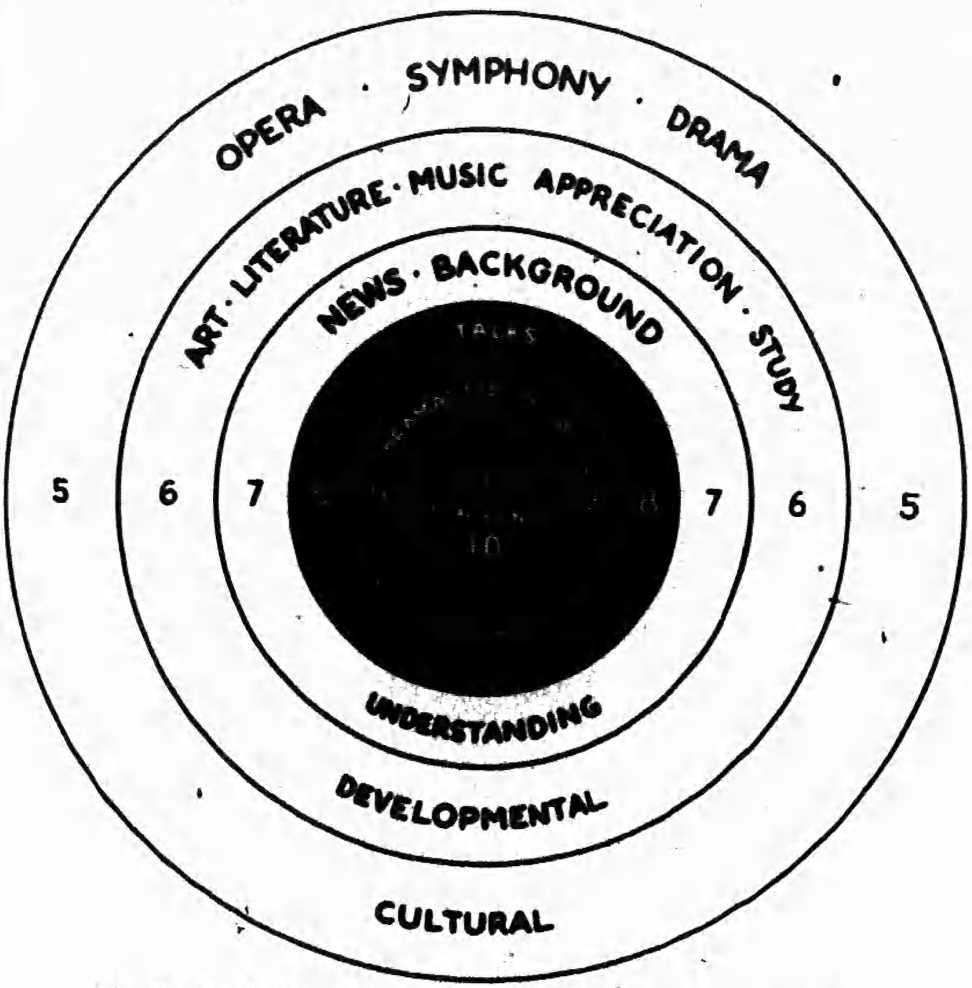
In a chart of programs that was made for the American Council on Education there were outlined 10 types of programs suggested for educational stations.[2]

The first four types do not appear on the chart, for they are the traditional and expected programs we shall continue to receive over standard commercial broadcasting stations, produced without particular help of educational institutions. They include: (1) Entertainment features; (2) news — newscasts, comment, and discussion; (3) Sports; and (4) Special events of every character.

Let us begin with No. 5, *Cultural*, which looks especially interesting to us. It includes programs of great cultural value — operas like Amahl, produced each year by NBC; Gianini Schicchi by Puccini, produced also by NBC; symphony orchestras like The Boston Symphony and the New York Philharmonic; drama like Studio One, U. S. Steel Hour, Lux, Kraft, Hallmark, CBS Workshop, and many other fine, cultural and entertaining features.

[2] Dunham, Franklin, Obligations of an Educational Television Station. *Educational Record*, October 1952.

No. 6 — *Developmental* (for want of a better word), covers programs like Heritage, done by the National Art Gallery and NBC, presenting the great art works of the world, utilizing that marvelous photographic element in television to take us places and to see things. It includes *Literature*, as the reviews of current books and the views of authors on their own and other work, and *Music Appreciation*, as in the explanations of the values achieved through trained listening and viewing through supplemental visual aids and the reading of scores. No. 7, *News*: We ask not just its presentation but background material to understand it, presented by authorities who do understand it, and high level discussion programs, with more light and less heat. No. 8, *Talks* (and now we enter the black portion of the pistol chart). Talks in the manner of the BBC, in many subject-matter fields to cover a wide variety of special interests, may all be based upon our college curricula,



Educational Television program chart showing typical areas of interest.

KETA-TV, University of Oklahoma
Italian-born faculty member gives recital in music appreciation series.

or in courses of our scientific institutions. No. 9, *Dramatized Research:* This is to be found in countless industrial and engineering enterprises, in many fields contiguous to human needs, like child welfare, health, recreation, housing, food, and all the elements of living. And, particularly is it to be found in our university and college research laboratories and our extensive research institutions, bringing the fruits of study and invention to bear on the welfare of humankind, for example: The Johns Hopkins Science Review. No. 10, *Direct Teaching:* Not only can we have the extension of teaching to millions heretofore unable by circumstance to conveniently receive it, but we can bring illumination to the mind by the audio and visual faculties possessed in television when harnessed to the learning process in the classrooms of the Nation.

To all this must be added reference books, written and graphically illustrated notes, proper tests for achievement, and when justified, credit toward advancement in the fields of study and accomplishment.

No. 8 (Talks), No. 9 (Dramatized Research), and 10 (Direct Teaching) seem to fall directly within the obligation and the resources of an educational institution. No. 5 (Cultural programs),

No. 6 (Developmental), and No. 7 (News), particularly background material for understanding it, may be said to be in the mid-area. Often, such programs could be done equally well by both standard commercial and by educational stations.

In the outer area (1–4) entertainment, newscasts, comment and discussion, sports and special events we continue to look for major service from the standard, commercial television stations, though even here, noncommercial television educational stations render great service and, more frequently, are the direct source of fresh new ideas and techniques in cooperatingly rendering such a service to the people of our country. All this should not relieve the standard commercial station of any of its public responsibility either. At the same time, there seems to be no reason why any educational station should be *limited* in the kind of programs it can present. The illustrations given here in the bull's-eye chart are simply suggestions for a concept of a station, broadcasting for education "in the public interest, convenience, and necessity."[3]

Characteristics of Television

A look at the inherent characteristics of the medium of television tells us that it possesses: (1) The value of immediacy; (2) low per capita cost of audience coverage; (3) advantage of a front seat at demonstrations or at any event; (4) ease and economy of film reproduction; (5) ability to induce mental participation; (6) photographic extension of the visual sense; (7) the virtue of intimate contact with the minds, methods, and personality of the most competent living teachers; (8) the advantage of using *one* set of apparatus in a laboratory, thus saving duplication of materials; (9) close relation to texts, following meticulously courses of study already available in schools or obtainable for home use, and (10) the power of a visual blackboard where maps, symbols, models, or moving objects may be displayed with aural illustrated exposition for identification.

When the nature of television is completely and fully sensed, its normal application to teaching will be established. Dr. Henry Chauncey, president of the Educational Testing Service at Princeton, N. J., believes that television, properly used, may easily affect teaching procedures, particularly in the elementary grades.[4] Dr. Chauncey calls attention to the need for research in the applying of television to the classroom, pointing out a parallel that exists

[3] Federal Communications Act, 1936.

[4] Annual Report—Educational Testing Bureau, Princeton, N. J., 1953.

between approaches made in the past few years in the effectiveness of advertising. These involve similar principles of apprehension, impact of negative or positive appeals, differential effects of various means of approach to individuals of varied intelligence, and comparative values of visually-presented outlines and formats.

"Education," says Dr. Chauncey, "requires information concerning problems of an analogous sort but within a most significant frame of reference." Studies are required to discover the optimum number of ideas to be presented in varied lengths of time and the optimum duration of TV in presenting different kinds of topics, to assess the value of different types of discussion materials and to measure the impact of impressions, presented by sight, by sound alone, and by sight and sound together. Ultimately, through careful research studies, the basic principles by which these important decisions are determined will be documented to the extent that they prove valid. When such research is accomplished, the results will affect the entire field of teaching.

WTTW, Chicago

Explaining requirements for credit course in junior college English.

Pretesting Programs

Another procedure to be recommended to educational station managements is one learned from experienced directors, that of previewing programs. The superficial tests frequently given programs by motion-picture or even television producers, in discovering whether they "click" or not, is not sufficient for the educator, but the device of pretesting for results in the acquiring or retention of knowledge is no less valuable because of its conventional use under the proper motive.[1] The United States Navy conducted a series of tests and measurements on the comparative effectiveness of instruction by television, television recordings and conventional classroom procedures as well as a study in learning and retention by television which no one entering the field of television programming or teaching should miss. These studies not only show the inherent values of television as a teaching medium but point out characteristics of TV teaching methods which have wide application to the reception of programs by the general audience.

The program schedules of educational stations must take into consideration many problems of audience appeal that may be applied not only to program types but to placement of the program into the time schedule of its viewers. The British Broadcasting Corp., having no competition from any other British broadcaster for many years, has had the advantage during the years of scheduling its radio programs to fit the habits and convenience of its listeners. Viewers of BBC telecasts now, get like treatment. Duple-programming, a practice of American Broadcasters in competition for the same eye and ear, constantly give the audience the choice between two or more comedians, two or more variety shows, two or more coverages of great public events, two or more commentators. Since no one can easily view both programs at the same time, the audience frequently shifts from one station to another thus getting a confused, even if varied, impression of the whole. Educational television, presenting one educational program in a community or coverage area, gives no educational choice but, at least, makes it possible for the viewer to choose between straight entertainment and something of educational value. What these programs of "educational value" shall be depends upon the educational station management.

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[1] Training by Television. SDC Report, 476-02-03, Special Devices Center, U. S. Navy, Port Washington, N. Y. (Available at Office of Education, Washington 25, D. C.)

Alabama State network

FARM FACTS, a program directed from Alabama Polytechnic Institute to farmers throughout the State.

Program Types

The following program types to fit different audiences are offered:

1. Programs to supplement schoolwork
2. Programs to help youth adjust to the adult life of the community
3. Continuation courses for out-of-school youth (Examples — San Diego, Chicago, Pittsburgh)
4. Programs for shut-ins, physically handicapped, and the aged
5. Program of community information, "how-to-do-its," and cultural needs
6. Programs in formal adult education
7. Programs for occupational and vocational groups
8. Programs for vocational rehabilitation
9. Programs in psychiatric therapy
10. Parent education programs, including selection of children's programs (for 3- to 8-year-olds) appealing to the curiosity and imagination of the child, as for exam-

ple, Walt Disney's "Disneyland," and others (for 9- to 14-year-olds) appealing to the pre-adolescent and adolescent youth's sense of adventure, devotion to duty, and accomplishment, as "Lassie."

11. *Youth programs* (for 15- to 18-years-olds) for adequate preparation for life and citizenship

These audiences may be reached through the following types of format (applying equally to any or all audience types) :

1. *Demonstrations* (How-to-do-its)
2. *Eyewitness accounts* of actual events in progress (surgery or similar programs)
3. *Talks* (visually illustrated exposition)
4. *Picture animations*
5. *The spectacle or pageant* (viewer identification)
6. *Great public events*
7. *Sports and athletic events* (college, high school, and intramural athletic contests)
8. *Stage dramatizations* (Little Theatre companies, university dramatics, high school amateur productions)

KUON-TV, University of Nebraska

CUBISM explained by University art director with selected paintings from the University's gallery.

9. *Audience participation programs* (aimed at stimulating viewers identification with the action of a discussion, debate, or forum-type program).
10. *Telecourses* (complete sequential courses for credit for college bachelor's degree or advanced degrees for professional accomplishment)

Conclusions

In the preceding text, an effort has been made to point up some of the opportunities that are available on noncommercial educational stations to provide a *different* program fare for the American public from that which is otherwise available. It seems futile to disregard the experience and advice already made available so generously by standard commercial station managements to the educational broadcasters of this country. Many educational station managements now include men and women, trained by standard commercial stations, and many more such stations will be staffed by people of like experience. The educational television station is under obligation to use the best experience of the television profession in presenting its programs and to keep high its standards of preparation and production. Both types of service to the American viewing and listening public increase the rich heritage of both the grown-ups and the children of America.

Part III. The Enrichment Program for Schools

THE EDUCATIONAL television program must be seen in its relation to teaching as a whole, and to the learning process as a whole. Until this relationship is understood, one cannot be expected to make intelligent and fruitful use of the medium which offers so much help in the daily work of a teacher. Above all, one must realize that television is only one of a wide range of promising tools designed to improve teaching. When properly used it offers great opportunities for improving learning. The ability of a program to communicate ideas, concepts and principles, to create appreciations, and to stimulate pupil investigation, are the measures by which the program's contribution to the learning process are determined.

Programs As Aids to Learning

This is not to say that a program must be dull if the purpose mainly is to enlighten. Unfortunately for too long a time there existed the notion that any effort to give real professional standing to a program dealing with cultural and educational subjects had to be solemn; that there was something deceitful about anyone who tried to stimulate an emotional reaction in a program with intellectual content. A decade or more of experience in television programming by educators, as well as by commercial broadcasters, has demonstrated times without number that professional standing can be achieved without sacrificing the cultural and educational values to the viewer.

The extent to which those values are transmitted to the student depends, of course, upon the skill, imagination and flexibility of the teacher in properly utilizing a program as an effective teaching tool, whether it be for curriculum enrichment, or for extended education at the adult level.

WKAR-TV, Michigan State University

The East brought to the West by native Japanese students presenting their country's folklore and customs.

New Demands Placed Upon the Teacher

Quite different demands are placed upon the teacher who appears before her class by means of television. While she must never for a moment surrender her primary objective to be the best possible teacher, she must also be familiar with the characteristics of the medium — its limitations as well as its possibilities, and able to make certain adjustments in her method of presentation. She soon discovers that an element of showmanship is highly desirable, but the talent of teaching is a different talent from that of acting. True, there is something of the actor in most good teachers, but their methods are basically different.

The teacher's is not primarily an emotional appeal. Teachers are bent upon eliciting intellectual as well as emotional reactions. Emotion is an important element in education just as it is in living, but the appeal in the classroom is not a climactic one and requires a talent for sustaining quiet interest and reflection. Like actors, teachers depend upon identification on the part of the students, but in education this identification is a matter of "start-

ing where the pupil is." For this reason, actors cannot be given lines on television and have them pass for teaching.

Uncovering the superior or gifted teacher who can bring the classroom or its equivalent alive on television is not an easy task, for television requires good teachers with a peculiar combination of talents, if their television lessons are to be projected effectively through the camera. (The role of the television teacher is covered in greater detail in another chapter of this publication.)

It is the purpose of this chapter to deal with various types of programs and to suggest their usefulness in the teaching of subject matter. Frequent changes and adjustments of program offerings preclude the advisability of referring here to programs as if they were presently on the air. Some of those mentioned were locally produced, with resulting viewing limitations, while still others are network "perennials" which may conceivably continue on the air for the lifetime of this publication. Emphasis here is rather on illustrative program suggestions which may: (1) Arouse sufficient interest and curiosity to investigate *all* current offerings, including those programs which may have far greater popularity among students than among their teachers; (2) cultivate more consistent viewing habits, looking to the discovery of programs having educational adaptability; (3) enable students to add something to a store of understandings, as well as to become more discriminating in their program tastes.

Having gained a familiarity with the medium, the English, science, or social studies teacher wisely turns the programs of her choice into a most effective teaching ally. She finds it challenging to think of the distance which this new force can penetrate into the hinterland.

Experience tends to show that some subjects lend themselves more favorably to television treatment than do others. Classroom favorites include the arts — the graphic arts as well as drama and the dance, health, history, languages, literature, science, and social studies, including geography. Other innovations have been introduced with moderate success, but with less regularity.

Detailed analyses of the results of some of these experiences are being made intermittently by research specialists, but many of the perplexing problems now in a state of flux cannot be answered until there is available a sizeable body of professional literature which will include reports on studies made in depth in order to determine common objectives of television programs for education, and methods of measuring success or failure to meet those objectives.

Meanwhile, the teacher, with even limited experience and skill in selecting programs for classroom adaptability, knows that a program must be authoritative and sufficiently substantive if it is to bring real meaning to a particular subject, and that the vocabularly must be within the comprehension of her students' age level. Correct pacing is still another factor to be considered

WGBH-TV, Boston

Boston Museum treasures brought to TV audience through "Open House" with curator guiding camera "on location."

in judging the efficacy of an artistic and thoughtful presentation. Except for those communities where educational television stations are in operation, or in the relatively few communities where in-school programs are presented over commercial stations, the classroom teacher is not apt to have easy access to programs throughout the school day. She must rather assign programs for out-of-school viewing which she and her students can discuss at the next meeting of the class. Actually, the teacher who may be in the favorable position of receiving programs during school hours should not overlook the rich resources to be found in many of the network programs that are presented during evening and weekend periods.

Correlating Programs to Classroom Use

The English teacher, for example, will discover a treasure house of programs that are appropriate for assigned viewing and later discussion. She will find in many instances that present-day producers no longer are dedicated to the practice followed by radio program producers and the earlier television producers who insisted that a program must be limited to 15 minutes, 30 minutes, or occasionally to 60 minutes in length. These arbitrary time limits now have given way — if and when the subject requires it — to 90-minute schedules, or — as in the case of "Richard III" to a full 3-hour performance.

Evening and weekend viewing usually includes a number of excellent television dramas having an enormous potential for teaching literature. They may offer a student his first opportunity to be a "first nighter," for television has destroyed the dramatic hinterland. First-rate performances of "Hamlet," "Macbeth," "The Taming of the Shrew," "Romeo and Juliet," "Cyrano de Bergerac," "The Barretts of Wimpole Street," "Man and Superman," "The Devil's Disciple," "Moby Dick," and many others, have offered rich resources for study. One teacher is quoted as having said, "I shall never forget the difference that Maurice Evans made in my teaching of 'Macbeth' to my high school seniors. The year before the telecast, I had to spend considerable time trying to indicate simply what happened; the Evans production enabled me to proceed at once to a discussion of the play as a work of art."

Teacher response to what might be termed "educational spectaculars" has revealed an enthusiastic awareness of their potential as teaching tools, and in a few instances has led to printed study guides for such performances as "Richard III," Shaw's "Man and Superman," and others. The less experienced teacher finds these printed guides extremely helpful in any attempt to deepen her students' appreciation of Shakespeare. In the case of the 3-hour filmed version of "Richard III," the guide was based on a preview of the film which, of course, is not possible in the case of most live television dramas.

Equally useful, however, is the *Teleguide* which is featured frequently in *Scholastic Teacher* [1] and which heralds, well in advance, a significant program summary with pertinent suggestions and study questions. The one which preceded the memorable 90-minute performance of "Behind the Looking Glass," was based

[1] Published weekly, Sept.-June. Scholastic Publishing Co., 23 W. Forty-second St., New York 36, N. Y.

on an interview with the people behind television's *Alice in Wonderland*, and provided intimate details not only about the star performer, Eva LaGalliene, one of the most outstanding actresses in both England and the United States, but graphic descriptions of some of the intricate production techniques that were being employed to insure an accurate adaptation of Lewis Carroll's book.

In addition to television performances of the classics, the English teacher and her students find the medium brings them frequent and easy access to contemporary contributors to America's cultural heritage. Through television the viewer is learning the names and works of present-day dramatist such as Paddy Chayefsky, Reginald Rose, Ted Mosel, Horton Foote, Gore Vidal, and others. Program series such as "Studio One," "Project 20," "Producer's Showcase," and "Playhouse 90" have provided vehicles for creative and experimental programming innovations on television.

Television also has made it possible for viewers to see and hear some of our great men of the age as they talked quietly and informally in almost astonishing intimacy. Throughout their lives comparatively few human beings have looked on the faces and heard the voices of such truly great men as Robert Frost, Frank Lloyd Wright, or Carl Sandburg, until they saw them in intimate conversations on television.

Enrichment Programs

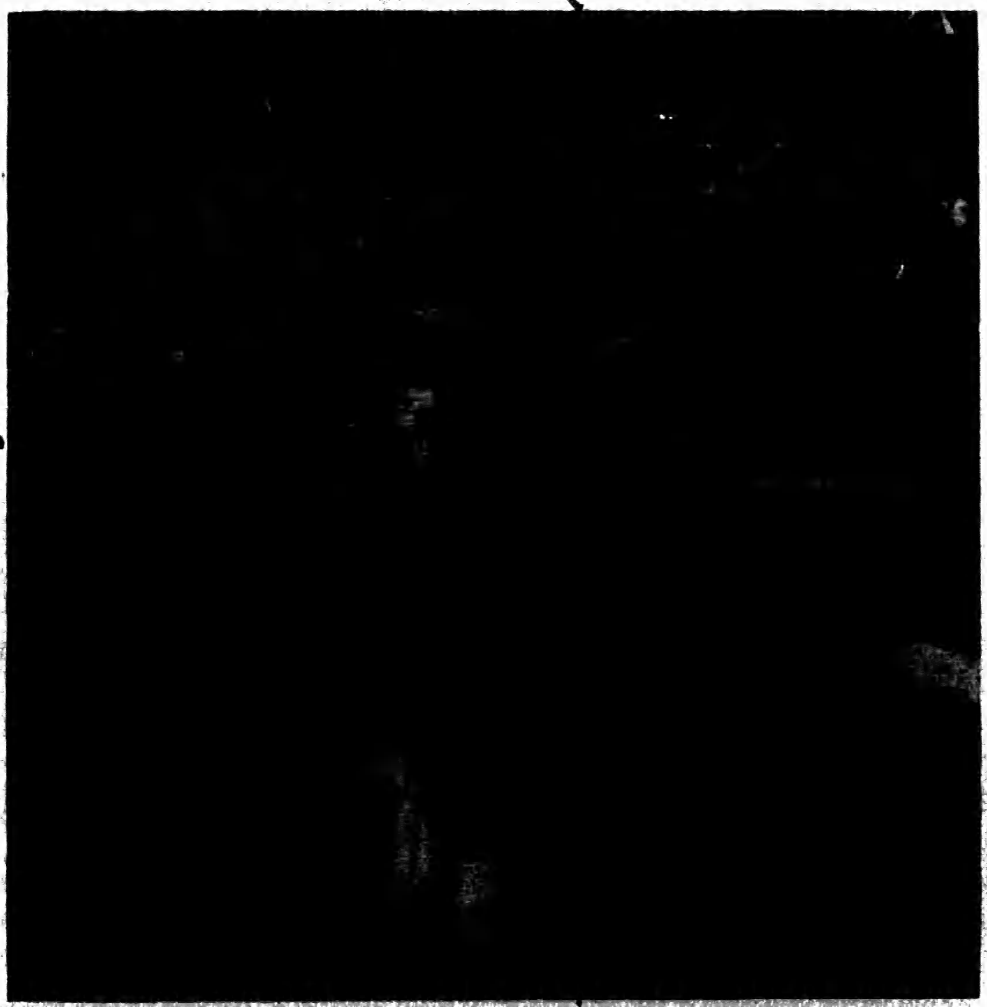
A review of both locally produced enrichment programs as well as those being distributed by the Educational Television and Radio Center, at Ann Arbor, Mich., shows English literature and drama to be a consistent choice. Dr. Frank C. Baxter, professor of English literature at the University of Southern California, became a television "star" in a few short months through his delightful and thoroughly meaningful presentations of "Shakespeare on TV." His programs are now released regularly for showing throughout the Nation over educational channels, and — under the prescribed conditions — over commercial channels where no educational channel has been allocated.

Of the 12 programs presented weekly over commercial stations by the Philadelphia public schools, a particularly notable one which is offered on Saturday at 11 a.m., is titled "Poetry for You" — designed to increase enjoyment and appreciation of poetry, not only by the child in class but by the entire family. Likewise

during out-of-school hours, a new "Color Recital" presents on Saturday afternoons a variety of local semiprofessional performers in presentations in color of drama, opera, and ballet. And on Wednesday evening, a program in "Practical English" deals mainly with English usage, pronunciation, use of the dictionary, etc., which makes for enjoyable and profitable viewing by the entire family.

Similar success with experimental programming on television may be found in the records of school systems in such large cities as Baltimore, Chicago, Detroit, New York, Minneapolis, St. Paul, Des Moines, Los Angeles, San Diego, Atlanta, and others.

While the tendency may seem to stress the importance of above-mentioned programs as tools of learning for the teacher of literature, the wise and discerning teacher of social studies will find



OMNIBUS—Introduction to modern music for Sunday audience in series by famous American composer.

many of them equally adaptable in studies of group relatic minority problems, and individual orientation.

The social studies teacher, as well as the English teach be alert to selected sequences in such programs as "Om which, as the title implies, includes a broad selection of from fine drama; to a musical version of "The Advent Tom Sawyer;" to a history of American musical comedy famous conductor-composer, Leonard Bernstein in a re demonstration of American ballet by Agnes de Mille; and subject of bullfighting as revealed in the story of Manol worlds' greatest toreador — to name but a few of the high

"Wide, Wide World" offers a myriad of people, plac things of interest to the young and the not-so-young, as t eras show what is going on exactly at the time it is hap whether it be on the cable car in San Francisco, the C Caverns, a huge manufacturing plant, or in a friendly int with Grandma Moses in her studio.

"Camera Three" has been one of television's most pro cultural experiments over a 3-year period, offering as it continuing study of man in terms of his relationship to and to the world about him. Sometimes referred to as " of the imagination" the producer tries, in "Camera Thr orchestrate the arts, using narrative, poetry, music, dan visual arts in such a way as to enrich each single art form.

The many innovations in Edward R. Murrow's "See It series offer unlimited opportunities for enrichment of the studies. One of the most appealing in the 1956 series was minute presentation of the "The Secret Life of Danny K which the famed comedian appeared as Ambassador-at-La the United Children's Fund. Joking, singing, dancing, he tr 50,000 miles into 11 countries to bring to his viewers t stories of ill, undernourished, ragged children in variou of the world. To aid teachers to prepare their classes f program, the National Education Association, in cooperatio the Columbia Broadcasting System, prepared a special dis guide, which was announced as the first in a series of NE pared guides designed to relate significant topics in the Now" series to the elementary and secondary school curricu

Other programs of interest to the social studies teach the weekly "Meet the Press" and "Face the Nation," togeth the penetrating analyses of the news presented almost d such commentators as Eric Sevareid, Edward R. Murrow Daly, and Quincy Howe.

One of television's most unique and impressive series for enrichment use was "Odyssey," launched in the fall of 1956, over CBS after more than 2 years of preparation. The hour-long programs are based on the epic story of man's greatest adventures in his dramatic journey from prehistoric caves to the frontiers of space. The series presents a tremendous range of subject matter using live and remote originations, studio originations, employing new and exciting production methods, new film shot specially for "Odyssey," much of which has never been seen by the public, dramatization, underwater television cameras, and many other unusual production techniques.

Network Cooperation With Educational Stations

Perhaps one of the most dramatic milestones in the history of educational television programming came with the launching of the Educational Television Project, a cooperative effort of the National Broadcasting Co. and the Educational Television and Radio Center, at Ann Arbor, Mich. In March 1957 the project introduced five new program series which were transmitted daily from 6:30 to 7 p.m. over the regular NBC network facilities to existing educational television stations. The five subjects covered in the Monday through Friday programs include mathematics, American government, world geography, music, and American literature. Each subject is presented under the direction of a recognized scholar, with guest appearances of equally distinguished men from their particular fields.

The mathematics series is conducted by James R. Newman, editor of "The World of Mathematics." The series on American government is conducted by Dr. Elmer E. Schattschneider, professor of government at Wesleyan University and president of the American Political Science Association. Albert E. Burke, director of the American Institute of Resource Economics, Hartford, Conn., and director of graduate studies of the conservation program at Yale University, is conductor of the series on world geography. The music series opened with "Highlights of Opera History" under the direction of Dr. Paul Henry Lang, Columbia University professor of musicology, while the American literature series was presented by Dr. Albert D. Van Nostrand, associate professor of English at Brown University.

The Educational Television and Radio Center supplies the local loops to connect the educational stations with the NBC network lines. To further extend reception of these programs, efforts are

being made to have them carried over local NBC commercial outlets in areas where an educational stations is not on the air.

Television and Books

"Television helps reading. Despite criticism to the contrary, there is ample evidence that television programs are a natural springboard to increased children's reading. According to a children's librarian in Houston, Tex., "Children ask for 'Twenty Thousand Leagues Under the Sea' because they saw it on television's 'Disneyland.' Or they wanted all the books available on Davy Crockett for the same reason." Probably not even Walt Disney would have predicted that his Davy Crockett programs on television would have sent millions of children to the library or the bookstore. Yet literally millions of youthful television fans in coonskin caps went forth to find books which they could read about their newfound hero. Library shelves were swept bare of everything labelled Davy Crockett. And ingenious teachers directed this unprecedented enthusiasm to many other books and stories about pioneer life and frontier history. When "Miss Frances" mentioned a book on "Ding Dong School," both adults and children flooded the libraries and bookstores with requests for it.

Similar stories of curiosity and motivation were detected as a result of the program series, "Televenture Tales," which originated over Station KING-TV in Seattle, Wash., and which is now available for showing elsewhere on kinescopes.

The teacher who is careful to make the connection between television programs and books, finds that programs do stimulate a child's curiosity and raise questions that can best be answered by books. Those who feel that television has diminished children's interest in reading have only to examine the current figures on children's book sales to learn that they have doubled in the past 8 years.

Typical of other programs that are apt to send children to a variety of good books is "Let's Take A Trip." One program where a baby alligator and a crocodile were shown, sent children to an encyclopedia to look up differences. Interest in animal stories has been given great impetus through such network programs as "My Friend Flicka," "Lassie," and "Zoo Parade."

One of the first experiments in a local reading program to attract nationwide attention was the "Streamlined Reading" series originated by the educational Station WKNO, Memphis,

Tenn. Carefully designed to assist the nonreader, in Memphis and other Midsouth communities, the first series drew enrollment of 762 adults. A second series followed for those completing the first course, while the first course was repeated for beginners with equal success.

As in the case of English literature programs, records reveal any number of locally-produced school programs which are designed to increase interest in reading or to assist in improving reading skills.

Television and Science

Television helps science teaching. Of all available media, television is the appropriate one for satisfying widespread public demand for science data. Today, by way of television, millions of people, both in and outside the classroom, may simultaneously look over the shoulder of the scientist as he demonstrates and describes scientific principles. Millions may view with the scientist, through his microscope, once obscure or unknown facts about our world. In a few television minutes, the scientist is often able to give a more complete understanding of a new discovery than could be gained in many hours of untutored reading and study.

Classroom teachers will recall one of the earliest television successes in the field of science was the "Johns Hopkins Science Review" in which Director Lynn Poole, of Johns Hopkins University, was among the first to use the medium effectively for the promulgation of scientific knowledge. Later efforts have presented "Mr. Wizard" in weekly science demonstrations, primarily for upper elementary and junior high school students. Donald Herbert, the "star" in the role of "Mr. Wizard" is himself a teacher, which may explain his feeling that young scientists are made early in life by giving them a chance to find the rewards that come from disciplined curiosity.

The first in a new series titled "Science on TV" might be termed a "science spectacular." Presented in November 1956 under the title "Our Mr. Sun," the first program was designed to answer perplexing questions about astronomy and isotopes. The second, "Hemo, the Magnificent," presented the story of blood. Programs are spaced at some distance apart and it remains for the teacher to watch for subsequent offerings if she is to include them in classroom discussions.

The series, "Air Power," which was 2 years in preparation, with the cooperation of the U. S. Air Force, traces the development

of flight and its impact on 20th century man. It covers the subject from the invention of the airplane to supersonic planes and missiles, and moves on into a glimpse of rockets and the future of aviation, and should be a great boon to the classroom teacher of science. Segments of earlier-mentioned programs, such as "Wide, Wide World," "Let's Take a Trip," "Odyssey," and many others contain a variety of sequences of particular interest in the study of science.

Science is a subject frequently reported by producers of school programs in local communities over both educational and commercial outlets. Programs prepared to fit the local curriculums are offered in general science and in natural science. Still further recognition of the subject and its adaptability to television is to be found in the program fare of the Educational Television and Radio Center at Ann Arbor, Mich.

A recent release of a nature study series entitled "Discovery" is attracting nationwide attention mainly because of the effective presentations of the teacher, Mrs. Mary Lela Grimes. While it originated as a local program offering over Station WGBH, the educational television station in Boston, it was later recognized as one having wide application in other communities. It is presently being distributed nationally through the Educational Television and Radio Center.

Other releases in the field of science being distributed by the center are "Almanac," which originated over Station KETC, St. Louis, Mo., in cooperation with the Missouri Conservation Commission, and which features the noted photographer and wildlife authority, Charles W. Schwartz, in a series about the world out-of-doors. A series titled "The Atom" features Dr. Edward Teller, sometimes considered the "Father of the Hydrogen Bomb" in explanations for the nonscientist of what is known about the nature and structure of the atom. "Frontiers of the Sea" presents the resources of the Marine Laboratory — the only subtropical marine laboratory in continental United States — in an effort to show how marine research benefits mankind from an economic standpoint. Another timely scientific series deals with the fundamentals of rocketry and man's efforts to harness this source of power, from earliest attempts at jet propulsion to earth satellites.

Program logs from local communities show science to be among the half dozen subjects to be included in most local school productions for classroom enrichment.

Television and Languages

Modern languages on television have been attempted with varying degrees of success in a number of areas. No attempt has been made to present language teaching on a national or network level, but records show that elementary French lessons are being pre-

Alabama State network

University studio at Tuscaloosa sends high school French course to schools of entire State.

sented to supplement classroom instruction as a part of the Mohawk-Hudson Television Council's "TV Schooltime" on commercial Station WRGB in the Schenectady, N. Y., area, over the educational Station WQED, in Pittsburgh, Pa., and over the educational Station WBIQ in Birmingham. This last-named station also features similar instruction in Spanish for high school students and adults, as well as for the elementary grades. The educational Station WGBH in Boston likewise presents biweekly instruction via television in Spanish and in French. Station KRMA-TV, the educational station in Denver, reports a highly successful series titled "Poco a Poco" for the schools within viewing range, and it is expected that it will be carried on a continuing basis, to be supplemented eventually by a similar series in French.

Experience has shown that supplementing the teaching of modern languages by way of television can do much to sustain interest on the part of the child learner. It can likewise serve the dual purpose, where needed, of providing an excellent vehicle for in-service teacher stimulation. The need for more such programs is recognized and it is to be hoped that they will increase in number and effectiveness as skill and production "know-how" are acquired more generally throughout the country.

Television for the Very Young

No analysis of programs would be complete without reference to programs for the very young. There is, perhaps, no topic in the entire gamut of program fare that can be more controversial than children's programs. Radio programs were the concern of parents and others a quarter of a century ago, and today many of the same criticisms are now being levelled at television. Disagreement begins with efforts to define children's programs, for the children themselves in the early days of radio demonstrated ability to understand and to enjoy what were normally thought of as adult programs.

A few isolated attempts have been made by the national networks to provide carefully planned programs for the preschool child. The advent of "Ding Dong School" did much to create an awareness of the value to children and their parents of programs based on understanding the child's mind and his needs. "Captain Kangaroo" has had an almost equally enviable record in exposing millions of young children to wholesome and worthwhile programs of fun and enlightenment. Walt Disney has done much to bring a land of fantasy and enchantment into the lives of young girls and boys through his filmed versions of "Mickey Mouse" and "Disneyland," but again, his efforts fill only a small portion of the child's needs. With few exceptions, the tendency appears to be to leave it to the discretion of local stations to fill the late afternoon and early evening hours with filmed westerns and cartoons.

Partial solution of the problem seems to rest with local producers where encouraging signs are beginning to evolve. Local artists, with a concern for children, are presenting programs successfully. Some of the more experienced ones have, and will continue, to capture the attention of program consultants at the Educational Television and Radio Center to be added to the following already catalogued releases:

Programs such as "Mr. Murgle's Musee," presenting two friendly marionettes as they weave worthwhile information into story plots and puppet antics; "Tempest in a Test Tube," designed to answer the child's questions of "how and why," as his curiosity in and about his particular world is being fanned; "Friendly Giant," in which the kindly giant who tells happy stories about fairies, animals, books and many other things of child interest after he lowers the drawbridge to his castle and invites the very young viewers to be his guests each evening just before bedtime; "Magic Doorways," which features tales about clowns and birthday parties, sunflowers, princesses, shadows, and an imaginary kingdom of Pindilly; "Buckskin Bob" and his sister Annie, who take youngsters on explorations of the world of the past, with a magic time machine — a history book.

For the music lover there is the series called "Music for Young People," designed to develop greater appreciation of good music in the 9- and 10-year-old viewer. Still others are "Children's Corner" and "The Finder," both available at the Center.

In total, all this adds up to a fairly creditable record, and the future looks even more encouraging, as ways and means are provided to extend the showing of programs such as these over increasing numbers of local stations, commercial as well as educational.

Basic to any intelligent use of television by schools is reliable advance information, sufficiently detailed to inform a teacher concerning the nature of a program — the subject covered and, preferably, some idea as to appropriate age levels. Easy access to this advance knowledge has long been a problem for the classroom teacher. Her daily newspapers carry little more than a mere listing of program titles. Many times a series may be well under way before a teacher has discovered that it has genuine substance for enriching the curriculum.

How to Find Needed Programs

One of the most consistently useful sources of program information is to be found in the weekly feature, *Listenables and Lookables*, published in *Scholastic Teacher*. Listed programs are carefully selected in terms of their possible usefulness in teaching situations, and the annotated descriptions are sufficient to be able to readily recognize those which best suit her purposes. Two of the commercial networks issue advance schedules of programs containing informative details and they are available on request.

The *NBC Television Network Advance Schedule*, a mimeographed document, covers a 2-week period. Requests to be added to the mailing list should be directed to: NBC Television News, Press Department, National Broadcasting Co., 30 Rockefeller Plaza, New York 20, N. Y.

The *CBS Television Program Guide* is released quarterly and contains interesting facts about public affairs, news, and other informational and cultural programs. Attention is directed to special one-time programs as well as to routine schedules under the various categories. Requests to receive copies should be directed to: The CBS Reference Department, Columbia Broadcasting System, 485 Madison Avenue, New York, N. Y.

In addition to program indexes such as these, teachers should not overlook the penetrating program critiques which appear as syndicated columns in periodicals in one or more newspapers in many of our metropolitan cities. Program analyses by Jack Gould, of the *New York Times*, John Crosby, of the *New York Herald Tribune*, and Robert Louis Shayon, Goodman Ace, and Gilbert Seldes, in the *Saturday Review* offer valuable suggestions for determining the success or failure of a given author, producer, and a cast to turn in effective television performances.

If the teacher's second responsibility as an instructor is to help to develop appreciation for "better" programs, she begins, as was stated earlier, where she finds the learner, watching and studying the programs he likes as well as those she thinks he ought to like. She must be familiar with what she criticizes so that her criticisms are valid. As she expresses her personal reactions to programs, she does not present them as definite standards of what is good and what is not good, but rather as a point of view which is different from that of others, perhaps, but as worthy of consideration.

Actually, what the problem reduces itself to is simply the question of developing taste in the uses of the medium, just as one tries to foster taste in the choices of books to read. To use Edgar Dale's shrewd phrase, "Good taste comes from tasting good things." Once this taste has been sufficiently cultivated, it becomes easier to identify mediocrity and to show a preference for programs of genuine merit.

Part IV. How a Community Can Plan for Educational Television

THERE has been a tendency on the part of schools and colleges not having the advantage of television of their own to look with envy upon the 83 communities in which the Federal Communications Commission has granted a locally-usable television broadcast frequency for educational use. For the most part, these communities are duly appreciative of the opportunities thus afforded them to develop their own respective educational television broadcast stations and most of them frankly recognize the prestige advantage to be anticipated from doing so. In fact, as shown in Part 1, a substantial number of these communities are already engaged with the various stages of educational station development or planning. However, quite a few of the remaining ones seem to be somewhat undecided as to immediate station planning intentions.

Examining the Need for a Local Educational TV Station

In view of the almost universal faith in television's vast educational potential, it may seem a bit difficult, at first glance, to comprehend why any community fortunate enough to have a television broadcasting frequency available locally for educational station assignment should have shown the least hesitation in starting active station planning. Certainly the idea of broadcast-station ownership and operation is not new! Some of the first radio broadcast stations to begin operation were owned by colleges and universities and, since the advent of frequency modulation (FM) broadcasting, station ownership by educational institutions has become fairly commonplace.

In some instances, it is possible that the several educational institutions and organizations in a community where one of 255 educational TV broadcast frequencies now allocated may choose, deliberately, to pass up the opportunity thus afforded to develop a local educational station. It may be, for example, that informational and cultural needs of the community are already being so well served by an existing school or college-owned radio station that an educational television station would be considered unnecessary. Or, perhaps, commercial radio and TV stations serving the community may be giving schools and civic organizations all the air-time they can possibly use for educational programming. Again, it may be felt that the community already has access to a sufficient number and variety of good television programs produced by commercial brodacasters, themselves, to satisfy its needs for informational and cultural programs. Or, if the community happens to be one which affords ready access to a better than average variety of educational and cultural resources — well stocked and imaginatively administered public libraries and museums, perhaps a local symphony orchestra or opera, ample libraries of teaching films, program recordings, and the like — it may prove extremely difficult to arouse any substantial community interest in adding an educational TV station.

Admittedly, it may not be easy, under such circumstances, to justify the need for a local educational station. On the other hand, it must be borne in mind that any of these presently-reserved TV frequencies not promptly claimed for educational-station development are subject to reclassification for commercial station assignment. In other words, the community which delays overlong in deciding whether or not to make use of the educational TV frequency allocated to it, or which decides to pass up this opportunity for the time being, faces a prospect of losing the opportunity forever.

A New Concept in Educational Station Planning

Precisely who, in any community where one of these frequencies is available, should assume the responsibility for deciding whether or not to develop a local educational TV station? The local board of education? A nearby college or university? In the case of aural broadcasting (conventional AM and FM "sound" broadcasting), the educational stations were developed by individual colleges and universities, and by individual school systems. However, certain factors unique to television broadcasting

necessitate an entirely new approach to educational-station planning.

In the first place, aural-broadcast frequencies available for educational-station assignment have been plentiful enough so that almost any educational institution prepared to offer a regularly-scheduled broadcast service, designed to meet acknowledged information and cultural needs of school and home listeners of its surrounding area, could have its own noncommercial educational broadcast station. This has been especially true in the case of FM (frequency modulation) broadcasting, where allocation of a continuous band of 20 successive FM frequencies exclusively for educational-station assignment makes it possible, by assigning each frequency in as many different locations as possible, to accommodate upwards of 2,000 educational radio stations.

In the case of television, the situation is quite different. Here, no single frequency (or "operating channel") has been set aside exclusively for either educational or commercial assignment. What may be reserved for educational assignment in one locality may be designated as a commercial channel in another. In speaking of "the reservation of 256 locally-assignable television broadcast channels for noncommercial educational broadcasting", what actually is meant is that, *in each of 256 different localities, one or another of the regular T.V broadcast channels is reserved, for the time being, for educational station assignment*. In other words, in the case of FM broadcasting, enough frequencies are allocated exclusively for educational broadcasting so that, except in a very few congested metropolitan areas, practically any educational institution able to afford the cost of a station and able to qualify for a license, can have a station of its own if it likes. On the other hand, educational television stations are possible in only 256 different communities and in no instance is more than a single full-time station possible in any one of these communities.

It is fairly obvious, then, that in any one of these communities where two or more separate educational institutions want to develop educational TV stations, either the single available TV channel will have to be assigned to one of them, with the understanding that it will make a proportionate amount of the station's air-time available to each of the others, or the single available channel must be assigned to an independent cooperative entity in which each of the several individual institutions is a co-owner.

Thus, no single school system or college in any one of these communities can undertake to develop a local educational TV station alone, unless it happens to be the only educational institu-

tion in that locality and is prepared to give adequate assurances that it will endeavor to meet the informational and cultural program needs of all responsible groups and organizations of the community which might otherwise become a competing applicant for the one available educational TV channel. The same is true, likewise, with respect to deciding whether or not the community shall make use of the educational TV broadcast channel allocated for local use. No single school system or college, nor any single civic, professional, or cultural group can be presumed to hold any prior right of decision. This is a determination in which all must share.

Another factor which points to the need for a cooperative approach in evaluating the need for a local educational TV station (and, if it is decided one is needed, for developing it) is the matter of TV station construction and operating costs. In the case of educational FM broadcasting, a full-power station capable of providing service to a radius of 30 to 50 miles can be built for approximately what one single classroom in a modern, fire-resistant school building costs — anywhere from $30,000 to $50,000. A television station capable of providing comparable broadcast coverage will cost roughly 10 times this amount — between $300,000 and $500,000. Moreover, a school can start FM broadcasting with one of the special class 10-watt stations costing as little as $2,500 to $5,000 and gradually expand its facilities, as additional funds become available, until it reaches full-power operation. In the case of television, however, it is not feasible to start with appreciably less than the full allowable power. Competition is so great among commercial station applicants for every available TV broadcast frequency, that any educational station licensee who might undertake to operate with limited power or to operate only a few hours a day, is likely to find himself under fire from commercial interests of the community for failure to serve his maximum potential audience.

A similar difference exists with respect to programming and station-operating costs. In operating an educational FM station, an annual budget between $10,000 and $20,000 will probably be enough to meet the maintenance and operating costs of the average station transmitter and provide a creditable amount of "live" programming, whereas an annual budget of from $100,000 to $200,000 or more is needed for operating and programming the average educational TV station. Judged according to prevailing school budget standards, the average school system or college which must look to tax-derived public monies for all or a major

portion of its support, is likely to consider an annual expenditure of this magnitude for educational station operation prohibitive. In consequence, it has been necessary, in most of these localities, to work out some kind of cooperative arrangement by which the several school administrative units that would be served by a local TV station share both the initial cost of constructing the station and the annual expense of running it.

In most instances it is possible to develop a local educational TV station only through cooperative support by all local school administrative units, and by all civic, professional, and cultural organizations of the community, all of which share in deciding whether or not such a station is actually needed.

Evaluating the Need for a Local Educational TV Station

How, exactly, does a community where one of these TV frequencies is available for educational-station assignment go about deciding whether or not a local station is actually needed? Perhaps the best place to start will be to undertake a communitywide survey aimed at identifying informational, cultural, and skill-training needs which either are being neglected entirely, or which are being only partially met by existing communications facilities of the community and for which the whole community can appropriately assume responsibility. As such needs are identified, the survey committee will need to evaluate each one with respect to the possibility of serving it through the medium of television. An examination of the program offerings of local commercial TV stations may reveal, in some cases, that certain of the needed educational programs are already available. In other instances, it has been possible to persuade commercial station managers to provide at least some of the kinds of programs that are needed.

However, as has been pointed out, there are some educational-program needs, in any given community, which commercial stations cannot very well undertake to meet. For example, there is often a need for at least some TV-program series designed to meet fairly specific educational or training needs of relatively small viewing audiences. Before urging a commercial broadcaster to provide programs of this type, it will be well to consider that any time he broadcasts programs of limited audience appeal, he does so at the almost certain risk of losing a substantial portion of his audience to competing stations. Even though he may be willing to offer one or two program series of this nature, it would be unrealistic to expect him to do any considerable amount of

programming of this kind. It is evident that any substantial need for educational programs of limited audience appeal indicates the desirability of having a local noncommercial educational station.

Another factor to be considered is whether or not the educational programming potential of the community can be utilized effectively and adequately if the community is limited entirely to such educational programming as can be done on air time made available by commercial TV stations. Some communities will experience no problem in this respect. Others may find a rich variety of resources which, if fully utilized, would provide content materials for a greater number and variety of high quality educational and cultural programs than commercial TV outlets of the community could use.

Finally, any survey committee of the kind that has been suggested needs to give careful study to the whole problem of providing TV programs designed to supplement regular classwork of the various schools that lie within the area a local educational station could serve. There is an increasing demand for program series designated for in-school, class-group viewing. In order to facilitate their use, these will need to be scheduled at hours when the greatest number of class groups they are intended to serve will be free to view them, and program length must be such that any such broadcast will fit within a normal class period in that locality. It is often difficult for local commercial stations to make air-time available for a few series of this kind, since schools tend to want such broadcasts at times of the day now becoming attractive to commercial sponsors. However, the commercial TV broadcaster faces a real problem when it comes to undertaking to broadcast educational programs designed for students and adult listeners during out-of-school hours, because many of these are desired during early evening hours when the demand for air-time hours by commercial sponsors is greatest.

Study of this problem, then, will usually tend to revolve about trying to get full and unequivocal answers to four questions: (1) If the schools of the community are solely dependent, for their programming needs, on air-time donated by (or purchased from) local commercial TV stations, can they be assured of enough air-time for the amount of programming required? (2) Can the local commercial station(s) guarantee air-time for those programs offered for in-school viewing that will match class schedules closely enough to make them usable by the majority of the class groups of the community for which they are intended? (3) Can the local

commercial TV broadcaster afford to make enough air-time available for nonsponsored educational programs designed for student and adult homelistening to meet the anticipated demand? (4) If the schools were to arrange to use commercial station facilities for their educational TV programming, might situations arise where station policies would require the exercise of a termination privilege that the school's program production might consider unreasonable?

As a communitywide survey of educational television program needs of the type suggested draws toward its conclusion, the survey committee may find itself in possession of a vast store of data, all pointing to the desirability of developing a local educational TV station. Data from each occupational and professional group of the community probably indicate somewhat different program needs, as may be true with respect to the data from different areas within the community. When all of these have been compiled and classified, it may be found that the community has a very substantial number and variety of informational and cultural needs that could be met most easily and most directly by means of suitably designed television programs.

Moreover, survey-committee members delegated responsibility for finding out how much of the needed educational programming the local commercial TV broadcasters will undertake to provide inevitably will discover: (1) That each commercial-station manager is willing to assume responsibility for providing at least one series of regularly scheduled educational programs dealing with subjects or personalities that offer promise of fairly wide audience appeal; (2) that few of them will reasonably find time for TV program series designed to serve specific (although important) needs of relatively small viewer audiences; and (3) that often too little valuable air-time can be spared for nonrevenue educational programming to make it feasible to undertake to do more than try to serve more than the very general and most widely distributed informational and cultural needs of the community.

Thus, the community will find itself confronted with the necessity for deciding whether it should scale down its educational TV programming ambitions to such proportions as can be accommodated within the public-service programming capacity of local commercial stations, or whether educational program needs that could be satisfied only if the community had its own independent educational TV station are of such crucial importance that they cannot be ignored. If the survey has been made with sufficient

care and thoroughness to give a true picture of local intellectual and cultural needs, it should provide an adequate basis for deciding which of these two alternatives represents best choice in any given community.

Aside from its primary function, such a survey may serve several other ends sufficiently valuable to warrant passing notice. To begin with, a survey of this kind provides both opportunity and incentive for all elements of the community's population to work together on a problem presumed to be of significance for all — a socially useful end in itself. In leading people of the community to identify, analyze, and evaluate their intellectual and cultural needs, it may encourage critical self-examination.

The circumstance usually encountered of being able to get only enough air-time from commercial TV stations for a very limited amount of educational programming forces the community to decide on a proper priority order rating for each of the educational program needs that have been identified according to overall importance and urgency. This is especially useful, because it serves to focus public attention on the need for "doing first things first."

By no means least of the incidental values likely to come from such a survey are the psychological effects it may have upon the community itself. Educational advantages claimed for television that may at first have seemed theoretical and remote will become increasingly self-evident as the survey progresses. Similarly, initial uncertainty as to precisely how a community goes about finding out whether or not a local educational TV station is needed will gradually disappear as definite educational jobs television can accomplish are identified. Finally, there is a tendency, upon successful completion of a communitywide survey of educational program needs, for the community to look on this achievement as the completion of the first step in the actual development of a local educational TV station!

Determining the Feasibility of Operating as an Educational Station

Having decided that a local educational TV station is necessary in order to meet educational program needs too important to ignore, a community is ready to proceed with the second phase of educational TV planning. Here, the chief concern will be one of investigating ways and means of financing the cost of constructing

and staffing such a station, and of assuring continuing financial support for its operation.

Probably the ideal situation would be one where the State education authority, a major university, or city school system would be able to finance the entire cost of developing the station and, in consideration of acknowledgment by all other educational institutions in that locality of the propriety of its applying for the locally available educational TV channel, would be prepared to undertake full responsibility for serving the principal educational program needs of the community or an entire State. However, it is doubtful that more than a very few, if any, single educational institutions will find themselves in a position to do this.

There have been instances where a single university or school system could afford the initial cost of constructing and staffing such a station, provided other educational institutions and civic organizations of the community are willing to share operating and programming costs. In still other instances, it is possible for two or more separate educational institutions to undertake, jointly, to construct and operate a station on a partnership basis. However, it seems as if a majority of the communities where educational TV channels are still available will have to look to a still broader base of financing if they are to be able to take advantage of this opportunity.

The pattern that has emerged in those metropolitan centers where educational TV stations are in operation involves formation of a nonprofit corporation, representative of all the educational institutions of the community, which becomes legally responsible for the exercise of all developmental, ownership, policymaking, and programming functions in relation to the projected educational station. A substantial portion of the initial cost of constructing and staffing such a station has been met, in most cases, from a combination of funds raised by public subscription, grants from local and national foundations and memorial funds, substantial lump-sum gifts from local manufacturers, merchants and other individual citizens. However, once such a station has been completed and begins operation it is usually presumed that the several educational institutions of the community will each contribute its agreed-on share to the annual operating and programming budget.

Any community which looks to this type of educational station financing will be able to get valuable advice on how to mobilize

local source of financial support by writing to the Educational Television and Radio Center, Ann Arbor, Mich.[2]

If, after investigating the various potential sources of financial support available to it, the community finds the general willingness to raise the funds that will be needed for developing a local educational TV station, it is ready to begin the third phase of planning, namely, the actual work of constructing and staffing the station.

[2] Educational Television for Your Community. Educational Television and Radio Center, 2320 Washtenaw Ave., Ann Arbor, Mich. Free.

Part V. How a TV Station Can Develop Essential Services

DURING the fact-finding and exploratory phases of educational TV station planning, most of the actual work of identifying educational program needs, of canvassing the community's educational programming potential and of exploring the feasibility of developing a local station will be handled by voluntarily-constituted working teams or subcommittees, loosely organized into a central planning committee. Where a local school system or college was responsible for initiating educational TV planning, the community will usually look to it to head this central planning committee. Where the initial incentive for planning came from the combined efforts of two or more educational institutions, responsibility for supervising planning activities will probably be shared between them. The same will likely be true of situations where initiative for educational TV planning originated with the community itself. Whatever the basis of supervisory direction, the planning work, up to this point then, will exhibit an informality that is lacking in the later phases of planning.

Once the decision has definitely been made to proceed at once with the work of developing a local educational station, planning activities will necessarily take on an air of parliamentary exactness, because from this time on, every decision that is made, as well as full details of the method by which it was reached, must become part of the official record.

Finding the Best Qualified Applicant

One of the first official steps to be undertaken, as planning enters its third phase, will ordinarily be to create a special committee made up of authorized spokesmen representing each of the local institutions and organizations in any way concerned with

WOSU-TV, The Ohio State University
Puppet show, "The Play's the Thing," telecast for all Central Ohio.

performing educational or cultural services, and specifically commissioned to perform the one but crucially important function of determining which one of the several presumably eligible educational TV applicants would be best qualified to serve the educational broadcast needs of all segments of the community's population, and the most likely to do so. Even where educational TV planning was initiated by a single school system or college and has been directed thereafter by it, this step will usually be considered advisable because no single educational institution will want to risk the possible consequences of embarking on a project of this magnitude without first having assured itself of the unanimous approval and continuing support of the entire community.

Normally, this formally commissioned planning body will continue in existence up to the time a decision has been reached as to which one of the potential applicants shall be authorized to apply for the locally available educational TV channel. At that juncture it will properly announce its decision to the central planning committee, and recommend its adoption and subsequent communication to the applicant elect. Then, on acknowledgment by the central planning committee that its assigned function has

been fulfilled, this special committee, disclaiming all presumption of continuing plenary powers with respect to the projected station or its management, will request its own dismissal.[1]

It will normally be presumed that once any community has decided which of the possible station licenses is to be approved as the one best qualified to apply for the locally available educational TV channel, this authorized applicant will automatically become the officially recognized agency for carrying station planning to its completion. Accordingly, it is of the utmost importance that this authorized applicant have full and unquestioned authority to perform all planning, contractual procurement, financial, and supervisory functions involved in constructing, staffing, and operating the projected station.

Where the authorized applicant happens to be a single school system, or a college or university, there is no problem in this respect. However, where it is proposed that two or more separate educational institutions undertake, jointly, to construct and operate the station, the problem immediately arises as to how the various responsibilities shall be distributed. The situation is even more complicated where the authorized applicant is a voluntary association representing all the various educational and civic institutions and organizations of a metropolitan community. Therefore, if the authorized applicant is anything other than a single educational institution, the community will need to take immediate steps to invest it with the requisite powers.

On the basis of communitywide educational TV planning to date, it appears reasonably obvious that the most satisfactory way to make it possible for two or more separate institutions and organizations to share in developing and operating an educational TV station will be to make each of them a coowner in a nonprofit educational corporation specifically chartered for this purpose.[2]

Exact organizational patterns of such educational station owning and operating corporations will show minor variations from

[1] It is suggested that the applicant-elect, who now becomes the official educational TV planning authority of the community, might well be advised to investigate the possible merits of recommissioning the membership of the now-dissolved special committee to serve as a continuing "Advisory Committee on Educational Program Needs."

[2] Other advantages of creating a local educational station owning and operating corporation were described in the preceding section. For a discussion of the advantages and disadvantages of this and other approaches to educational TV-station development, the reader is referred to: Educational Television for Your Community, The Educational Television and Radio Center, Ann Arbor, Mich.

one metropolitan community to another, according to variations in State laws governing corporations, and according to the number and variety of corporation members in each community corporation.

Determining the Station Facilities Needed

As soon as the legal entity status of the applicant authorized to apply for the locally available educational TV channel has been established, the actual work of planning the station's physical facilities begins. This will necessarily precede filing the application for a station construction permit because much of the technical information required for making out the application form will not even be known until it has been determined precisely what station facilities are needed for the programming that is proposed.

It should be emphasized at the very outset, however, that the job of actually determining what station facilities will be needed and of planning the details of station construction is much too complicated to be undertaken by other than a professional broadcast engineering consultant who is thoroughly experienced in TV station construction. This will be true even in cases where the applicant either has been operating a full-power radio broadcast station or has had considerable experience in motion picture production.

Admittedly, experience in broadcast station operation will have many advantages for any applicant since engineering, operating, and management problems in radio and television are similar. Likewise, casting, staging, and microphone techniques normally used in motion picture production are not far different from those employed in dramatized television programs. Yet planning and constructing a TV station will confront the educational station planner with a multitude of problems for which previous radio-station ownership and operating experience will have provided no adequate basis for making decisions, while film making experience applicable to television will be of little, if any, immediate use until the station is completed and ready for operation.

It is difficult to estimate average costs of installing and operating an educational TV station.[3] What would be adequate in one

[3] Average educational TV applications show $350,000 installation costs and $150,000 per year cost of operation. WKAR-TV cost approximately $500,000 and operations are $150,000; KTHE cost only $150,000 in already constructed building and operating budget is $100,000; KUHT cost $315,000 and operating budget is $90,000.

community might not meet programming needs and operating conditions in another community, and, even if station facilities needs of all communities were identical, costs would vary widely.

Any educational station will need at least one reasonably large studio (2,000 to 3,000 square feet in floor area) for "live" program production. At least two TV cameras of the Image Orthicon or the Turret Vidicon type will be needed for the simplest productions. These, along with camera dollies, synchronizing generator, basic camera control equipment, audio equipment and lighting facilities, will represent an outlay, at prevailing prices, of between $50,000 and $55,000. Ordinarily, however, a third camera will be considered necessary, bringing the total for one studio to somewhere between $65,000 and $70,000 exclusive of costs of partitioning, sound-treating, and air-conditioning.

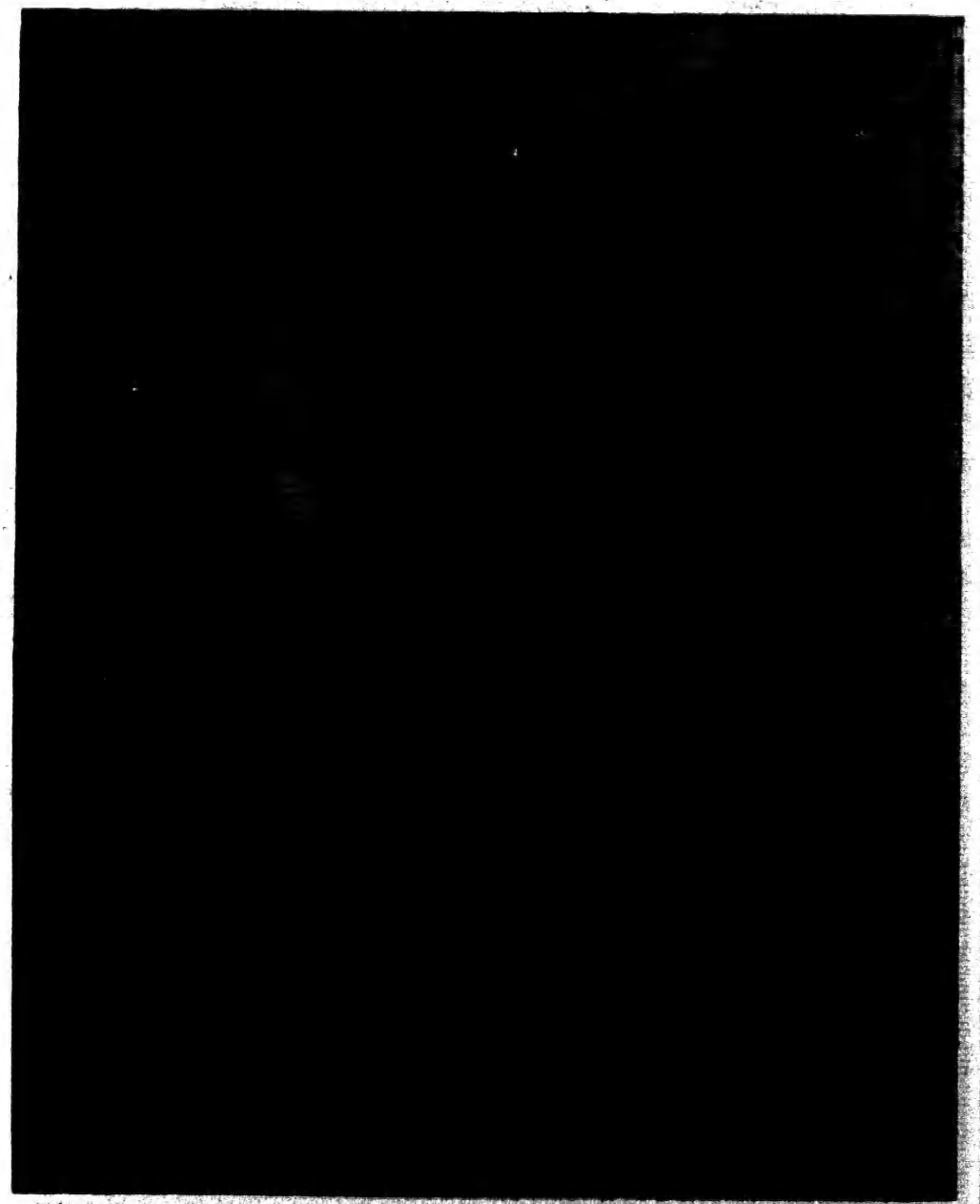
In most cases, it will be considered desirable to have a second studio, equal in size and equipment to the first, in order to be able to accommodate rehearsals while the station is on the air. This will add another $65,000 to $70,000. It may even be necessary to provide a third studio, smaller in size and equipped with two cameras rather than three, depending on how much of the station's programming will be "live." Thus, studio facilities for "live" programming may involve a total of anywhere from a minimum of $50,000 to somewhere in the vicinity of $200,000.

In many instances, it will probably be desirable to provide portable camera equipment for use in telecasting actual classwork in progress, or for telecasting school and community activities of various kinds. Where connecting lines capable of carrying television program signals are available between the desired pickup points and the station's transmitter, the additional equipment investment may be no more than $20,000. However, for maximum flexibility, a mobile unit costing between $60,000 and $70,000 might be desirable.

Where the major portion of the programming is originated locally, it may be desirable to provide kinescope recording facilities. As done at the present time, this involves what amounts to taking a motion picture of television programs. Kinescope recorders, consisting of a "bright" monitor, special 16 millimeter sound-on-film motion picture camera, and rapid film processor, are available on the market today which permit continuous filming of television programs automatically. The cost of such an automatic kinescope recorder will probably fall somewhere between $35,000 and $45,000. Use of this type of equipment will enable the local educational TV station to produce programs at times

most convenient to staff and performing personnel, and to accumulate a "backlog" of programs well in advance of their scheduled broadcast dates. It will also be useful in producing kinescope recordings for exchange with other educational stations.

In this connection, educational-station planners would be well advised to watch the new development now in production — video tape recording — which will make it possible to record television programs magnetically both monochrome and full color at a fraction of the cost of the present film recording process.



TV magnetic tape for recording in black and white or color presented by its originator.

Also to be considered, is the need for facilities for telecasting films and the various sizes of slides and filmstrips. In addition, the conventional 16 mm. sound projector offers another means of projecting teaching films for class-group viewing as well as television. Yet it must be remembered that television offers the only practical means of showing such films to home audiences. Moreover, motion picture sequences, color slides, filmstrips, conventional lantern slides, and opaque pictures can often be introduced to "live" TV program to illustrate particular points or to document generalizations. Accordingly, facilities for telecasting projected materials of these kinds will usually be considered an essential item of station equipment. Equipment costs, here, will range from around $15,000 to as much as $35,000, according to the amount of use that is to be made of such materials.

Naturally, the more a station may require in the way of program originating facilities, the more studio and control-room space will be needed to accommodate it. Auxiliary space needs for storage of stage properties and scenery and for such things as maintenance shops, paint shops for painting scenery and title cards, and the like, will also tend to increase with the amount of "live" programming to be done. It would hardly be possible to estimate any "average" costs for studio and control-room space, but the educational station planner will do well to bear in mind that this will usually be a fairly substantial item in station construction cost and that, like program production equipment costs, it will tend to increase with the amount of "live" program production equipment costs.

Ordinarily, the educational station planner will already have formed a fairly clear notion of the programming obligations the projected station should undertake by the time the community has approved his applying for the locally available TV frequency. Visits to commercial TV stations in his vicinity to observe actual program production will help him to estimate certain of his production facilities needs. However, before starting definite planning of the arrangement of studio facilities, it is always advisable to get professional station engineering advice. In other words, if professional broadcast engineering consultant services have not already been engaged, this should be done without further delay.

Next, the educational station planner must take into account two groups of factors that are so closely interrelated that they must be weighed in relation to one another. One of these includes factors to be considered in choosing the most advantageous site for the station's transmitter and antenna; the other group, those

to be considered in choosing the most advantageous location for the station's studios and administrative offices.

First, it should be pointed out that the distance to which any radio or television broadcast station can broadcast a satisfactory program signal is largely determined by four factors: (1) The output power of the transmitter; (2) the efficiency of the transmission line in delivering this power from the transmitter into the station's antenna; (3) the efficiency of the antenna in distributing this power, in a concentrated layer, over the station's service area; and (4) the height of the antenna above the average elevation of the surrounding countryside. While increasing any one of these will usually extend the station's program coverage to a greater distance, the last-named of the four is especially important in TV-station planning because, in addition to giving extended station coverage, a high antenna location will usually mean far less difficulty from coverage problems such as "reception shadows" and "multi-path interference." For these reasons, it will normally be considered an advantage if a TV-station's transmitter can be located immediately adjacent to a high hill or a tall building, in order to save on antenna-tower cost as much as possible.

In several instances, commercial TV broadcasters have arranged educational station antennae to be mounted on their own towers either without charge or on a nominal charge basis. Wherever this opportunity is offered, the educational station planner will usually be well advised to accept, even though this may mean locating the transmitter so far away from the preferred studio location that a microwave relay will be required to connect the two. (After all, a microwave relay can be installed for around $20,000, whereas a tower may cost upward of $75,000.) The only likely exceptions would be where one of the members of the educational-station planning corporation already owns a building or prominent hill in the immediate vicinity of the preferred studio location, high enough so that a relatively inexpensive mounting mast will provide sufficient antenna height to insure the coverage needed, or where the owner of such a potential antenna site is willing to make it available at nominal cost. Availability of such a site would make it possible to locate studios and transmitter close enough together so studio program amplifiers could feed the transmitter directly without any necessity for relay equipment.

In undertaking to determine the most advantageous location for the station's studios and administrative offices, five basic factors will need to be considered. First, since (a) the officially designated location of any broadcast is required by the FCC to

coincide with that of its principal studios, and (b) since programming operations will require a very substantial amount of supervisory attention, it will be desirable wherever possible to locate the station's administrative offices in the same building as its studios. Secondly, in any community where it has been agreed that one particular educational institution shall be responsible for supervising the station's operations, it is desirable that studios and administrative offices of the station be located on the premises of that institution, or as near to it as possible. Thirdly, suitability of any existing building for conversion into studios and administrative offices should be evaluated in terms both of whether it provides the required amount of space and of whether the necessary modifications can be accomplished with a minimum of structural alterations. Fourthly, it will usually be considered desirable that the studios and administrative offices be located where they will be conveniently accessible both to the station's regular operating staff and to teachers, student groups, and others who will be participating on programs. While there is a tendency to think of accessibility in terms of centrality of location, station planners should not lose sight of the fact that other factors, such as availability of off-the-street parking space, nearness to streetcar and bus lines, or location on through boulevards or expressways, may be equally important. Finally, as indicated earlier, it may sometimes be considered advantageous to be able to have studios, transmitter, and offices all in one building or in immediately adjacent buildings.

In some instances, it has been possible to find a potential location for studios and administrative offices that will meet all of these conditions. In others, it will be found that certain of them will either be irrelevant or will actually be in conflict with each other. It it evident for example, that the entire station simply cannot be housed under a single roof where the transmitter must be located across town or out in the suburbs in order to take advantage of the availability of antenna space atop the tower of a commercial TV station. Only when all of the factors peculiar to a given community have been identified, and have then been interpreted by a professional station engineering consultant, will the local educational-station planning institution or corporation be ready to undertake the contractual and construction work involved in building and equipping the station.

Constructing the Station

Gradually, as decisions are reached in the course of this in-

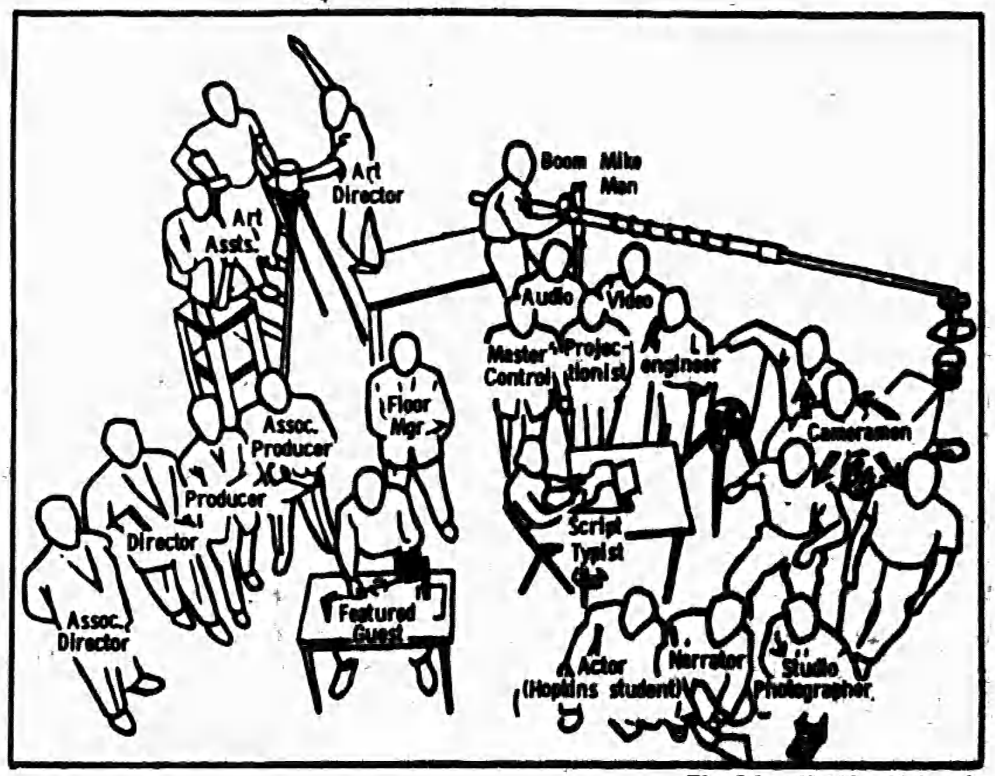
tensive study of station facilities needs, the engineering consultant firm whose services have been retained will translate them into specific items of station equipment to be procured, and into detailed specifications for their installation and arrangement. Then, when final decisions have been made as to where transmitter and studios and offices will be located, the actual station layout will be blueprinted ready for submission to building contractors for bids covering remodeling and new construction, and for inclusion with station component lists and installation specifications to be submitted for bids to broadcast equipment manufacturers.

Eventually, then, all bids will be evaluated and the contracts for equipment and materials and construction be let, and the actual work of building the station will get underway.

Staffing the New Station

Generally speaking, educational station staff needs will be influenced to some extent by: (1) The nature and complexity of the programming to be undertaken; (2) the number of hours of station operation per day that is contemplated; and (3) the number of hours of "live" programming to be produced locally.

Television station operation by educational institutions is still



The Johns Hopkins University

Typical studio setup for TV production.

too varied to provide any exact basis for estimating what any given educational TV station is likely to need in the way of programming, operating, and management personnel, but estimates are available for calculating the size of the station personnel budget likely to be required. Such estimates place this amount at anywhere between $80,000 and $160,000, but it should be pointed out that estimates that have been offered to date are based on commercial station practices and may or may not be applicable to educational station operation. Probably the lower figure will be found too low to allow for any considerable amount of "live" production while the upper figure may be higher than necessary.

So far as administrative, clerical, and engineering services are concerned, it would seem reasonable to expect that staffing needs may not differ substantially from those of the educationally-owned radio broadcast stations, except that possibly top administrative and engineering positions may carry a somewhat higher salary rate because of the heavier responsibilities involved. More program research people and script writers will probably be required than in radio due to the more complex nature of TV scripts and to the need for both auditory and visual documentation.

Several types of employees, hitherto unknown to broadcasting, will be required — art directors and assistants who develop and decorate scenery "flats" and stage "props"; a property custodian; a lighting technician and a crew of assistants; a "special effects" director and one or more assistants; a film director, film editor, and one or more projectionists, and, perhaps, a studio photographer who takes record photographs of staging arrangements and the like. The control-room engineer of radio broadcasting becomes the audio-control engineer of a 9-man studio production crew, consisting of director, floor manager, two or three cameramen, boom-mike man, master-control engineer, video-control engineer, audio-control engineer, and studio engineer. (In the case of more elaborate productions, this production crew may be enlarged to include one or two additional camermen, an assistant director, a producer, and a projectionist.)

However, the job of staffing the new station need not wait for its completion. It will usually be desirable to employ the director as soon as definite station planning begins, in time to help with the work of evaluating educational program needs of the community. Similarly, the chief engineer and one or two assistants might properly be employed in time to help with the job of collecting and processing the technical information that will be needed in making out the application for the station's construction

College of the Pacific

Students produce a creative program in their own TV workshop.

permit. It may be desirable, fairly early in the course of actual station facilities planning, to hire the station's program director, together with one or two assistant directors as may be needed, and at least one thoroughly experienced television script writer since they can be particularly helpful in relation to planning studio facilities and in helping to train existing school personnel for programming responsibilities.

Finally, it will usually be desirable to inaugurate a fairly comprehensive in-service training program in which existing personnel reassigned to programming and technical operations responsibilities, working under the direction of the newly hired specialists, will actually begin producing educational programs in the form of kinescoped sound films for immediate experimental use and evaluation, and for subsequent broadcast use when the station "goes on the air."

Providing Facilities for In-School TV Viewing

Part of the programming of any educational TV broadcast station will probably be directed to production of program series

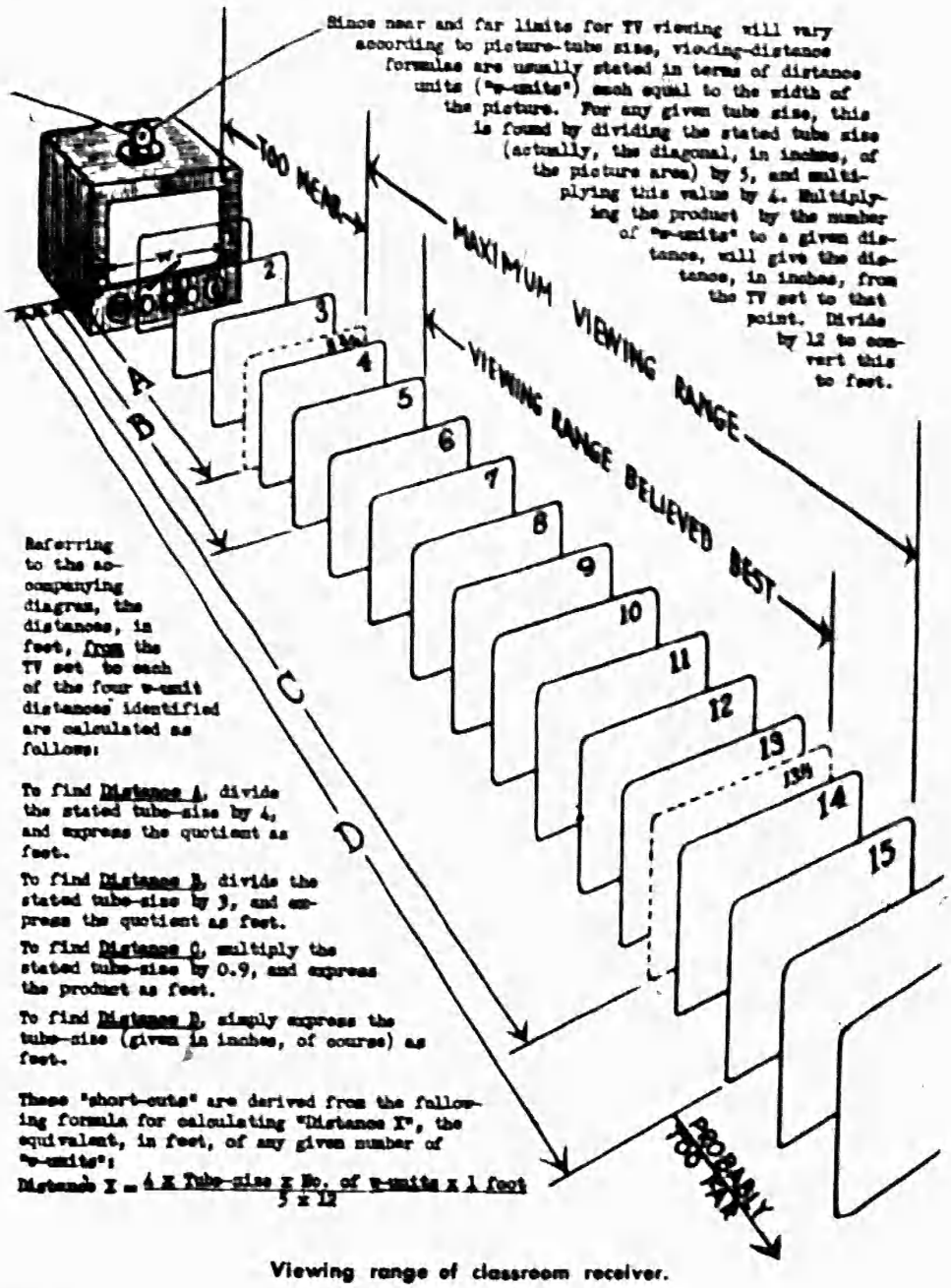
designed for use by specific class groups to supplement regular school work currently in progress. It is desirable, then, to give some thought to the problem of providing suitable facilities for in-school TV viewing by class groups.

There has been some tendency to look to large screens for the answer — picture size at least 30 x 40 inches; a minimum viewing distance of 2 picture widths; a maximum viewing distance of 6 picture widths; and a maximum, included viewing angle, of 40 to 60 degrees (20 to 30 degrees to either side of the axis of projection); and, of course, opaque shades to cover the windows. However, experiences reported by teachers whose classes use TV programs regularly would seem to indicate that these standards appear not to fit the classroom TV viewing situation.

In the first place, the greater brightness range ("sparkle") and apparent depth of TV pictures inherent in direct view picture tube operation appear to enhance picture "readability" to a somewhat greater degree than results when projected pictures are simply made larger. Then, due to the characteristic curvature of the picture-forming surface in the TV picture tube, plus the further fact that the TV picture is seen by transmitted light, rather than by reflected light, the effective viewing angle for television is slightly wider (actually, an included angle of approximately 80 to 90 degrees) than that for optically projected pictures. Moreover, since the TV picture is seen by transmitted light that is generated within the picture tube itself, television can be viewed at levels of classroom illumination that would "wash out" projected pictures completely.

Finally, TV program producers have learned to fill the receiver's picture area with just the essential details of any pictured situation, omitting all picture field details not immediatley needed to convey the intended meaning. In consequence, essential "subject matter" of a given TV picture "frame," as seen on a 21-inch or 24-inch TV set, will often occupy about the same viewing screen area as it would if it were being shown in the form of a conventional classroom sound-film on a regular size classroom projection screen.

Under the present TV set pricing structure, a standard make home-type table model receiver in the 21-inch or 24-inch picture-tube size offers the greatest value in terms of dollars of cost per pupil accommodated. This does not mean that a single 21-inch or 24-inch receiver will suffice for an average-size class group. Actually, experience has shown that a classroom of average size and normal proportions will ordinarily require *two* TV sets for



Viewing range of classroom receiver.

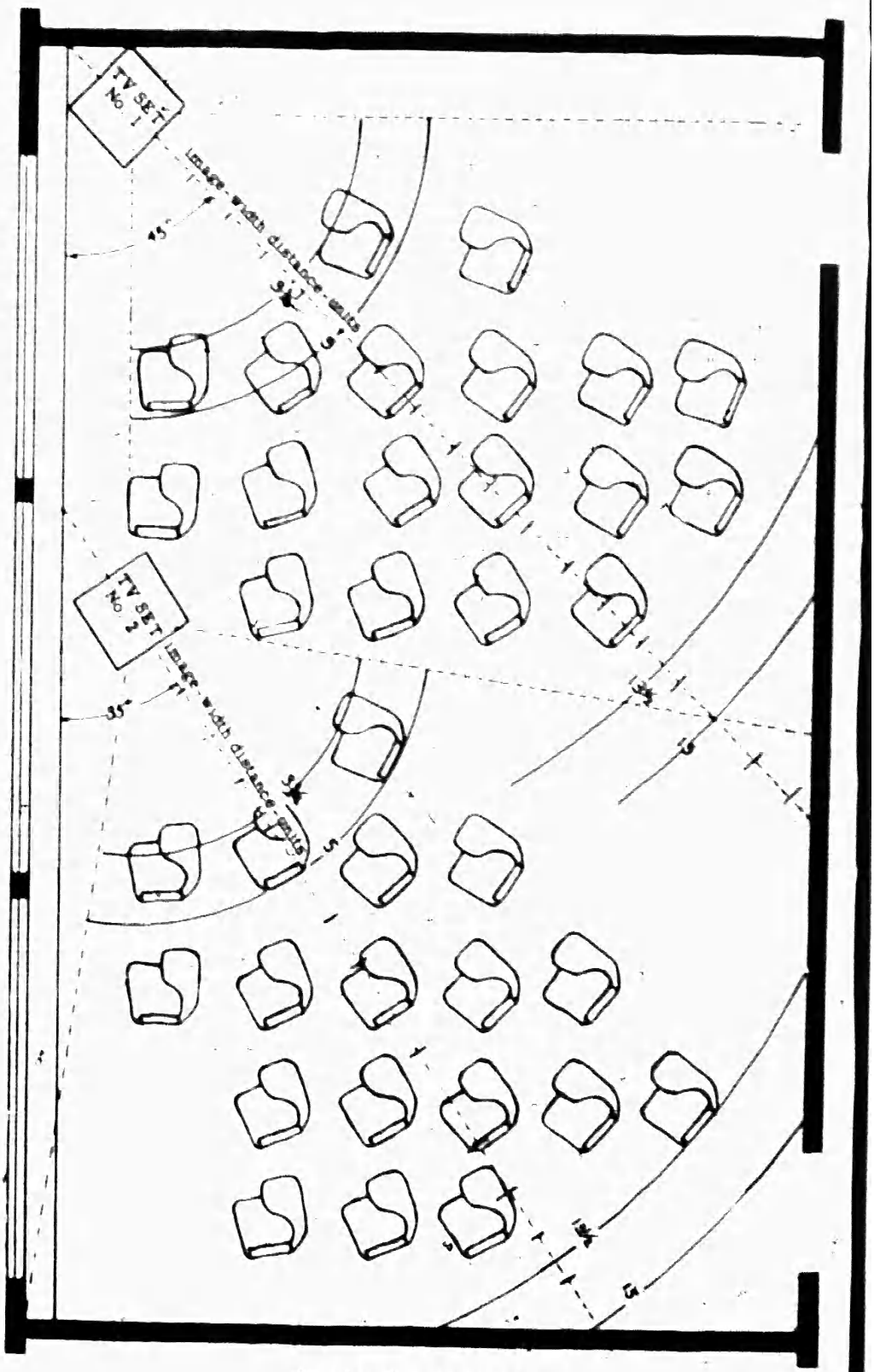
satisfactory group viewing and that, with two sets in use, no student need be seated beyond the maximum viewing range of each set.

There is still some question as to the closest distance for TV viewing. Some of those who have studied this problem would place the near point for class group viewing at about 3¾ times the width of the actual picture area on the face of the picture tube, but the majority would place it at a distance of 5 times the picture width. (This would amount to a distance of between 5¼ feet and

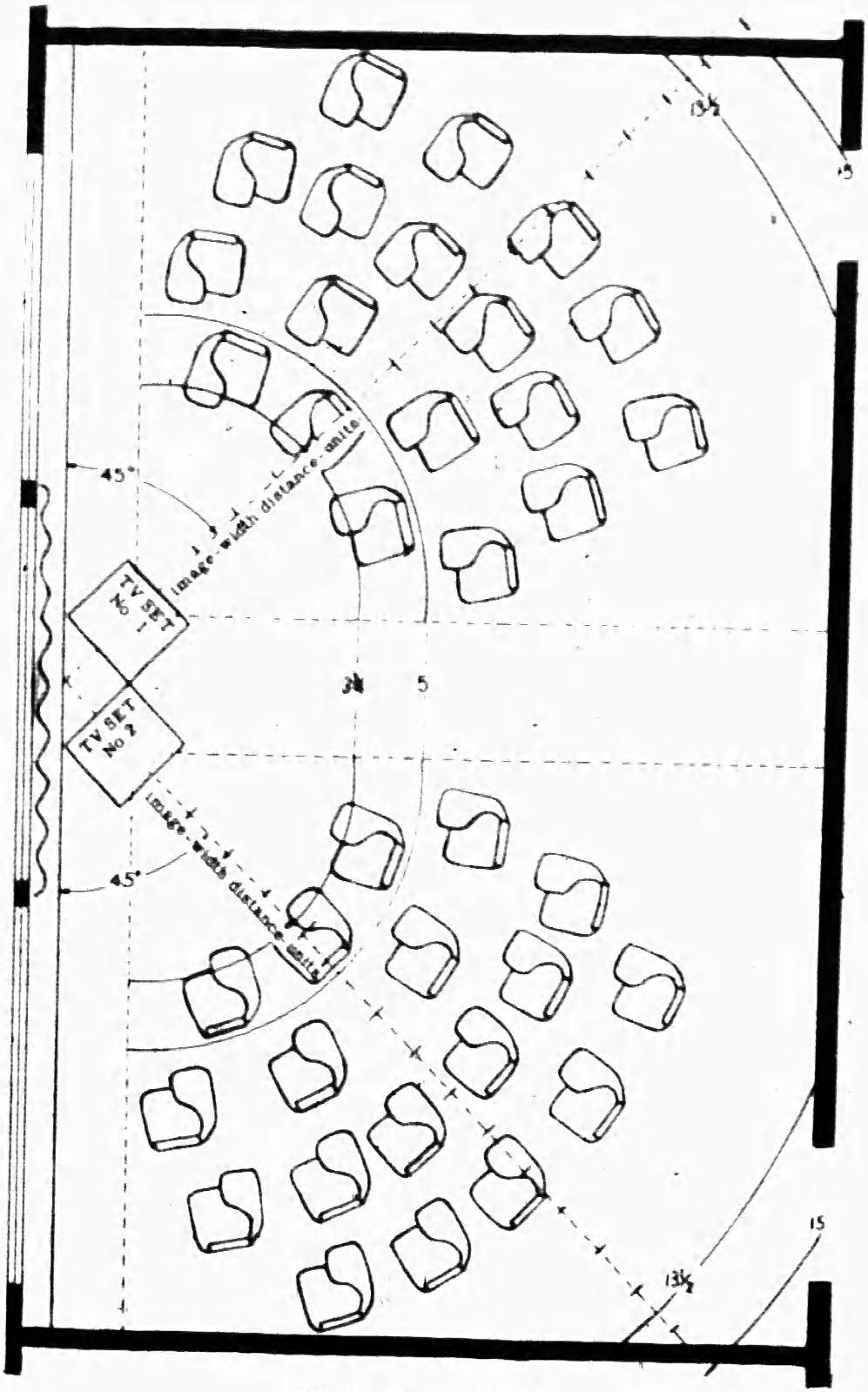
7 feet for a set with a 21-inch picture tube). Similarly, some would recommend a distance of 13½ times the picture width as the theoretically ideal far-point for TV viewing. Most would agree, however, that the maximum far-point for TV viewing for students with normal vision lies at a distance from the receiving set equal to about 15 times the picture width, or about one foot of distance for each inch of picture tube diagonal. (Thus, for a 21-inch set whose picture tube diagonal measures approximately 21 inches, the very maximum viewing distance for most students would be about 21 feet.) The basis for calculating near and far point viewing distances is explained diagrammatically on the opposite page.

Experience in class group TV viewing to date, has identified three principles pertaining to the most advantageous location of the receiving sets. *First*, when these viewing-distance limitations are considered in relation to television's usable 80° to 90° viewing angle and physical dimensions of classroom seats currently used, it will be found that each 21-inch TV set can accommodate between 18 and 22 students (depending on grade level), or that each 24-inch set, between 20 and 24 students. *Secondly*, it has been found, from actual classroom TV viewing experiences that television receivers must be angled away from window walls at somewhere between 35° and 45° so that direct daylight and window reflections will not fall upon either the face of the picture tube or upon the protective cover glass in front of it. This means that TV sets will normally need to be located somewhere near the classroom's window wall, facing diagonally toward the opposite wall. *Thirdly*, on the basis of classroom TV viewing experiences, to date, it has been found that the two or more sets in any given classroom must be so oriented with respect to one another that no student anywhere in the row will have an equally good view of two pictures at the same time. Otherwise, viewer attention is frequently broken by periods of "visual shopping for a better picture."

Two different classroom arrangements that meet these three conditions are shown diagrammatically on pages 68-69. Each represents a typically dimensioned classroom, and each suggests a seating arrangement that will accommodate a viewing group of 36 students. *Arrangement B* offers two potential advantages over *Arrangement A*: (1), Plug-in provisions for antenna connection and for operating current can be grouped together in one location, thereby simplifying wiring requirements, (2) with the two TV sets located corner-to-corner, the television "sound track" appears to come from a single direction, rather than from two. However,



Viewing Arrangement A.



Viewing Arrangement B.

Arrangement A is likely to be preferred by most schools since teachers, understandably, prefer to avoid the inconvenience and commotion involved in rearranging classroom furniture for viewing sessions. In fact, it was this arrangement that was adopted as the basic viewing-room arrangement for use in the closed-circuit teaching experiments at Pennsylvania State University at University Park, Pa., and now appears to be gaining favor, generally.

Obviously, considerable experimentation and research are still needed before any "ideal" classroom viewing plan can be recommended. New technical developments now in progress are likely to offer opportunities for still other arrangements. Meanwhile, *either* of the two plans pictured should provide an acceptable interim arrangement. In choosing between them, it should be pointed out once more that *Arrangement A* has already demonstrated itself in use, whereas *Arrangement B*, may possibly offer additional advantage.

Technical considerations strongly point to the advisability of installing a built-in amplifier "master" antenna system in any school building where most of the classrooms will eventually be equipped with TV sets, rather than to use independent antenna facilities for each individual classroom set. Not only can a well-engineered master antenna system virtually eliminate interference between sets in nearby rooms and reduce all kinds of static and hum pickup to the lowest possible minimum, but by varying the amount of signal preamplification to suit the respective station signal levels at the several television stations serving the local area, each classroom receiver is able to tune in all of these stations with uniform picture quality and freedom from static and interference. Moreover, should one of the desired stations happen to be a UHF station, a relatively inexpensive converter can be added to the master antenna system to convert this station signal to a locally unused VHF channel, thereby obviating any need for a school so equipped to purchase the higher-priced combination VHF-UHF sets where stations operating in both bands are to be received. Finally, adding still another relatively inexpensive unit to the master antenna system, namely a closed-circuit transmitter tuned to any locally unused TV channel, will convert it into the video equivalent of the long familiar central sound system, making it possible to originate lecture table demonstrations and student workshop video programs within the school building and to distribute these to any or all other rooms with TV sets, as desired.

Part VI. Exploring the Practicability of Direct Teaching by Television

FEW SUBJECTS, if any, in the past two decades of public education have awakened such widespread public interest or have so thoroughly challenged the imagination of professional educationists, as has the question of whether or not it is possible to teach regular school and college subjects by television as effectively as they are normally taught in a conventionel classroom situation. Interestingly enough, there is no longer any question as to whether or not students can or do learn from viewing educationally significant television programs, or as to whether or not television programs designed specifically to supplement regular classroom teaching can be used to motivate student effort and to enrich school experience for young people generally. Instead, the focus of interest for educators and lay public alike is that of determining, experimentally, the extent to which direct teaching by television in the basic subject areas at public school and higher education levels can be used effectively to perform teaching functions traditionally performed by individual teachers working directly with small class groups under conventional classroom recitation-discussion conditions.

Telecourses Prove Practicable

The idea of using broadcasting to enable a teacher to reach students beyond the physical confines of the immediate classroom is not new. A quarter century ago, colleges and universities that owned and operated radio stations started broadcasting extension courses for the convenience of enrollees in isolated rural areas who could not readily join local extension study groups. A survey made at Michigan State University during the 1955-56 academic

year[1] showed a total of some 280 separate telecourses being offered by 69 different colleges and universities, and since that time the total has risen to almost 400 courses.

Supplementation-Type Programming

At the public school level, educational broadcasting has developed along substantially different lines. As had been true in the case of radio broadcasting, initial ventures into television broadcasting in most instances involved demonstration-type programming over local commercial stations designed to maintain community interest in the work and purposes of the schools by showing samples of commendable student achievement and performance skills. Then, gradually, as school people came to recognize the potentialities of broadcasting for motivating student effort and for providing new instructional content materials not other-

WTVS, Detroit

American history series for intermediate grades features authentic preps supplied by Henry Ford Museum, Dearborn, from its George Washington collection.

[1] Telecourses for Credit. East Lansing, Mich.: Michigan State University, Continuing Education Service, University of the Air. June 30, 1956.

wise immediately accessible to the individual classroom teacher, demonstration type programming gave way to a new type commonly known as "supplementation" or "enrichment" programming.

Basically, this concept of the role of educational broadcasting rests on the assumption that radio and television from the standpoint of public education, are to be thought of as "access channels" to potentially useful instructional content materials not conveniently available from conventional sources. The obligation it holds for the broadcaster is one of providing educationally significant supplementary content directly related to individual courses in the basic school subjects and of scheduling these broadcasts at times most convenient for reception by class groups for which their use would be appropriate.

The individual classroom teacher is assumed to be the person continuously in a position to know precisely what her class group is intellectually and psychologically ready to be taught and how it should be taught in order to make it maximally meaningful. Therefore, she is held to have the right of final decision as to whether or not she will use any given educational radio or television program at the time it is broadcast. Finally, it is considered to be her responsibility to decide on the amount and kinds of complementary teaching (or "utilization") needed for each enrichment type program she considers it advantageous to use with her class groups. This type of programming has been treated in some detail in Part III.

Evolution of the Direct Teaching Concept

By the middle 1930's, credit-course broadcasting at the college level had become fairly common, particularly in colleges and universities that operated their own broadcast stations. The fact that radio course enrollees generally had been found to do about as well on the achievement-type tests used with the regular on-campus courses as did students who took the same courses normally was accepted as "proof" of the practicability of direct teaching by radio. However, most of these "radio courses" employed the conventional "college lecture" type of lesson presentation with little modification other than to restrict the movements of the professor sufficienly to keep him within the "pickup pattern" of the microphone. By contrast, classroom instruction in the public schools for the most part had developed along the lines of the familiar question and answer recitation-discussion pattern still widely used today. Understandably then, public school people

tended, at that time, to look upon "the radio teaching method" as poorly suited for use below the college level and, in consequence, to consider any notion of using radio for direct teaching in public school subjects impracticable.

To be sure, there had been several noteworthy occasions where radio had been pressed into service during a communitywide emergency or epidemic that necessitated closing the schools temporarily to enable teachers to teach their "absentee class groups," so that the prescribed content of the local course of study could be completed on schedule. Moreover, subsequent use of standard achievement tests to find whether students "had learned enough from going to school by radio" to obviate any need for holding "Saturday makeup classes" or for extending the school year invariably showed entirely satisfactory progress. However, the fact that each of these ventures into direct teaching by radio had been undertaken simply as a temporary expedient tended to identify it in the minds of a great many school people as nothing more than a *substitute* for conventional classroom teaching.

Meanwhile, what is known as "School of the Air" radio broadcasting which had started in the latter 1920's with enrichment type programming was gradually undergoing a shift in orientation in the direction of a modified form of direct teaching variously identified as "demonstration teaching," "specialist teaching" and "master teacher broadcasting."

Early program use surveys began to reveal instances where a local school, lacking a teacher trained to teach a particular subject, was attempting to use an enrichment-type program series to do the basic teaching job in that subject and assigning one of its local teachers to do whatever supplementation teaching was necessary. Gradually, on the basis of the findings from measurement studies in schools that undertook to use radio in this manner, it became reasonably evident that it was possible to do on acceptably effective teaching job in many of the commonly offered public school subjects by using a suitable enrichment-type program series to do the basic teaching job in combination with careful and thorough supplementation teaching (or "program utilization," to call it by its less definitive but more common name) by the teacher immediately following each broadcast.

The Specialist Teacher

As news of these findings spread, State and local school systems that were doing school-of-the-air broadcasting began to re-direct the emphasis of their subject area program series to make them

more readily usable on a specialist teaching basis. The "radio teachers" were selected with greater care, in an attempt to have each course series "taught" by the local teacher judged to be truly of specialist teacher stature in the handling of her subject.

Insofar as practicable, individual broadcasts were planned to serve as self-contained teaching units, and manuals and study guides for each program series were developed to help the individual local teacher improve her "program utilization technique" by suggesting a variety of possibly applicable followup devices and student activities. Except for a few subtle and not readily discernable differences in structure and emphasis, however, these programs were closely similar to the programs of series produced for enrichment use.

Up to the time of the beginning of World War II, this type of direct teaching by radio, though fairly common, had not yet achieved anything remotely approaching general acceptance. One city school system, that of Cleveland, Ohio, was experimenting with direct teaching in all subject areas on a citywide basis and, by that time, had accumulated a fairly substantial amount of achievement score evidence of its practicability. Elsewhere, however, direct teaching use of radio was usually confined to exploratory experimentation in a few selected courses or with a few selected class groups.

The Same Cycle Again With Television

With the advent of television, broadcasting at the public-school level started, much as it had with radio, with broadcasting samples of student performance, gradually expanding into the field of enrichment-type programming related to specific curriculum areas. However, as the colleges and universities began to adapt their credit-course offerings for presentation by television, the whole instructional approach underwent a change in character and within a very short time the familiar lecture method had been superseded by what has been termed the "lecture demonstration" method. What on radio, had been verbally communicated "know-how," on television became "show-how" and college course broadcasting began to take on a new significance.

Meanwhile, a similar change set in at the public-school level. The addition of visual demonstration to verbally communicated explanation tended to make the enrichment type program even more a "self-teaching" unit of experience than had been achieved by radio lessons planned intentionally for direct teaching use! Instead of merely referring to visual materials which the cus-

tomary radio series teacher's manual had suggested, the teacher-on-camera herself showed whatever illustrative materials she thought likely to be needed to establish visual identification of unfamiliar objects and places and things, or to help students visualize the internal structure and dynamics of new concepts.

Even when the specialist teacher approach began to make its appearance in television programming designed for in-school viewing, the teacher-on-camera was no longer a "superior" to be envied and mistrusted but, instead, became a helper who assisted with the more routine communication phase of teaching so that the local classroom teacher might have more time left for the more meticulous job of helping her students interpret and apply the new television communicated experiences.

Use of "television lesson" broadcasts in the public schools, although still offered for use solely on an elective basis, has shown a steady growth, until today, it is fairly general in our larger cities. Difficulties in adjusting class schedules to match broadcast schedules still continue to limit the use of such broadcast series in a great many schools, and lack of suitable classroom facilities for television viewing impose still other limitations. Significantly, however, concern over the respective merits of *enrichment programming* as opposed to *direct teaching programming* appears, for the most part, not to have carried over from radio into the field of television.

Today, instead of concerning herself over whether she is "trying to fit television lessons into her own teaching" or "trying to fit her own teaching into that of the television teacher" the average teacher who elects to make use of lesson telecast series appears to do so with something of a feeling that she is *deliberately inviting the teacher-on-camera* to come into her classroom once or twice a week by television to help out with an aspect of the total teaching job which she, lacking the variety of illustrative and demonstrations materials and the specialized skills in using them, could not do as readily.

Not only, then, has direct-teaching programming, once considered to be unsuited for use below the college level, now come to be accepted as educationally and philosophically sound at the elementary school level, but the prevalence of its use has tended to make school people sense a distinction between the two concepts of the role of educational broadcasting which had not been apparent before the advent of television.

Enrichment programming, *from the standpoint of the broadcaster*, finds itself immediately in competition with informational

and public-service programming already being done by the commercial stations and networks. From the standpoint of program-utilization by the classroom teacher, it finds itself in competition with teaching films and other types of library materials designed for selective use precisely when needed. Direct-teaching programming, however, *competes with neither* for it undertakes what neither the commercial broadcaster nor the text-materials producer has ever attempted to accomplish.

Closed-Circuit Television Invites Further Experimentation

Early experimentation in the use of television for direct teaching was handicapped by the fact that most school systems and colleges were completely dependent on the generosity of local commercial stations for any opportunity to explore possibilities of adapting established instructional techniques and procedures to the new medium and devising such new lesson presentation techniques as might be needed. Accordingly, at the start of direct teaching by television, lesson presentation patterns tended generally to follow program formats of standard television broadcasts.

At first the programs attempted merely to bring viewers a picture of a teacher teaching a physically present class-group, on the assumption that each lesson presentation needed actually to picture a recognizably normal classroom situation in order to enable the individual viewer to achieve any feeling of immediate participation. Teachers, too, tended to prefer having student groups appear with them on camera, to help them achieve optimum "pacing" in their teaching and to indicate for them, by the questions they asked, any points in the lessons that might need further elaboration or clarification.

Gradually, however, observations reported by researchers, together with evidence from viewer reaction studies began to raise some doubt about the utility of this practice. Repeatedly researchers have noted that when a student group is seen on camera with the teacher, the psychological effect on the individual viewing group member tends to be one of "making him feel himself to be merely a spectator to something that is happening to somebody else, free of any obligation to pay attention to what is being said and done," instead of giving him any sense of being a participating member of the group in the studio.[2]

[2] Kumata, Hideya. An Inventory of Institutional Research. Educational Television and Radio Center, 2320 Washtenaw Ave., Ann Arbor, Mich.

As this point of view gained currency, direct-teaching programs began to undergo some significant changes in format. The student-group used on camera was decreased in number or eliminated altogether and the basic camera (Camera One) was moved to a new position directly facing the television teacher. Other cameras were added to permit "dollying in" for closeup "shots" of display materials and for over-the-shoulder inspection of teacher demonstrations involving precise manipulations within a relatively small visual field (such as showing how to read a micrometer, or how to read a vernier scale, or demonstrating how to sharpen a saw blade). Gradually the lesson presentations took on the production characteristics of regular broadcast-television programming.

However, not all schools and colleges interested in experimenting with television as a medium for direct teaching were so fortunate as to be located near a commercial broadcaster able to make any substantial amount of air time available for school broadcasting, and even those that were so situated often found that the amount of time made available to them was inadequate for their needs. Accordingly, when closed-circuit television equipment first made its appearance schools and colleges were quick to interest themselves in exploring its potential applicability, either for use as a substitute for broadcast television facilities or, where the institution chanced to be one of those that planned, eventually, to operate its own TV broadcast station, for use in experimenting with educational programming techniques preparatory to going on the air.

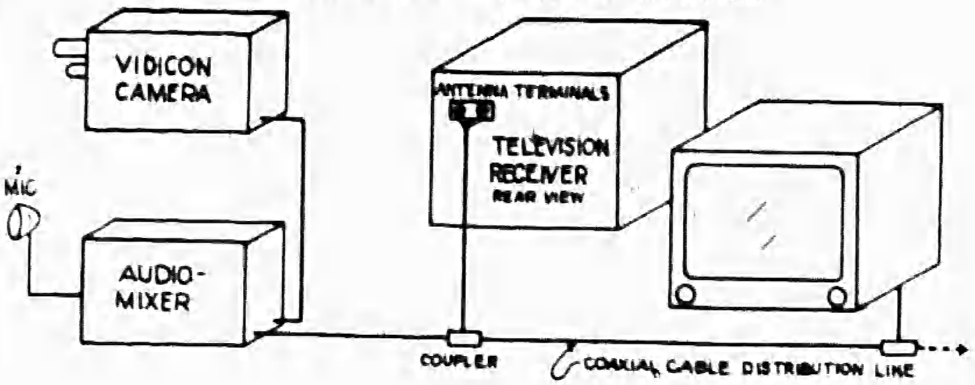
Closed-Circuit Equipment

Fundamentally, any closed-circuit television system consists of three basic parts: The program-origination facilities, the distribution cable system, and the receiving facilities.

The program-origination facilities include one or more television cameras and their associated camera-control equipment, one or more microphones and a microphone-control mixer preamplifier and an electronic device that mixes the combined camera output signals with the combined microphone signals to form a single composite program signal identical in character with the program signal that is transmitted by any regular TV broadcast, except that it has only a tiny fraction of the power that the signal transmitted by a TV broadcast station has.

The distribution cable system includes a system of shielded cable program lines interconnecting the program origination point with each of the rooms within the building (or buildings within

BASIC CLOSED-CIRCUIT SYSTEM



a school system or an entire community) where it is intended that the programs be receivable, along with any amplifiers that may be needed to boost the power of the program signal to insure clear picture reception at all viewing locations, and suitable line terminating units at the individual receiver locations for plugging in the individual receiving sets and matching their antenna input characteristics to those of the signal supplied by the distribution system.

The receiving facilities normally consist of standard television receivers.

The chief distinction betweeen closed-circuit television and "open-circuit" television (or "broadcast television" as it is better known) is that, with a closed-circuit system, the program "transmissions" are carried entirely within the cable circuits of the distribution system and are, therefore, not receivable *except* on television receivers connected directly to line terminating "outlet boxes" of the distribution system (more often known as a "master antenna system"), whereas with broadcast television, any TV receiver capable of tuning to the station's operating channel can tune in its broadcasts.

Another distinction, of course, is the great difference in installation and operating costs. For a television broadcast station of average power and coverage, the combined costs of transmitter, antenna, and antenna-supporting tower alone can easily run to $200,000, and the transmitter operating costs may average anywhere between 5 and 10 thousand dollars a year. Program-origination facilities to provide for one studio for "live" programming, plus facilities for the use of films and slides will cost anywhere from $90,000 to $100,000, or higher.

Educational institutions that plan, eventually, to go into educational TV broadcasting, sometimes prefer to buy broadcast-

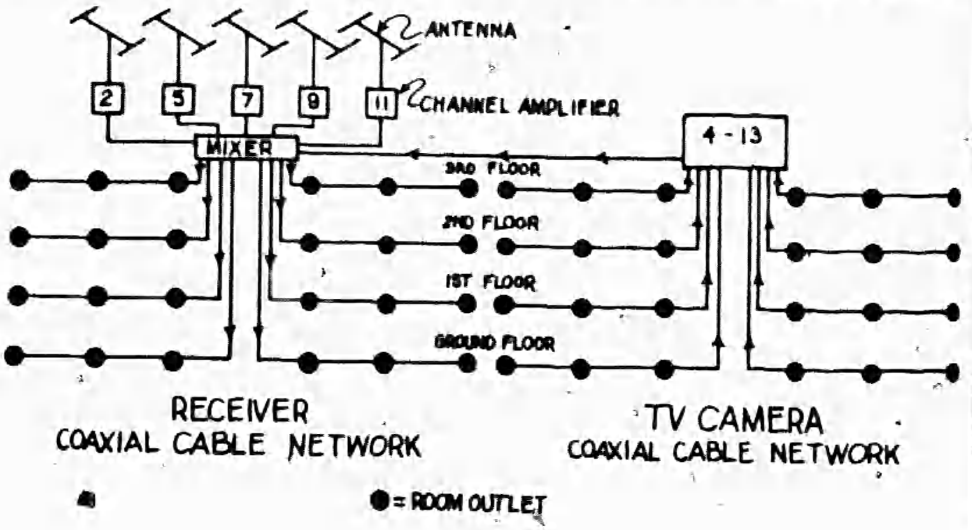
type camera equipment for program origination over closed-circuit systems, instead of starting out with less-costly "Vidicon" type cameras ordinarily employed in closed-circuit operations. However, where there is no immediate prospect of the school's going into actual broadcast programming, there are several definite advantages to be gained from using the closed-circuit type of camera equipment.

For one thing, the "Vidicon" camera-tube is far less easily damaged by improper handling by non-professional camera crews than is true of the "Image Orthicon" tube used in studio-type camera designed for broadcast use, and, when it does require replacement, the cost is far less than the cost of an Image Orthicon tube. Then, use of the Vidicon camera-tube permits simpler, more compact design of the camera, along with lighter weight and greater operating convenience.

Most important, from the standpoint of camera use in direct-teaching operations, the Vidicon-type camera can remain focused on stationary display materials — charts, maps, diagrams, scale models, and pictures of all kinds — for prolonged periods of time without any danger of image "burn-in" on the photo-sensitive, picture-scanning surface of the camera tube, whereas the Image Orthicon tube can be ruined beyond recovery if left focused on a nonmoving pattern or object for more than a very few minutes.

Since something over 80 percent of the needs for visual-information usage in teaching involves types of materials whose instructional significance lies in identification of physical appearance, and relative size and contour of objects or persons, and in tracing

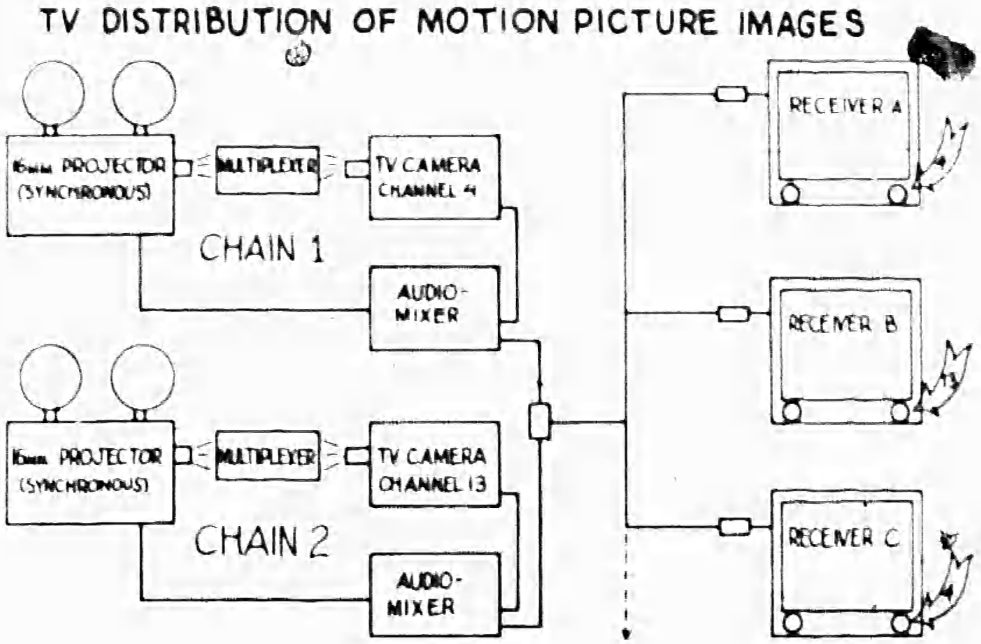
SCHOOL COAXIAL SYSTEM FOR CAMERAS AND RECEIVERS



patterned interrelationships among parts of charts, diagrams, and 'models', which students must have ample time to study in detail, it is evident that the Vidicon-type camera is far better suited to direct-teaching use than is the Image Orthicon type camera.

Adding the Programming Facility

As mentioned in Part IV, once a school plant is equipped with a master-antenna system, with TV receiving sets installed in individual classrooms, it is a relatively simple matter to transform



it into a closed-circuit broadcast system by merely adding program origination facilities to accommodate whatever types of programming are desired. (In fact, an entire 30-room school can be equipped, at the time of construction, with a master-antenna system for the simultaneous transmission of up to seven program signals, two 21-inch receiving-sets installed in each classroom, and minimum program-origination facilities for the simultaneous production of two separate direct-teaching lesson series, for only slightly more than the average cost — assuming fire-resistant construction — of a single classroom.)

Educators were quick to recognize that closed-circuit television affords advantages for experimenting in direct-teaching programming that had not been feasible over television broadcast stations. With reception limited solely to receiving-sets actually connected to the distribution system's cable network, there was no

necessity either for timing lesson-presentations to conform to conventional broadcast time-divisions, or to follow conventional broadcast-programming practices. Neither has it been necessary for all lesson presentations of a given course to conform to any single teaching format, so that formats initially adopted for any given direct-teaching experiment have been subject, generally, to modification to make use of new discoveries in relation to factors that appear to affect teaching effectiveness.

Once experimentation in direct-teaching application of closed-circuit television began, it spread rapidly, until, by the end of 1955, according to a survey study made by Mr. C. M. Braum of the Joint Council on Educational Television[3], experimental projects of this character were in progress in 70 different schools and colleges and in 7 military training centers, distributed over 33 different States and the District of Columbia, with approximately half of the projects using the Vidicon-type camera equipment, and the other half using the broadcast-type Image Orthicon cameras. Exact figures are still not available as to the number of educational institutions using closed-circuit television today, either on an experimental basis or as a part of regular teaching, but it is believed that a conservative estimate would put the number at well over a hundred.

Three Approaches to Direct Teaching by TV

The term "direct teaching by television" has been used to describe a variety of different educational applications of television. As has been pointed out earlier some of the first ventures into enrichment-type programming were thought of as being direct-teaching broadcasts. At the college-university broadcasting level, the term implied telecourse broadcasting. Commercial broadcasters often use it to apply, generally, to any broadcast series designed to fit a particular subject area. Educational broadcasters recognize the specifically intended direct-teaching purpose, but tend to think of the individual lesson presentations as "programs" rather than as lessons. Even researchers concerned with experimental study of direct teaching by television, although fully cognizant of the direct-teaching purpose common to their respective studies, exhibit wide differences with respect to basic assumptions,

[3] Closed-Circuit Television Installations at Educational Institutions. (mimeographed) Washington, D. C.: Joint Council on Educational Television and the Committee on Television, American Council on Education. February 1956.

characteristic lesson presentation format used, and the role assigned to the teacher-on-camera.

Any attempt to examine, individually, the various research studies that have been undertaken, to date, in the field of direct teaching by television tends to support the inference that each one of them is uniquely different from any other. However, if we re-examine them in terms of the stated or implied role accorded the teacher-on-camera, it will be seen at once that they tend to fall into three distinct and basically different categories.

The "Televised-Education" Approach

Experimental projects and research studies based on this approach characteristically undertake to use television to "extend the classroom visually," to enable the teacher-on-camera to teach a number of remotely located viewing groups at the same time he is teaching his physically present class group. Television is considered to be merely a transmission system used to bring viewers a picture of an expert teacher actually engaged in the process of teaching a student group immediately before him.

The assumptions on which its structure and procedures are based are: *First*, that the full potentialities of an outstandingly able teacher are better utilized by using television to extend the number of students he can reach directly; *second*, that, in his capacity of teacher-on-camera, he must be able to observe the reactions of a physically present student group, typical of the range of interests and abilities represented by the total student population his lesson presentations are expected to serve, to enable him to achieve optimum "pacing," an dto identify points that need further clarification or elaboration; and, *third*, that, by "staging" each TV lesson to duplicate or closely approximate the characteristic classroom situation, members of viewing groups will be most likely to identify themselves as participating members of the student group seen on camera.

In its simpler forms, "televised-education" teaching involves simply training one or more cameras on the "television teacher" in the act of teaching his normal class group, and employing conventional instructional techniques. Usually, one or two lessons a week are broadcast: (1) To supplement the regular class work of the groups that are viewing these lessons; (2) to provide added pupil stimulation and motivation by reason of the superior quality of the lesson presentation; and (3) to provide an example the individual local classroom teacher can use in an attempt to improve her own teaching procedures. In effect, this approach

appears closely to parallel the "master teacher" approach of the days of direct teaching by radio, mentioned earlier.

In its more-advanced form, however, *the main camera* is moved around to face the "television teacher" directly, while *a second camera is* "cut in," periodically, for a closer view of something the teacher is showing, and *a third camera*, placed to face the student group in the studio, is cut in, from time to time, to enable viewers to observe the reactions of these students being taught directly.

In its most advanced form, the student group on camera actually disappears, altogether, but every other effort is made to create the illusion of "a true classroom situation," with the teacher-on-camera concentrating on *"teaching the camera,"* but stopping, now and then, to answer student questions purporting to come from students to the right or left of the camera position.

Characteristically, each TV viewing group is in charge of a person variously referred to as a "proctor," monitor," or "teacher assistant," who is responsible for: (1) Keeping order during the viewing session; (2) answering any questions from the group; (3) seeing that the group carries out instructions given by the teacher-on-camera; (4) collecting assigned homework papers from the group; (5) distributing prepared reading lists and study guides; and (6) administering tests and recording the student achievement scores.

In variations of this approach where the teaching responsibility is assumed to be shared between the teacher-on-camera and the local classroom teacher, the latter is responsible for doing whatever supplementary teaching may be needed to make sure the TV lesson is fully comprehended.

However, all variations of the "televised-education" teaching approach have one thing in common, whether they be of the simpler forms wherein viewers see a teacher actually teaching a student group on camera, or whether they be of a type closely approaching staged program production.

The teacher-on-camera is the locally available teacher considered to offer the best combination of thorough knowledge of his subject, acknowledged teaching skill, and ability to "project himself" on television. Further, it is assumed that he, being in effect a "master teacher" in all respects, is the person best qualified to determine the content and emphasis of each TV lesson presentation, and that he alone has the right to decide precisely *how* he can develop the lesson topic most effectively. Accordingly, on camera, he customarily is self-directed, with camera taking their cues from him, rather than from a program producer.

Most of the courses being taught experimentally by closed-circuit television in the Pennsylvania State University research project[4] tend to follow this general approach in their instructional procedures, and much of the experimentation in direct teaching by television, at the public-school level, tends, likewise, to fall into this category.

The "Broadcast-Production" Approach

Like the "televised-education" approach, which it closely resembles in some respects, this approach stems from an attempt to provide systematic instruction in regular school and college subjects to student groups beyond the immediate physical presence of the teacher. However, there is no pretension that the teacher-on-camera is teaching a physically present class group co-incident with his teaching remotely located viewing groups. Instead, each lesson presentation is studio-produced, and employs standard, professional broadcast-television production techniques with a lecture-demonstration type of program format.

As in the "televised-education" approach, the teacher-on-camera is selected for thorough familiarity with his subject, plus the ability "to project himself" on television, but less emphasis is placed on demonstrated ability to teach in a normal classroom situation since it is assumed that broadcast programming techniques of presentation will be used in the TV lessons. Instead, the teacher-on-camera and the program director assigned to work with him in presenting his course constitute a "Lesson-Production Team," *each* of them considered to be *"the full professional equal of the other."*[5] They decide *jointly* what will be taught in any given lesson, but the decision as to how it will be taught is held to be a "production" matter, properly referrable to the director.

Each lesson presentation tends, in effect, to be a professionally-produced television program. Usually, the teacher-on-camera "teaches the camera" directly, at all times, although there are still some who prefer, as in the "televised-education" approach, to have some students present in the studio to help them achieve proper lesson "pacing," and to interrupt with questions, occasion-

[4] Carpenter, C.R. *and* Greenhill, L. P. An Investigation of Closed-Circuit Television for Teaching University Courses. University Park, Pa.: The Pennsylvania State University. July 31, 1955.

[5] This approach is succinctly explained by Dr. Huston Smith, Washington University, St. Louis, in a paper prepared for delivery October 7, 1955, at the 38th Annual Conference of the American Council on Education.

WQUED, Pittsburgh

Television teacher directs 5th graders' attention to book list set up in each classroom for their daily assignment provided by broadcasting station.

ally, where further clarification is needed. Such lesson productions are sometimes designed to be used as "complete teaching packages," as in the case of Pittsburgh's "Total Teaching Demonstration" experiment,[6] in which TV lessons were planned for use without any supplementary teaching by local classroom teachers. In other cases, such as the experiment in direct teaching of selected elementary-grade and high school subjects undertaken by the St. Louis public schools over Educational Television Station KETC-TV,[7] the TV lessons are designed to do the basic job of presenting and explaining new content, but are intended to be supplemented by further teaching by the individual local classroom teacher.

Although critics of this approach contend that "it forces the teacher-on-camera to first become an actor, in order that he may play the role of teacher before the camera," it cannot be denied that research studies have shown it to be at least as effective as

[6] Television Teaching Demonstration: Annual Report 1955-56, and Information Concerning Television-Teaching Demonstration Conducted Over Educational Television Station WQED, 1956-57. Both publications available, in mimeographed form, from Division of Public Relations, Pittsburgh Public Schools.

[7] Herminghaus, Earl G. An Investigation of Television Teaching, Conducted by The St. Louis Educational Television Commission and The St. Louis Public Schools. St. Louis: St. Louis Public Schools, September 1956.

the "televised education" approach in producing measurable learning gains. Understandably, it is the approach that appears to be favored for use in experimental projects where lesson series are broadcast over local TV stations, and, since schools engaged in closed-circuit programming research tend to look for operations personnel with broadcast-television experience to meet their staffing needs, the "broadcast-production" approach appears to be gaining favor here, as well.

The "Video-Instrumented Teaching" Approach

However, there is another approach that differs sharply from the two already identified, with respect to its basic assumptions and its over-all procedural structure.

First publicized by Dr. Lewis of Chicago Teachers College[8] about 6 years ago, this approach starts with the assumption that television's most far-reaching significance for direct teaching of regular school and college subjects lies in its potentialities for *facilitating instruction.*

Advocates of this approach have pointed out, again and again, that learning gains discovered in experimental studies of the past half-dozen years "are clearly attributable, NOT to any subtle magic inherent to television as a medium of communication, but, rather, to the fact that no other instructional medium offers the truly resourceful teacher anything remotely approaching an equal opportunity to do such an incisively-precise job of teaching through imaginative selection and skilled application of instructional techniques uniquely and immediately suited to the teaching purposes of the moment — techniques, for the most part, not practicable for use in conventional classroom teaching on a school-wide basis."

This is tantamount to saying that the more capable teacher stands to gain more from using television for direct teaching than does the less gifted teacher. This inference is supported by the almost universal observation of researchers in this field that "truly good teaching takes on added effectiveness on television, while mediocre teaching, on television, stands starkly revealed in all its shabby futility."

Moreover, advocates of this approach contend that the "specialist-teacher" concept, implicit in both the "televised-education"

[8] Lewis, Philip. *Closed-Circuit TV: New Tool for Teachers. Chicago Schools Journal,* November-December, 1953, pp. 69-75.

approach and the "broadcast-production" approach, is unrealistic, that individual differences exist among teachers much as they do among students, and that in order to assure top-level skill in *all* aspects of the entire teaching process, "teacher *teams*" are needed, each member selected for a particular ability necessary to the total teaching job.

They insist that it is unrealistic, also, to concern ourselves with exploring the practicability of using television as a means of providing *existing types of school experience* to a constantly growing school population — that, *instead*, we should be trying to find out how television's demonstrated potential for instrumenting teaching can best be utilized to improve the character of instruction on a school-wide basis.

Improvements in the traditional public school curriculum, they point out, are always desirable, and, as schools undertake to develop functionally reoriented curricula geared to the realities of living in a society characterized by increasingly automated technology, we can expect an intensified demand for more efficient use of instructional resources. This, they maintain, is the area in which direct teaching by television finds its greatest opportunity and meets its greatest challenge.

Attention is called to the fact that this new approach envisages the total teaching process as consisting of two separate functionally-distinct phases: The basic-communication phase, and the interpretation-application phase.

The basic-communication phase, includes the communicating factual content and makes it comprehensible through carefully organized explanation and demonstrations, together with orientation and motivation aspects of teaching, establishing visual identifications, and setting up "intellectual cross-indexing" to facilitate selective recall by students.

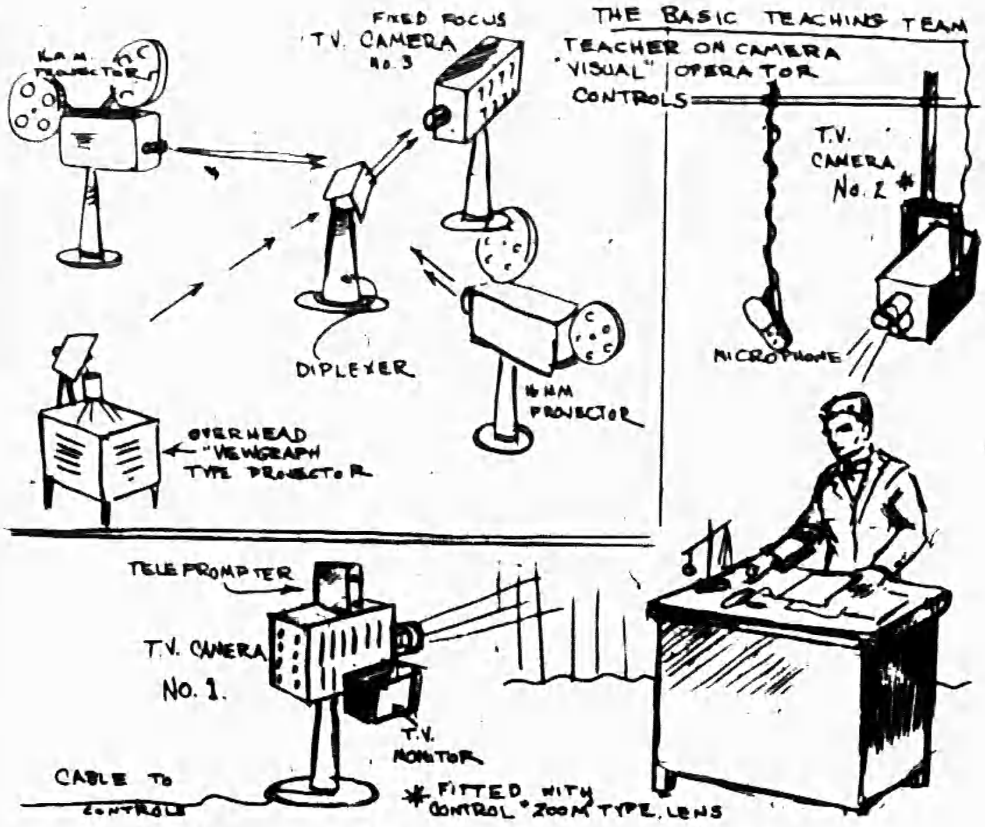
The equally important and more meticulous *interpretation-application phase*, involves (1) helping students to interpret the new TV-communicated learnings, to identify and evaluate their potentialities and limitations with respect to applications and significance, and to fit these learnings into the total configuration of antecedent experience in order to provide an expanded basis for further learning, and (2) providing planned practice situations in which students can apply the new learnings in teacher-guided procedures aimed at accomplishing specifically defined goals with clearly specified levels of achievement.

The basic-communication phase it assigns to specialized teaching teams employing television (usually, closed circuit) in order

to accomplish this phase more quickly (and, possibly, with somewhat better student retention), and to give the individual classroom teacher more time for types of teaching best accomplished through working directly with relatively small student groups and individual students.

The interpretation-application phase, it still holds to be the responsibility of the individual classroom teacher working immediately with her own class group, who, either as an actively participating member of the teacher team assigned to a particular lesson series, or as a curriculum committee member that shared in defining its objectives, is fully informed as to the content and emphasis of forthcoming lesson presentations, and is, therefore, continuously in a position to organize past learnings to provide a conceptual basis for her group's ready comprehension of each new lesson presentation.

Under this approach, then, the teacher-on-camera is neither a "specialist" or "master teacher" nor the performer member of a teacher-producer team. Instead, he is simply one member of a "teacher-team" responsible for planning, writing, and document-



Push-button control of camera aiming, framing, and switching.

ing the successive lesson presentations of a particular course at a given grade level, and for presenting them on camera. He is selected by the team on the basis of his being thought the member best qualified to present the lessons (or a given lesson or lesson sequence within the course). On camera, he is entirely self directed, and may even perform the actual camera aiming, framing, and switching operations, if desired, by means of push button controls.

Normally, each course is originated from a psychologically simplified *"teaching set,"* especially equipped to fit the particular course for which it was designed, and there is never any suggestion that the lesson is originating in an actual classroom. Students rarely appear on camera, and when they do, it is for the purpose of reporting directly to viewing groups on the results of special projects in which they have participated, or individual assignments they have completed. On such occasions, it is assumed that the individual doing the reporting has something of general interest to say to all viewing-group members, and he "tells it directly to the camera." Likewise, the teacher-on-camera *"teaches the camera" exclusively*, in an attempt to capture and hold, continuously, the total visual attention of every viewing-group member.

No provision is made to accommodate questions from students of viewing-class groups during the TV presentations, on the grounds, *first*, that research studies concerning this aspect of direct teaching by television show, generally, that such questioning tends to break the psychological continuity of a lesson presentation, resulting in measurable loss in teaching effectiveness, and *secondly*, that, with the teacher-team lesson development, learning difficulties can be anticipated accurately enough in advance to obviate any need for questioning while a lesson is in progress.

Finally, as indicated earlier, this approach assumes that each viewing group will be supervised, during lesson presentations, by its regular teacher in each respective subject area, who, as a member of the teacher team for the TV course being taught, participated in its planning and development. Prior to the start of each TV lesson, she gets the class group organized for viewing, and, immediately on its conclusion, "takes over" to do the interpretation-application phase of the total teaching job.

Any comprehension difficulties noted during a lesson presentation are customarily reported to the teacher-on-camera soon after the TV presentation is finished, in order that the members of the teacher team immediately responsible for preparing the teaching "scripts" and illustrative materials can take this into account in

planning the next lesson presentation of the series, while frequent conferences between central TV teaching staff and teachers using the lesson presentations with their class groups provide the means for matching the TV lesson presentations to the average rate of individual class group progression.

It is this "video-instrumented teaching" approach that is used, for the most part, as the basis for television usage in the 5-year experimental teaching project now in progress in Hagerstown, Md. Now in the middle of its first year of operation, this project is already providing the basic-communication phase of instruction in the basic subject areas to 2 high schools and 6 elementary schools in the immediate Hagerstown area, and will eventually be expanded to include all the schools of the Washington County (Md.) public schools[9] [10]. Three separate studios are fully equipped and in operation at "Television Teaching Center" immediate to the Board of Education headquarters building, making it possible to originate three separate lesson series at the same time, and to transmit them, simultaneously, over a communitywide coaxial cable closed-circuit system for individual class group viewing.

The project's first year of operation is concerned largely with developing appropriate TV teaching techniques and system operations procedures, organizing administrative procedures and lesson scheduling for maximum convenience in class group viewing, and identifying specific aspects of the total program for controlled experimentation and measurement study. The project is proceeding smoothly, slightly ahead of schedule, and, it has met with wholehearted support from faculty and community, alike.[11]

Research Findings Basic to Planning

Early research and experimentation in the field of direct teaching by television were addressed largely to two problems: Finding out which of the common public school and college subjects could appropriately be taught directly by television; and finding out, experimentally, whether or not a given teacher, employing what

[9] Dunham, Franklin *and* Lowdermilk, Ronald R. Television in Our Schools. U. S. Department of Health, Education, and Welfare, Office of Education. (Bulletin No. 16.) Washington: U. S. Government Printing Office, 1956, pp. 23–24.

[10] Stoddard, Alexander J. Schools for Tomorrow: An Educator's Blueprint. New York: The Fund for the Advancement of Education, 1957, pp. 34–35.

[11] Working Together in the Schools of Washington County. Washington County Board of Education, Hagerstown, Md., 1956.

would be considered good classroom teaching techniques, could "teach his subject" by television, to additional student groups (or to individual viewers), beyond the confines of the immediate classroom, *as effectively* as he, or an equally able teacher could teach a comparable student group in a conventional classroom situation. Little interest, if any, seems to have been shown in trying to find out whether or not there might be certain aspects of teaching that could be accomplished better or, perhaps, more expeditiously, through the use of television. Most researchers appeared to be concerned, primarily, with trying to determine whether or not television could qualify as "one of the modern teaching tools."

Then, study by study, the accumulating findings of research provided steadily mounting evidence that: (1) Practically all of the common school and college subjects can be taught acceptably well by television; (2) students taking courses by television tend to do about as well (in some cases, perhaps, somewhat better) on achievement-type tests as those who take the same courses conventionally; and (3) size of viewing groups seems to make no measurable difference, quantitatively or qualitatively, on the effectiveness of direct teaching by television.[12]

Once it was established with reasonable certainty that regular public school and college subjects could be taught by television, a variety of experimental projects sprang up in all parts of the United States. Some of them, such as Pittsburgh's "High School of the Air" and Chicago's "Junior College of the Air," already described in some detail, in Part I, page . . ., undertook to apply these findings in projects designed to provide systematic instruction in regular school or college subjects to young people who, for one reason or another, could not be accommodated in regular in-school (or on-campus) classes. Other projects have frankly been attempts to explore the possibility of using direct teaching by television to relieve the effects of critical shortages in qualified teachers and school housing.

Still other projects have undertaken to identify principles and techniques by which direct teaching by television can be made maximally effective in promoting learning, and to explore ways and means of using it to improve the quality of school experience for young people, generally. (This, it will be recognized, is the

[12] Kumata, Hideya. An Inventory of Instructional Television Research. (Reporting a project of the Institute of Communications Research at the University of Illinois) Educational Television and Radio Center. Ann Arbor, Michigan, 1956.

Hagerstown, Md

Sixth-grade elementary science demonstrated with lesson on snow flakes for Washington County schools.

basic purpose underlying the "video-instrumented teaching" approach to direct teaching by television.)

A number of studies have demonstrated the values of making liberal use of visual aids, simple mechanically- and electrically-based and analogues designed to aid student visualization of relationships and time-sequence processes, and supplementary materials of all kinds. In fact, it has been found, where direct teaching by television is done on a schoolwide basis, that, not only can a greater variety of visual materials be used to advantage, but the fact that a single set of such materials for a given topic of instruction is enough to serve an entire school system makes it easier and more economical to keep illustrative and demonstration materials continuously up-to-date.

Other research findings have established such obvious educational advantages of direct teaching by television as: (1) Its ability to bring every member of each viewing group a closeup view of teaching demonstrations conventionally feasible only on an individual basis, such as dissections of biological specimens, showing how to use a sliderule, of showing how to make buttonholes; (2) its ability to bring students visual information not otherwise accessible for direct observation, such as visualization of the interacting sound-wave pressure fronts within a loud-

speaker enclosure, division-of-labor phenomena inside an anthill, or microscope-slide views of bacteria cultures; and (3) its ability, through the use of multiple-camera techniques, to portray, visually, relationships between two or more different things that are not readily apparent when they are examined singly, as can be done in visually relating pictures of products or industries with specific map locations by superimposing the one upon the other.

Several researchers[13] [14] who have undertaken to investigate the relationship between abilities of students and the extent to which they can profit from direct instruction by television have found that, although *both* low-ability and high-ability students showed statistically significant learning gains at least equal to those found for conventional classroom instruction, the low-ability students tended, on the basis of actual percentage gain from pre-test to post-test scores to show proportionately more learning from the television lesson presentations than did the high-ability students. This would seem to suggest a possibility that the use of television may make it possible to design lessons for television presentation to accommodate a somewhat wider range of individual differences in student abilities than has been considered possible in conventional classroom instruction. However, further research is obviously needed before this can be stated as anything more than a hypothesis.

One of the major concerns, both of educators interested in the use of television for direct-teaching application and of researchers working in this field, has been that of finding some practicable means whereby members of viewing groups might be able, during the course of a lesson presentation, to question the teacher-on-camera about points not fully comprehended. Various approaches to this problem have been devised.

In some of the experimental projects, microphones have been installed in viewing rooms, with lines running back to a loudspeaker in the program-originating room, so that, when a viewing-group member indicates he wants to ask a question, the "assistant teacher," "monitor," or "proctor" (as he has been variously identified) in charge of the viewing group can simply signal the teacher-on-camera, and then switch on the microphone

[13] Kanner, J. H., Runyon, R. P. *and* Desiderato, O. Television in Army Training: Evaluation of Television in Army Basic Training. (Technical Report 14) Washington, D. C.: Human Resources Research Office, The George Washington University. Nov., 1954.

[14] Boone, W. F. Evaluation of the U. S. Naval Academy Television as a Teaching Aid. (No. 7010-7-26-54, Duplicated). Annapolis: United States Naval Academy. October 29, 1954.

so the student can ask the question. In other projects, the return-speech circuits of a central sound system have been used in this fashion. A few projects have made use of both microphone circuits and closed-circuit TV camera facilities in viewing rooms, so that the teacher-on-camera could both see and hear his questioners.

Surprisingly, however, studies at the Pennsylvania State University[15] failed to show any statistically significant differences in learning between groups provided with microphone "talk-back" facilities and those without. Two studies conducted at the Special Devices Center, at Port Washington, Long Island[16 17] showed, further, that where communications facilities were provided to allow for questions from viewing groups during lesson presentations, the questions asked tended to be trivial, inconsequential, and unrelated to the principal topic under consideration. Moreover, evidence gathered in connection with the Human Resources Research Office study previously cited[18], and in an independent study conducted at the New Jersey State Teachers College in Montclair[19] suggest that, with adequate lesson preparation in advance by experienced teachers, the kinds of questions students are most likely to want to ask can be anticipated with reasonable accuracy, and their need obviated by making certain that such points of possible comprehension difficulty are fully explained in the lesson presentation proper.

Thus, it would appear that, instead of being necessary for effective teaching by television, intercommunication facilities between teaching room and the individual viewing rooms are actually undesirable in that their availability tends to invite time-wasting questions that serve only to interrupt the psychological continuity of the lesson presentations.

In addition to these findings pertaining to the problems central to the respective experimental projects and research studies com-

[15] Penn State TV Research Report. Progress Report, Fall Semester 1955, University Park, Pa.: The Instructional Research Program, Pennsylvania State University, Feb. 20, 1956 (duplicated).

[16] Fritz, M. F., Humphrey, J. E., Greenlee, J. A., *and* Madison R. L. Survey of Television Utilization in Army Training. Human Engineering Report, SpecDevCeb 530-01-1, 31 December 1952. Port Washington, Long Island, N. Y.: Special Devices Center.

[17] Rock, R. T., Duva, J. S., *and* Murray, J. E. Training by Television: Comparative Effectiveness of Instruction by Television, Television-Recordings, and Conventional Classroom Procedures. Port Washington, L. I., N. Y.: Special Devices Center. S.D.C. Report 476-02-2 (NAVEXOS P-850-2).

[18] Cf. Footnote [13], p. 94.

[19] Kelly, G. A., *and* Conrad, L. H. Report on Classroom Television, 1954. Montclair, N. J.: New Jersey State Teachers College, 1954 (duplicated).

pleted to date, there have been a number of incidental findings that have not only provide highly useful in devising instructional procedures for use in direct teaching by television, but, in addition, have served to focus the attention of professional educators and school people upon the need for critically reexamining certain of our accepted beliefs concerning the nature of the teaching-learning process.

For example, most researchers in this field have called attention, in particular, to the fact that, like teaching films and other projection materials, television not only provides viewing groups with a fixation point for visual attention, but also serves to direct viewer attention continuously to the precise detail of visual information under discussion at the moment; like radio, it creates for viewers the illusion of being an actual eye-witness to action in progress. In consequence of this two-fold character of television, there is a tendency toward immediate and sustained emotional involvement on the part of each individual student, and on the part of the viewing group as a whole, in a real-life situation that is happening now.

One of the most challenging findings to date has been the discovery that the TV instructor, by "teaching the camera" rather than a physically present class group, is able to look every student, in every viewing group squarely in the eye throughout an entire lesson presentation — a universally recognized teaching advantage heretofore impossible in group instruction.

These research studies, together with inferences drawn from consistent recurrence in current practice of apparent cause-effect relationships between instructional methods employed and the measured or observed outcomes resulting, provide the basis for the general procedure that is now in use for direct teaching by television.[20]

[20] R. R. Lowdermilk. Manual for Direct Teaching by Television. U. S. Office of Education, Washington 25, D. C., 1957.

Appendixes

Appendix A.—Educational Television Stations (In Order of Establishment)

Station and City	Channel	Address	Manager
KUHT Houston	8	3801 Cullen Blvd.	John Meaney
WKAR East Lansing	60	Michigan State University	Armand Hunter
WQED Pittsburgh	13	4337 Fifth Ave.	John F. White
WHA-TV Madison	21	University of Wisconsin	H. B. McCarty
KQED San Francisco	9	525 Fourth St.	James Day
WCET Cincinnati	48	1234 Elm St.	Uberto T. Neely
KETC St. Louis	9	Washington University	Henry F. Chadeayne
KUON-TV Lincoln	12	University of Nebraska	Jack McBride
KCTS-TV Seattle	9	University of Washington	Loren B. Stone
WTIQ Munford (Ala.)	7	Protective Life Bldg. Birmingham	Raymond Hurlbert
WUNC-TV Chapel Hill	4	University of North Carolina	Earl Wynn

Station and City	Channel	Address	Manager
WBIQ Birmingham	10	Protective Life Bldg.	Raymond Hurlbert
WGBH-TV Boston	2	84 Massachusetts Ave. Cambridge	Hartford N. Gunn, Jr.
WILL-TV Champaign-Urbana	12	University of Illinois	Frank E. Schooley
WTHS-TV Miami	2	275 NW. Second St.	Vernon Bronson
WTTW Chicago	11	1761 E. Museum Dr.	John W. Taylor
WTVS Detroit	56	9345 Lawton Ave.	Henry D. Brown
KRMA-TV Denver	6	414 Fourteenth St.	James Case
WOSU-TV Columbus	34	The Ohio State University	Richard B. Hull
KETA Oklahoma City	13	1901 N. Ellison	John W. Dunn
KLSE Monroe (La.)	13	State Dept. of Education, Baton Rouge	Shelby M. Jackson
WKNO Memphis	10	268 Jefferson Ave.	Harold M. Martin
WAIQ Andalusia (Ala.)	2	Protective Life Bldg., Birmingham	Raymond Hurlbert
WHYY-TV Philadelphia	35	Packard Bldg.	Richard S. Burdick
WOI-TV Ames*	5	Iowa State College	Robert C. Mulhall
KOMU-TV Columbia*	8	University of Missouri	Edward C. Lambert
WNDU-TV South Bend*	46	University of Notre Dame	Bernard C. Barth
WYES New Orleans	8	916 Navarre Ave.	Duff Browne
WETV Atlanta	30	68 Mitchell St., SW.	Haskell Boyter
WMVS-TV Milwaukee	10	1015 N. Sixth St.	William F. Rasche
KTCA Minneapolis-St. Paul	2	2070 W. Roselawn Ave., St. Paul	John C. Schwarzwalder

*Noneducational license.

Station and City	Channel	Address	Manager
In Process of Opening			
WIPR San Juan (P. R.)	6	1310 Ponce de Leon Ave.	Rafael Delgado-Marquez
WMUB-TV Oxford (Ohio)	14	Miami University	Stephen Hathaway
WGTV Athens (Ga.)	8	20 Ivy St., SE., Atlanta	Gerald Appy
Construction Permits and Applicants			
Sacramento, Calif.	6	324 N. San Joaquin St., Stockton	
WTCB Bridgeport (Conn.)	71	State Office Bldg., Hartford	
WEDH Hartford	24	do.	
WCTN Norwich (Conn.)	63	do.	
WJCT Jacksonville	7	203 Greenleaf Bldg.	William K. Cumming
Savannah (Ga.)	9	208 Bull St.	
KDPS-TV Des Moines	11	629 Third St.	
Lawrence (Kans.)	11	University of Kansas	
KSAC-TV Manhattan (Kans.)	8	Kansas State College	
KDAC-TV Corvallis	7	Oregon State System of Higher Education	
Albuquerque	5	Board of Regents University of N. Mex.	
WUOM-TV Ann Arbor	26	University of Michigan	
WTLV New Brunswick	19	State Department of Education, Trenton	
WTVZ Albany	17	State University of New York	
WQTV Binghamton	46	do.	
WTVF Buffalo	23	do.	

Station and City	Channel	Address	Manager
WIET Ithaca	14	State University of New York	
WREG New York	25	do.	
WROH Rochester	21	do.	
WHTV Syracuse	43	do.	
Rome-Utica	26	do.	
WGTE-TV Toledo	30	1901 W. Central	Harry D. Lamb
KOED-TV Tulsa	11	Box 2005, Norman	
Providence (R. I.)	22	Board of Education	
Nashville (Tenn.)	2	Nashville Educational Television Foundation	
San Antonio (Tex.)	9	National Bank of Commerce Bldg.	
KUED Salt Lake City	7	University of Utah	Richard Evans

Appendix B.—Non-Commercial Educational Television Assignments (256 Reservations)

Educational Area	Channel
ALABAMA (6)	
Andalusia	*2
Auburn	56
Birmingham	*10
Mobile	42
Montgomery	26
Munford	*7
ARIZONA (2)	
Phoenix	8
Tucson	6
ARKANSAS (3)	
Fayetteville	13
Fort Smith	16
Little Rock	2
CALIFORNIA (8)	
Fresno	18
Los Angeles	28
Sacramento	6
San Bernardino	24
San Diego	15
San Francisco-Oakland	*9
San Jose	54
Stockton	42
COLORADO (4)	
Boulder	12
Colorado Springs	17
Denver	*6
Pueblo	8

* On the air.

Educational Area	Channel
CONNECTICUT (3)	
Bridgeport	71
Hartford	24
Norwich	63
DELAWARE (1)	
Wilmington	59
DISTRICT OF COLUMBIA (1)	
Washington	26
FLORIDA (9)	
Gainesville	5
Jacksonville	7
Miami	*2
Orlando	24
Panama City	30
Pensacola	21
Tallahassee	11
Tampa-St. Petersburg	3
West Palm Beach	15
GEORGIA (5)	
Athens	8
Atlanta	*30
Columbus	34
Macon	41
Savannah	9
IDAHO (2)	
Boise	4
Moscow	15
ILLINOIS (7)	
Carbondale	61
Champaign-Urbana	*12
Chicago	*11
DeKalb	67
Moline (see Davenport, Iowa)	
Peoria	37
Rockford	45
Rock Island (see Davenport, Iowa)	
Springfield	26
INDIANA (9)	
Bloomington	30
Evansville	9
Fort Wayne	27
Gary	66
Indianapolis	20
Lafayette	47
Muncie	71
South Bend	40
Terre Haute	57
IOWA (6)	
Cedar Rapids	26
Davenport-Rock Island & Moline, Ill.	30
Des Moines	11
Iowa City	12
Sioux City	30
Waterloo	22
KANSAS (4)	
Lawrence	11
Manhattan	8
Topeka	48
Wichita	22
KENTUCKY (1)	
Louisville	15
LOUISIANA (4)	
Baton Rouge	34
Lake Charles	19
Monroe	*13
New Orleans	*8
MAINE (3)	
Bangor	16
Orono	12
Portland	47
MARYLAND (1)	
Baltimore	24
MASSACHUSETTS (3)	
North Adams	80
Boston	*2
Amherst	82
MICHIGAN (12)	
Alpena	11
Ann Arbor	26
Bay City	73
Detroit	56
Escanaba	49
Flint	22
Grand Rapids	17
Houghton	25
Kalamazoo	74
Marquette	35
Sault Ste. Marie	34
Traverse City	26

* the air.

Educational Area	Channel
MINNESOTA (2)	
Duluth-Superior, Wis.	8
Minneapolis-St. Paul	*2
MISSISSIPPI (5)	
Biloxi	44
Jackson	19
Meridian	36
State College	2
University	20
MISSOURI (4)	
Kansas City	19
St. Joseph	36
St. Louis	*9
Springfield	26
MONTANA (6)	
Billings	11
Bozeman	9
Butte	7
Great Falls	23
Miles City	6
Missoula	11
NEBRASKA (2)	
Lincoln	*12
Omaha	16
NEVADA (2)	
Las Vegas	10
Reno	21
NEW HAMPSHIRE (2)	
Durham	11
Hanover	21
NEW JERSEY (6)	
Andover	69
Camden	80
Freehold	74
Hammonton	70
Montclair	77
New Brunswick	19
NEW MEXICO (6)	
Albuquerque	5
Gallup	8
Raton	52
Roswell	8
Santa Fe	9
Silver City	10

Educational Area	Channel
NEW YORK (10)	
Albany-Schenectady-Troy	17
Binghamton	46
Buffalo-Niagara Falls	23
Ithaca	14
Malone	66
New York	25
Poughkeepsie	83
Rochester	21
Syracuse	43
Utica-Rome	25
NORTH CAROLINA (8)	
Asheville	56
Chapel Hill	*4
Charlotte	42
Durham	40
Greensboro	51
Raleigh	22
Wilmington	35
Winston-Salem	32
NORTH DAKOTA (6)	
Bismarck	24
Dickinson	17
Fargo	34
Grand Forks	2
Minot	6
Williston	34
OHIO (8)	
Akron	55
Cincinnati	*48
Cleveland	25
Columbus	*34
Dayton	16
Oxford	*14
Steubenville (See Wheeling, W. Va.)	
Toledo	30
Bowling Green	70
OKLAHOMA (7)	
Enid	27
Lawton	28
Muskogee	45
Norman	37
Oklahoma City	*13
Stillwater	69
Tulsa	11

* On the air.

Educational Area	Channel
OREGON (4)	
Corvallis	7
Eugene	9
Portland	10
Salem	18
PENNSYLVANIA (4)	
Erie	41
Philadelphia	*35
Pittsburgh	*13
State College	44
RHODE ISLAND (1)	
Providence	22
SOUTH CAROLINA (4)	
Charleston	13
Clemson	68
Columbia	19
Greenville	29
SOUTH DAKOTA (4)	
Brookings	8
Pierre	22
Sioux Falls	44
Vermillion	2
TENNESSEE (7)	
Chattanooga	55
Crossville	71
Knoxville	20
Lexington	11
Memphis	*10
Nashville	2
Sneedville	2
TEXAS (18)	
Amarillo	2
Austin	30
Beaumont-Port Arthur	37
College Station	48
Corpus Christi	16
Dallas	13
Denton	2
El Paso	7
Fort Worth	26
Galveston	47
Houston	*8
Laredo	15
Lubbock	20
San Angelo	28
San Antonio	9
Texarkana	18
Waco	28
Wichita Falls	16
UTAH (4)	
Logan	46
Ogden	18
Provo	28
Salt Lake City	7
VERMONT (1)	
Burlington	16
VIRGINIA (5)	
Blacksburg	60
Charlottesville	45
Norfolk-Portsmouth-Newport News	21
Richmond	23
Roanoke	27
WASHINGTON (10)	
Ellensburg	65
Kennewick-Richland-Pasco	41
Omak-Okanogan	35
Pullman	10
Seattle	*9
Spokane	7
Tacoma	56
Walla Walla	22
Wenatchee	45
Yakima	47
WEST VIRGINIA (4)	
Charleston	43
Huntington	53
Morgantown	24
Wheeling-Steubenville, Ohio	57
WISCONSIN (11)	
Adams	58
Chilton	24
Eau Claire	19
La Crosse	32
Madison	*21
Marinette	38
Milwaukee	*10
Park Falls	18

* On the air.

Educational Area	Channel
Richland Center	66
Shell Lake	30
Superior (see Duluth, Minn.)	
Wausau	46
WYOMING (1)	
Laramie	8
U. S. TERRITORIES AND POSSESSIONS	
ALASKA (4)	
Anchorage	7
Fairbanks	9
Juneau	3
Ketchikan	9
HAWAIIAN ISLANDS (4)	
Lihue, Kauai	8
Honolulu, Oahu	7
Wailuku, Maui	10
Hilo, Hawaii	4
PUERTO RICO (1)	
San Juan	6

Appendix C.—New Books on Educational Television

BARNOW, ERIK. Mass Communication—Television, Radio, Film, Press. New York, Rinehart and Co., Inc., 1956.

BOGART, LEO. The Age of Television. New York, Frederick Ungar Publishing Co., 1956.

CHERRY, COLIN. On Human Communication. New York, The Technology Press of the Massachusetts Institute of Technology and John Wiley & Sons, 1957.

ELLIOTT, WILLIAM Y. Television's Impact on American Culture. East Lansing, Mich., The Michigan State University Press, 1956.

EMERY, WALTER. Four Years of Progress in Educational Television. Washington, D. C., Joint Council on Educational Television, 1956.

HEAD, SYDNEY W. Broadcasting in America. Boston, Houghton Mifflin Co.; Cambridge, Mass., The Riverside Press, 1956.

KUMATA, HIDEYA. American Inventory of Instructional Films in Research. Ann Arbor, Mich., Educational Television and Radio Center, 1956.

PAULU, BURTON. British Broadcasting. Minneapolis, University of Minnesota Press, 1956.

ROSENBERG, BERNARD *and* D. M. WHITE, *editors*. Mass Culture: The Popular Arts in America. Indian Hills, Colo., Falcon's Wing Press, 1956.

SELDES, GILBERT. The Public Arts. New York, Simon and Schuster, Inc., 1956. (Second Printing).

STASHEFF, EDWARD *and* RUDY BRETZ. The Television Program. New York, Hill and Wang, Inc., 1956.

Appendix D.—Publications of the U. S. Office of Education on Radio-Television and Visual Education

	How to obtain
Audiovisual Education Directors in State Departments of Education and in Large City School Systems Names and addresses of 315 such individuals. (1956)	OE; free.
Classroom Radio Receivers Specifications and standards developed by the Office of Education and the Radio EL-TV Manufacturers Association. (1948)	OE; free.
Directory of College Courses in Radio and Television, 1957-58 Annotated list of 400 colleges and universities offering courses in radio and television. (1957)	OE; free.
Directory of 3,300 16mm Film Libraries State and city list of institutions and organizations that lend or rent 16mm films. Annotated. (1956)	GPO; 70¢.
Film Sources in the D.C. Area Annotated directory of loan and rental sources of motion pictures and filmstrips in the District of Columbia metropolitan area. Prepared cooperatively with the D.C. Public Library. (1956)	OE; free.
General Catalogs of Educational Films Descriptive bibliography of catalogs of educational motion pictures and filmstrips. (1956)	OE; free.
Key Personnel in U.S. Government Film Programs Directory of 99 individuals in the Washington, D.C. area. (1956)	OE; free.
List of Standard and FM Educational Radio and Television Stations by State and City Names and addresses of 160 such stations. (1956)	OE; free.
Movie Projectors in Public High Schools Results of a 1949 survey of 16mm sound projectors in public high schools. Illustrated. (1950)	GPO; 15¢.
102 Motion Pictures on Democracy A selective bibliography of 16mm films. Classified and annotated. (1950)	GPO; 20¢.
Radio and Television Bibliography Annotated and classified bibliography of references. (1956)	GPO; 25¢.
School Sound Recording and Playback Equipment Specifications and standards developed by the Office of Education and the Radio Manufacturers Association. (1947)	OE; free.
Survey of Educational Television Programs Over Commercial Stations, 1955–56 List of 581 program series sponsored by educational institutions.	OE; free.

	How to obtain
Television in Our Schools Uses of television in school situations. (1956)	GPO; 15¢.
U.S. Government Films for Public Educational Use Descriptive catalog of 4,500 U.S. Government motion pictures and filmstrips available for public use in the United States. Contains subject index and instructions for borrowing, renting, and purchasing each film. (1955)	GPO; $1.75.
U.S. Government Films for Television Catalog of 1,200 U.S. Government motion pictures which have been cleared for television. (1956)	OE; free.
U.S. Government Films: How to Obtain Them for Use in Schools Summary table explaining how to borrow, rent, and purchase the motion pictures and filmstrips of different U.S. Government agencies. (1956)	OE; free.

Note: OE = Office of Education,
U. S. Department of Health, Education, and Welfare,
Washington 25, D. C.

GPO = Superintendent of Documents,
U. S. Government Printing Office,
Washington 25, D. C.

Appendix E.—Organizations of Joint Council on Educational Television

AMERICAN COUNCIL ON EDUCATION, 1785 Massachusetts Ave., NW., Washington 6, D. C.

AMERICAN ASSOCIATION OF LAND-GRANT COLLEGES AND STATE UNIVERSITIES, 1785 Massachusetts Ave., NW., Washington 6, D. C.

AMERICAN ASSOCIATION OF SCHOOL ADMINISTRATORS (NEA), 1201 Sixteenth St., NW., Washington 6, D. C.

COUNCIL OF CHIEF STATE SCHOOL OFFICERS, 1201 Sixteenth St., NW., Washington 6, D. C.

EDUCATIONAL TELEVISION AND RADIO CENTER, 2320 Washtenaw Ave., Ann Arbor, Mich.

NATIONAL ASSOCIATION OF EDUCATIONAL BROADCASTERS, 14 Gregory Hall, University of Illinois, Urbana, Ill.

NATIONAL ASSOCIATION OF STATE UNIVERSITIES, 1785 Massachusetts Ave., NW., Washington 6, D. C.

NATIONAL CONGRESS OF PARENTS AND TEACHERS, 700 N. Rush St., Chicago 11, Ill.

NATIONAL EDUCATION ASSOCIATION OF THE UNITED STATES, 1201 Sixteenth St., NW., Washington 6, D. C.

Appendix F.—Foundations Making Grants to Educational Television

A. A. Shuford Foundation
Abel Caleb Lineberger Foundation
Alfred P. Sloan Foundation
Allan Hancock Foundation
Arbuckle Foundation
Arthur B. Baer Fund
Atkinson Foundation
A. W. Mellon Educational and Charitable Foundation
B. F. Nelson Foundation
Bigelow Foundation
Burlington Mills Foundation
Cargill Foundation
Columbia Foundation
Dayton Foundation
Edwin L. Peterson Fund, The
E. K. Gaylord Foundation
Emerson Radio and Phonograph Corporation
F. A. Bean Foundation
Falk Foundation Fund, The
Fenner Family Fund
Field Foundation
Filene Fund
Ford Foundation
Ford Motor Company Fund
Fund for Adult Education
Fund for the Advancement of Education
Goodman Foundation, The
Greystone Foundation
Hamin Foundation
Hill Foundation
Jefferson Standard Foundation
Joaquin Miller Foundation
Joel Foundation
John Rich Foundation
Joseph Foundation
Lincoln and Theresa Filene Foundation
Marbrook Foundation
McGregor Foundation
Mid-Southern Foundation
Minneapolis Foundation
Old Dominion Foundation
Percival Stern Foundation
Phillips Foundation
Rich Foundation, The
Rosa-Mary Foundation
Rosenberg Foundation
San Francisco Foundation
Southways Foundation
Toyer Foundation
20th Century Fund
Walker Foundation
W.D.S.U. Foundation
W. G. Connor Foundation
W. K. Kellogg Foundation
Weinboldt Foundation
Wolfson Meyer Foundation, The
Z. Smith Reynolds Foundation

Appendix G.—Closed-Circuit Educational Television in Schools, Colleges, Universities, and Defense Installations

ALABAMA
- Alabama Polytechnic Institute, Auburn
- Birmingham Area ETV Association, Birmingham
- University of Alabama, University

ARIZONA
- University of Arizona, Tucson
- West Phoenix High School, Phoenix

ARKANSAS
- University of Arkansas, Fayetteville

CALIFORNIA
- Cedars of Lebanon Hospital, Los Angeles
- Chico State College, Chico

CALIFORNIA (cont'd.)
College of Physicians and Surgeons, San Francisco
Sacramento State College, Sacramento
St. Mary's Hospital, San Francisco
Samuel Gompers Vocational High School, San Francisco
San Diego State College, San Diego
San Francisco State College, San Francisco
San Jose State College, San Jose
Stanford Research Institute, Stanford
University of California, Berkeley
University of California, Santa Barbara
University of Southern California, Los Angeles

COLORADO
Opportunity High School, Denver
University of Denver Research Institute, Denver

CONNECTICUT
Yale University, New Haven

DISTRICT OF COLUMBIA
Georgetown University Institute of Languages and Linguistics
National Institute of Health

FLORIDA
Florida State University, Tallahassee
Lindsey-Hopkins Vocational School, Miami
University of Florida, Gainesville

GEORGIA
University of Georgia, Athens

IDAHO
Idaho State College, Pocatello
Pocatello Public School System, Pocatello
University of Idaho, Moscow

ILLINOIS
Chicago Teachers College, Chicago
Evanston Township High School, Evanston
Herman Felsenthal Elementary School, Chicago
Illinois Institute of Technology, Chicago
Loyola University, Chicago
Midwestern Broadcasting School, Chicago
Nathan Goldblatt Memorial Hospital, Chicago
Northwestern University, Evanston
University of Chicago, Chicago
University of Illinois, Colleges of Dentistry and Medicine, Chicago
University of Illinois, Urbana
Western Illinois State College, Macomb

INDIANA
Indiana State Teachers College, Terre Haute
Purdue University, Lafayette
Indiana University, Bloomington
University of Notre Dame, Notre Dame

IOWA
Drake University, Des Moines
Iowa State College, Ames
Iowa State Teachers College, Cedar Falls
State University of Iowa, Iowa City

KANSAS
Kansas State College, Manhattan
Kansas State Teachers College, Emporia
Kansas State Teachers College, Pittsburgh
Roosevelt High School, Emporia
University of Kansas Medical Center, Kansas City

LOUISIANA
Louisiana State University, Baton Rouge
Louisiana State University School of Medicine, New Orleans
Southwestern Louisiana Institute, Lafayette

MARYLAND
Johns Hopkins University, The Baltimore
U. S. Naval Academy, Annapolis

Washington County School System, Hagerstown

MASSACHUSETTS

Berke-Lee School of Music, Boston
Boston University, Boston
Emerson College, Boston
Newton High School, Newton
South Hamilton High School, South Hamilton

MICHIGAN

Amelia Earhart High School, Detroit
Michigan State University, East Lansing
Pontiac High School, Pontiac
University of Detroit, Detroit
University of Michigan, Ann Arbor
University of Michigan, Willow Run Laboratory, Willow Run

MINNESOTA

University High School, Minneapolis
University of Minnesota, Minneapolis

MISSISSIPPI

Mississippi Southern College, Hattiesburg

MISSOURI

Stephens College, Columbia
University of Kansas City, School of Dentistry, Kansas City
University of Missouri, Columbia
Washington University, St. Louis

NEBRASKA

Nebraska Psychiatric Institute, Omaha
University of Nebraska College of Medicine, Omaha

NEW JERSEY

New Jersey State Teachers College, Upper Montclair
Rutgers University, New Brunswick

NEW MEXICO

New Mexico College of Agriculture and Mechanic Arts, State College

NEW YORK

Albany Medical College of Union University, Albany
Cornell University, Ithaca
Division Avenue High School, Levittown
Edward J. Meyer Memorial Hospital, Buffalo
Fordham University, New York City
Levittown Memorial High School, Levittown
Mount Pleasant High School, Schenectady
New York University, New York City
New York University College of Dentistry, New York City
Port Chester High School, Port Chester
Skidmore College, Saratoga Springs
State University of New York:
College for Teachers, Albany
College for Teachers, Buffalo
Teachers College, Brockport
Teachers College, New Paltz
Teachers College, Oneonta
Union College and University, Schenectady
University of Rochester, Rochester

NORTH CAROLINA

Consolidated University of North Carolina, Chapel Hill, Raleigh, Greensboro

NORTH DAKOTA

University of North Dakota, Grand Forks

OHIO

Case Institute of Technology, Cleveland
College Conservatory of Music, Cincinnati
Denison University, Granville
Miami University, Oxford
Ohio University, Athens
South High School, Columbus
University of Toledo, Toledo

OKLAHOMA

University of Oklahoma, Norman

OREGON

Oregon State College, Corvallis
Oregon Technical Institute, Oretech
University of Oregon, Eugene

PENNSYLVANIA
- Carnegie Institute of Technology, Pittsburgh
- Duquesne University, Pittsburgh
- John Bertram Vocational High School, Philadelphia
- Mellon Institute, Pittsburgh
- Pennsylvania State University, The, University Park
- Philadelphia College of Osteopathy, Philadelphia
- University of Pennsylvania Dental School, Philadelphia
- University of Pennsylvania Hospital, Philadelphia
- State Teachers College, Indiana
- Temple University, Philadelphia
- Temple University School of Medicine, Philadelphia

SOUTH CAROLINA
- Medical College of South Carolina, Charleston
- South Carolina Area Trade Schools, West Columbia

SOUTH DAKOTA
- University of South Dakota, Vermillion

TENNESSEE
- Fisk University, Nashville
- University of Tennessee, Knoxville

TEXAS
- Texas Technological College, Lubbock
- Texas Western College, El Paso
- University of Houston, Houston
- University of Texas, Austin
- West Texas State Teachers College, Canyon

UTAH
- Brigham Young University, Provo

VIRGINIA
- Medical College of Virginia, Richmond
- Union Theological Seminary, Richmond

WASHINGTON
- Hudson's Bay High School, Vancouver
- State College of Washington, Pullman

WISCONSIN
- Milwaukee Vocational and Adult Schools, Milwaukee
- New London High School, New London
- University of Wisconsin, Madison

Military Installations Using TV Primarily for Training Purposes

ARIZONA	Fort Huachuca
CALIFORNIA	Naval Post Graduate School, Monterey
	San Francisco Naval Shipyard, San Francisco
DISTRICT OF COLUMBIA	Walter Reed Army Medical Center, Washington
GEORGIA	Signal Corps Training Center, Camp Gordon
ILLINOIS	Chanute Air Force Base, Rantoul
MAINE	Strategic Air Force Command, Lewiston
NEW JERSEY	Signal Corps, Fort Monmouth
NEW MEXICO	White Sands Proving Ground
NEW YORK	Armed Forces Special Devices Center, Port Washington
	Army Chaplains School, Fort Slocum
	Signal Corps Pictorial Center, Long Island City
OHIO	Wright Patterson Air Force Base, Dayton
TEXAS	Randolph Field School of Aviation Medicine
VIRGINIA	Army Transportation School, Fort Eustis

Appendix H.—Armed Forces Television Stations (In Order of Installation)

1. Lajes Field, Azores
2. Wheelus Field, Tripoli, Libya
3. Iceland Air Defense Force, Keflavik, Iceland
4. Thule Air Base, Greenland
5. Dhahran Air Base, Saudi Arabia
6. Kindley Air Force Base, Bermuda
7. Clark Air Force Base, Philippines
8. U. S. Naval Station, Guantanamo Bay, Cuba
9. Kagnew Station, Asmara, Eritrea
10. Kadena Air Force Base, Okinawa
11. Sondrestrom Air Base, Greenland
12. Eniwetok, Marshall Islands
13. Ft. Clayton, Panama, Canal Zone
14. Albrook Air Force Base, Panama, Canal Zone
15. Ft. Greely, Alaska
16. U. S. Naval Station, Kodiak, Alaska
17. U. S. Naval Station, Adak, Alaska
18. Goose Bay Air Base, Labrador
19. Ernest Harmon Air Base, Newfoundland
20. Port of Whittier, Alaska
21. Ramey Air Force Base, Puerto Rico
22. Landstuhl Air Base, Germany
23. Spangdahlem Air Base, Germany

Appendix I.—Typical Educational TV Schedules

WQED Program Reviews, Pittsburgh, Pa.

Program Schedule, September

MORNING SCHEDULE

9:05 Schooltime

Monday — "Conquest of Science" — General Science, High School. Eight tours to places of scientific interest. Among the tours are trips to a cyclotron, to medical research laboratories, to a weather station, to a large telephone center, and to a coke and chemical plant.

Tuesday — "The High Road" — Language Arts, Intermediate Grades. A series of programs that gives children pointers on finding information, note-taking, interviewing techniques, reading for different purposes, studying for tests, etc.

Wednesday — "Gateway to Business" — Business Practices, High School. This gives students planning to enter clerical fields an idea of how to best prepare themselves for and what to expect in the business field.

Thursday — "Under the Sun" — Science, Primary Grades. A series of programs planned to help children interpret what they see, hear and feel in the world around them.

Friday — "Talking Town" — Speech Improvement, Primary Grades. Aims to make children more attentive to sounds — both visually and auditorily — thus enabling them to improve their speech.

9:20 Clock
9:25 Schooltime
Monday — The High Road — see above
Tuesday — Gateway to Business
Wednesday — Under the Sun
Thursday — Talking Town
Friday — Conquest of Science
9:40 Clock
9:45 TTD Reading

Miss Stella Nardozza teaches reading to Fifth Graders in classrooms under the signal area of WQED that are involved in the Television Teaching Demonstration.

10:10 Clock
10:15 Charming Children

Games, songs, handwork for the pre-school children at home with Mrs. Marjorie Harm as the hostess. Parents may enroll their children in this course by calling or writing to the station for an enrollment blank.

11:00 Clock
11:05 TTD Arithmetic

Mr. Alvin J. Stuart teaches arithmetic to fifth grade classes registered in the Television Teaching Demonstration.

AFTERNOON SCHEDULE

12:55 Clock
1:00 TTD Physics

Dr. Harvey E. White will conduct physics classes for high school students in the Pittsburgh area.

1:30 Clock
1:32 Schooltime
Monday — Gateway to Business
Tuesday — Under the Sun
Wednesday — Talking Town
Thursday — Conquest of Science
Friday — The High Road
1:47 Clock
1:50 TTD History - Geography

Miss Mary Elizabeth Sefler teaches history - geography to fifth grade students in the Pittsburgh area involved in the Television Teaching Demonstration.

2:15 Clock
2:17 Schooltime
Monday — Under the Sun
Tuesday — Talking Town
Wednesday — Conquest of Science
Thursday — The High Road
Friday — Gateway to Business
2:32 Clock
2:37 Schooltime
Monday — Talking Town
Tuesday — Conquest of Science
Wednesday — The High Road
Thursday — Gateway to Business
Friday — Under the Sun

2:52 Clock

3:00 Schooltime French

Mrs. Olga Russell of Chatham College teaches beginning French on Mondays, Wednesdays and Fridays.

Tuesdays and Thursdays — PARLONS FRANCAIS with M. Louis Celestin of the Fillion Studios.

4:00 The Children's Corner

Each day Josie Carey, Daniel S. Tiger, Grandpere, Henrietta, X-Scape, King Friday XIII, and all the other members of the Children's Corner will be on hand to bring you lots of fun, contests, and the following weekly features:

Monday—It's a Small World—many things have happened over the summer in the attic. Dancing with Jack Burkhard.

Tuesday—The Zoo with Dorothy Merchant. "What's New?" with Nancy Evans. Things new around town and direct phone calls to children to find out what's new.

Wednesday—"The Toy Shelf" presented by the Junior League of Pittsburgh. "Craft Corner."

Thursday—"It's a Small World" with the Attic members. "Stunts and Tumbling" and Cooking.

Friday—Lt. Gatchell—Navy knots and their uses is first on the agenda for the fall. Specials—something special every Friday. Among the guests will be the Mason Marionettes; Emile Jacobson, the Poetry Lady; the Bouncy Bunny, and others.

EVENING SCHEDULE

MONDAY

6:30 Adult School of the Air—English

Mr. Wayne Mong, of Peabody High School, and Mr. Clarence Worley, of Gladstone High School, are the instructors for the course in English. See clip-out registration blank on page two.

7:00 The Classical Answer

Dr. Robert L. Zetler, Professor of English, Chatham College, returns to WQED this fall with a new series of programs in which he turns to the classics, the great works of the great thinkers, for the answers which they can give to human problems today.

8:00 The Greeks Had A Word for It

The popular family quiz game returns to WQED with Jim Westover as host, and Josie Carey of the Children's Corner and Hank Stohl of Kay-Dee Kartoons as permanent panelists.

9:00 Shop Talk

The do-it-yourself program returns to WQED this fall for its third season with Don Moon.

9:30 Operation Understanding

The problems of labor and management will be discussed in this new program series presented by the National Conference of Christians and Jews.

10:00 American Art Today

Dr. Malcolm Preston, Chairman of Fine Arts Department at Hofstra College, serves as host for this series concerning expressionism, realism, classicism, influences of science on art and sources of 20th Century art.

WHA-TV, Madison, Wisconsin

Program Schedule Week of October 29

TUESDAY

9:30 a.m. Early Wisconsin
1:30 p.m. Let's Draw
5:45 p.m. Music Album
6:00 p.m. TV Journal: Robert Lindsay
6:15 p.m. Buckskin Bob
6:45 p.m. Friendly Giant
7:00 p.m. Music for Young People
7:30 p.m. Quiz the Professor
8:00 p.m. Frontiers of Health
8:30 p.m. The National Government
9:00 p.m. Station Sign Off

KQED, San Francisco, California

Program Schedule for Week of October 15

WEDNESDAY, OCTOBER 17

3:15 THE AMERICAN ECONOMY — Telecourse with Dr. Thomas Lantos, S. F. State.
4:00 YESTERDAY'S WORLDS — Preview of evening series on archeology.
5:30 PORTRAIT IN MUSIC — "Scheherazade" — (Rimsky-Korsakov).
6:00 HOP, SKIP AND DANCE — Creative dance for children with Dick Ford.
6:30 SPORTS TIME — Athletic skills for aspiring young athletes.
7:00 PORTRAIT IN MUSIC — Rubinstein plays compositions by Liszt.
7:30 EFFECTIVELY SPEAKING — Public speaking techniques with Martha Hood.
8:00 RENAISSANCE ON TV — "Aldus Manutius, Master Renaissance Printer."
8:30 YESTERDAY'S WORLDS — "Portraits of Ancient People."
9:00 WORLD OF 1980 — "Automobiles in the Future" — Bay Area experts.

WCET, Cincinnati, Ohio

Program Listings for Week of November 26

THURSDAY, NOVEMBER 29

3:10–3:40 PM EXTENDED HOMEROOM PERIOD — A teacher and a group of his homeroom pupils informally discuss some problems that come up in school; for viewing by teachers. (L)
7:00–7:30 PM AMERICAN ALBUM — In this third film of the OMNIBUS "LINCOLN" series, we see Abe's life as it was between the ages of 14 and 21. (K)
7:30–8:30 PM PALETTE AND BRUSH: BASIC ART PRINCIPLES — Art and artists; styles and techniques are discussed by Carl von Volborth, as he continues his college credit telecourse, offered in conjunction with the UC evening college. (L)
8:30–9:00 PM RENAISSANCE ON TV — Dr. Frank Baxter discusses the many factors in the development of printing. (K)

FRIDAY, NOVEMBER 16

3:10 p.m. College Math — algebra trigonometry
7:00 p.m. College Math — algebra trigonometry
7:45 p.m. Frontiers of the Sea
8:00 p.m. President's Press Conference
8:30 p.m. Frontier's of Health — Tuberculosis
9:00 p.m. American Art Today

Alabama Educational Television Network: WTIQ, Munford, WBIQ, Birmingham, WAIQ, Andalusia

Program Schedule, Week of October 22

MONDAY, OCTOBER 22

12:00	Sign On	4:30	Let's Go Traveling
12:00	TV School Time	5:00	Film
12:30	Farm Facts	5:30	Speak Spanish
1:00	TV School Time	6:00	Masterworks
1:15	TV School Time	6:30	Mathematics
1:30	TV School Time	7:00	Careers
2:00	Today's Home	7:30	Capstone Review
2:30	TV School Time	8:00	Concert Grand
3:00	Industrial Progress	8:30	History 21
3:30	Buckskin Bob	9:00	Shakespeare on TV
4:00	Red Cross	9:30	Sign Off

WUNC-TV, Chapel Hill, North Carolina

Program Schedule Week of October 29

TUESDAY

12:44	Sign On	6:30	News
12:45	Music	6:45	Sports
1:00	Today on the Farm	7:00	Books and People
1:30	Music in the Air	7:15	Bible Course
2:00	Science and Nature	8:00	Educational Sociology
2:30	Sign Off	8:45	State Government
5:44	Sign On	9:30	Passing Notes on Music
5:45	Music	10:00	Final Edition
6:00	Magic Lantern	10:05	Sign Off
6:15	Sports Clinic		

WGBH-TV, Cambridge, Massachusetts

Program Schedule, October

TUESDAY

6:15 THE FRIENDLY GIANT. Bob Homme, University of Wisconsin School of Music. (ETRC)

6:30 LOUIS M. LYONS and the NEWS. Curator of the Nieman Fellowships, Harvard.

6:45 THE WORLD WE WANT. Foreign high school students discuss world problems. (ETRC)

ROUNDUP OF THE BRITISH WEEKLIES. (BBC)

7:15 NEIGHBOR TO THE NORTH. Film portraits of Canadian life. Oct. 2 — *Arctic Dog Team;* Oct. 9 — *Cliff Hangers;* Oct. 16 — *French Canada;* Oct. 23 — *River Watch.*

TELL YOU A STORY. Donald Born, Boston University. Oct. 2 — *The Shorn Lamb* by Jean Stafford; Oct. 9 — *The Great Grandmother* by Nancy Hale; Oct. 16 — *Monsieur Seguin's Goat* by Alphonse Daudet; Oct. 23 — *The Whistle* by Eudora Welty; Oct. 30 — *Lost Soldier* by Stanford Whitmore.

7:30 PASSING NOTES ON MUSIC. Gomer J. Jones, Professor of Music, Michigan State University. (ETRC)

(To be repeated Wednesday at 8:30)

8:00 THE CAMPAIGN ISSUES. Louis M. Lyons and guests.

(To be repeated on WGBH-FM, Saturday at 5:00)

VARIATIONS ON A THEATRE THEME. Anecdotes and reminiscences of Ben Iden Payne, Guest Professor of Drama, The University of Texas. (Radio House)

(To be repeated Friday at 5:15)

8:15 Oct. 30 — BOSTON SYMPHONY ORCHESTRA. Charles Munch, Music Director. (From Kresge Auditorium)

SPOTLIGHT ON ETV. The story of educational television in America. Oct. 2 — *Chicago;* Oct. 9 — *Seattle;* Oct. 16 — *San Francisco;* Oct. 23 — *Boston.*

8:30 Beginning Oct. 16 — BOOKS AND IDEAS. Oct. 16 — *World Enough and Time* by Robert Penn Warren; Oct. 23 — *Conservatism in America* by Clinton Rossiter. (ETRC)

Oct. 2 — BOSTON SYMPHONY ORCHESTRA EDINBURGH FESTIVAL CONCERT. Charles Munch, conductor. Works by COPLAND, BEETHOVEN, SCHUMANN. (Isaac Stern, soloist)

VOICES OF FRANCE IN CHORUS. Oct. 9 — *Twentieth Century;* Oct. 16 — *Poulenc, Sauguet, and Honegger;* Oct. 23 — *Lesur and Nigg.*

9:00 LABORATORY. Experiments in ideas and techniques. Oct. 2 — *Poetry of Edward Lear.* David McCord, Honorary Curator of the Farnsworth and Poetry Rooms in the Harvard College Library.

Oct. 16 — MUSEUM OPEN HOUSE. *The World of Humphrey Clinker.* Peter Wick, Assistant Curator of Prints, host. (Telecast direct from the galleries of the Museum of Fine Arts.)

Oct. 23 — WORLD WITHOUT END. How the United Nations works to help the nations of the world.

WILL-TV, Urbana, Illinois

Program Schedule for Week of November 5

WEDNESDAY, NOVEMBER 7

6:15 News
6:30 Children's Corner
7:00 Books in Balance
7:30 Beginning Spanish Telecourse
8:00 Art and Artists of Great Britain
8:30 Shakespeare on TV

KCTS, Seattle, Washington

Program Schedule, October

MONDAY

Classroom Viewing

1:15-1:40

Traveling With Trippy. Programs designed to arouse primary schoolers' interest in transportation are built around a little suitcase which travels.

Sept. 24. The Freight Train.
Oct. 1. The Highway Train.
Oct. 8. The Biggest Ship.
Oct. 15. The Bus.

1:15-1:40 (cont'd.)

Oct. 22. A Mainliner.

Begins Oct. 29. Cast Your Vote. Intermediate grades are shown the background, meaning, and results of voting by Keith Kem, of Eastgate School. First topic: History of the Ballot.

1:45-2:10

Resource For Harvest. Jack Sechrist, of the State Game Department, instructs intermediate grades in our five basic natural resources.

Sept. 24. Salt Water Fisheries.
Oct. 1. Minerals and Their Meaning.
Oct. 8. Forest Products and Wild Life.
Oct. 22. Hunting Safety.
Oct. 29. Small Game Animals.

Children's Programs

7:00-7:15

Little Adventures. Sally Illman plays Queen Shamerahue and tells stories about the sprites of the forest.

7:15-7:30

Mr. Murgle's Musee. Film. The wonders of the world are Mr. M's topic; he's a favorite of young folks.

Sept. 24. Wonderful Planets.
Oct. 1. Sounds in the Air.
Oct. 8. Mastodon and Mammoth.
Oct. 15. Pennsylvania Dutch.
Oct. 22. Vikings at Cape Cod.
Oct. 29. Bees in Your Bonnet.

7:30-8:00

How To Play Flag Football. Bob Hendershott, of the University of Washington, and Tom Evans, of John Marshall Jr. High, instruct and Ted Bell is m.c. for these lessons.

Begins Oct. 29. How To Ski.

Family Viewing

8:00-8:30

Sept. 24. Telecourse Preview. Lecturers for all four fall telecourses will appear on Channel Nine to discuss their classes and how to enroll.

Begins Oct. 1. Spanish At Home. Clarence Abello, of Seattle University, teaches beginning conversational Spanish, emphasizing commercial aspects. Viewer's Guide: 50 cents to Seattle University, Broadway and Madison, Seattle 22.

8:30-9:00

Heritage of the Past. Lectures by several members of the Uinversity of Washington history department will comprise this telecourse, coordinated by Dr. Solomon Katz. For study guide, send $2 to Telecourse, University of Washington, Seattle 5.

KUON-TV, Lincoln, Nebraska

Program Schedule, October

WEDNESDAY, OCTOBER 3, 10, 17, 24, 31

MORNING

9:00 MUSICAL FORMS — A noted violist explains the forms used by composers. From University of Southern California. Ends October 24.

9:00 (cont'd.)
MUSIC FOR YOUNG PEOPLE — Fifth and sixth graders learn music appreciation from outstanding ensemble groups. From New York City. Begins October 31.

9:30 THE MONTHS BEFORE BIRTH — Dr. Anne Wagner frankly discusses anatomy and physiology of reproduction. From WQED, Pittsburgh. Ends October 17.

FACTS OF MEDICINE — Harvard professor of preventive medicine discusses differences between facts and opinion concerning health problems. From WGBH-TV, Boston. Begins October 24.

10:00 BUCKSKIN BOB — For the young set, a series of historical adventures with important men of the past. From KQED, San Francisco.

10:30 FIRST YEAR ALGEBRA — Twenty minute daily session with high school algebra teacher, David Wells.

AFTERNOON

1:30 MUSICAL FORMS — Repeat of morning program from University of Southern California. Ends October 24.

MUSIC FOR YOUNG PEOPLE — Repeat of morning program from New York City. Begins October 31.

2:00 THE MONTHS BEFORE BIRTH — Repeat of morning program from WQED, Pittsburgh. Ends October 17.

FACTS OF MEDICINE — Repeat of morning program from WGBH-TV, Boston. Begins October 24.

WTHS-TV, Miami, Florida

Date County's Non-Commercial Educational Community Television

Program Schedule for Week of October 15th

WEDNESDAY, OCTOBER 17

6:45– 7:00	Dinner Music	8:30– 9:00	Big Picture
7:00– 7:30	Parents and Dr. Spock	9:00– 9:15	Flight Plan for Peace
7:30– 7:45	The Almanac	9:15– 9:30	Community Feature
7:45– 8:00	Community Feature	9:30–10:00	Passing Notes on Music
8:00– 8:30	Art Around Us		

WTTW, Chicago, Illinois

Program Listings for Week of October 21

MONDAY, OCTOBER 22

9:15– 9:45 a.m.	TV College — Political Science 223	1:30– 2:15 p.m.	WTTW Test Pattern
9:45–11:00 a.m.	WTTW Test Pattern	2:15– 2:45 p.m.	TV College — English 101
11:00–11:30 a.m.	TV College — Biology 101	2:45– 4:00 p.m.	WTTW Test Pattern
11:30– 1:00 p.m.	WTTW Test Pattern	4:00– 4:15 p.m.	Story Time
1:00– 1:30 p.m.	TV College — Social Science 101	4:15– 4:30 p.m.	Playschool
		4:30– 5:00 p.m.	Totem Club
		5:00– 7:00 p.m.	Window of the World of Music

7:00– 7:15 p.m.	Adventure Out of Doors	8:30– 9:15 p.m.	Kaleidoscope
7:15– 7:30 p.m.	How-To-Do-It Time	9:15– 9:30 p.m.	Industry on Parade
7:30– 8:00 p.m.	The Universe About Us	9:30–10:00 p.m.	World Spotlight
8:00– 8:30 p.m.	TV College — Political Science 223	10:00–10:05 p.m.	Tomorrow
		10:05–10:35 p.m.	TV College — English 101
		10:35–11:05 p.m.	TV College — Biology 101

WTVS, Detroit, Michigan

Detroit Educational Television Foundation

Program Listings for Week of November 4

TUESDAY, NOVEMBER 6

10:00–10:30 a.m.	Globe Trotter	7:30– 8:00 p.m.	Dinner Bell
1:30– 2:00 p.m.	Understanding the Child	8:00– 8:30 p.m.	Living in the City
2:00– 2:30 p.m.	On Stage	8:30– 9:00 p.m.	Yesterday's Worlds
2:30– 2:45 p.m.	Window to the Past	9:00– 9:30 p.m.	Food Buy-Ways
4:30– 4:45 p.m.	Story Time	9:30–10:00 p.m.	Wonders of Dentistry
7:00– 7:30 p.m.	Music for Young People	10:00–10:30 p.m.	Object: Matrimony

KRMA-TV, Denver, Colorado

Program Schedule for Week of October 22

THURSDAY, OCTOBER 25

6:45	Teddy's Sketchbook	(C)	8:00	Science — Quest (Archeology)	(A)
7:00	Man and Laughter (Sinclair Lewis)	(AY)	8:15	Human Biology (Telecourse)	(AY)
7:30	Play Better Football	(F)			

WOSU-TV, Columbus, Ohio

Program Schedule, Week of October 29

MONDAY, OCTOBER 29

PM		PM	
3:00	Test Pattern	6:30	Water for a Nation
3:30	Best in Best Sellers	6:50	News
3:45	The Crristophers	7:00	Agribus
4:00	Film	7:30	Great Plains Trilogy
4:15	The Friendly Giant	8:00	Play by Ear
4:30	The Bibliophile	8:30	Film
4:45	Film	9:00	Sports
5:00	Heritage of the Land	9:10	Program Preview
5:30	The Radioisotope		

KETA, Oklahoma City, Oklahoma

Program Schedule

WEDNESDAY

1:30 Intermediate Algebra
2:00 The Laughing Clown
2:15 Tell A-Story
2:30 Physics
3:00 Trigonometry
3:30 Sign Off
6:30 The Finder
7:00 Tepees to Towers
7:30 American Art Today
8:00 Frontiers of Health
8:30 Sign Off

WOI-TV, Ames, Iowa

Program Schedule from November 4-10

MONDAY, NOVEMBER 5

12:00 Mostly Music
12:15 12:15 News — Miller
12:25 Mid Day Weather — Kolb
12:30 Farm and Market Digest
12:45 Industry on Parade
1:00 Today's Homemaker
1:15 Time for Company
1:30 TV Schooltime — Current Events
2:00 Afternoon Film Festival
3:30 TV Theater
4:00 Westward Whoa
4:30 Magic Window — Puppets
5:00 Mickey Mouse Club
6:00 Range Riders
6:30 Bold Journey
7:00 Danny Thomas Show
7:30 Voice of Firestone
8:00 Bishop Sheen
8:30 Tunes and Talent — Welk
9:30 News — Bishop
9:45 Weather — Kolb
9:50 Sports — Greene
10:00 Republican Speech
11:00 Two for the Show

KUHT, Houston, Texas

Program Listings for Week of October 22

TUESDAY, OCTOBER 23

7:30 a.m. Life Sciences
8:15 a.m. Industry on Parade
8:30 a.m. Mathematics of Finance
9:15 a.m. To be announced
9:30 a.m. At Home with Your Child
10:00 a.m. Morning sign off
5:15 p.m. News and Views
5:30 p.m. Children's Corner
6:30 p.m. Piano Lesson
6:30 p.m. World We Want
7:00 p.m. Viz Quiz
7:30 p.m. American Album
8:00 p.m. Land to be Free
8:30 p.m. Accounting
9:30 p.m. The Late Edition
10:00 p.m. Let's Talk Sports
10:30 p.m. Sign off

WKAR-TV, East Lansing, Michigan

Program Schedule for Week of October 29

TUESDAY, OCTOBER 30

3:29 p.m. Headline News
3:30 p.m. Ladies Time
4:00 p.m. Toy Shop
4:29 p.m. Headline News
4:30 p.m. Buckskin Bob
5:00 p.m. Here
5:29 p.m. Headline News
5:30 p.m. Man in the Kitchen

6:00 p.m.	Sports Whirl	8:00 p.m.	American Album
6:15 p.m.	Teledition	8:30 p.m.	American Wit & Humor
6:30 p.m.	Facts of Medicine	9:00 p.m.	Spartan Sport-lite
7:00 p.m.	Public Health	9:30 p.m.	Abstractions
7:29 p.m.	Headline News	9:45 p.m.	News and Sign Off
7:30 p.m.	Romance of Words		

Appendix J.—State-Wide Networks of Educational TV Stations

Educational Area	Channel
ALABAMA	
WAIQ — Andalusia	2
WBIQ — Birmingham	10
WTIQ — Munford (Program Centers at University of Alabama, Birmingham, and Alabama Polytechnic Institute in Auburn)	7
FLORIDA	
Florida State University — Tallahassee	11
University of Florida — Gainesville	8
WJCT — Jacksonville	7
WTHS-TV — Miami	2
Community	
Tampa — St. Petersburg	3
GEORGIA*	
WGTV — Athens	8
WETV — Atlanta	30
Community	
Columbus	34
Savannah	9
ILLINOIS	
WILL-TV — Champaign-Urbana	12
WTTW — Chicago	11
Community	
Carbondale	61
DeKalb	67
Peoria	37
Rockford	45
Springfield	26

Educational Area	Channel
LOUISIANA*	
KLSE — Monroe	8
WYES — New Orleans	2
Community	
Baton Rouge	34
Lake Charles	19
MINNESOTA*	
KTCA — Minneapolis-St. Paul	2
Community	
Duluth	8
OHIO*	
WCET — Cincinnati	48
WOSU-TV — Columbus	34
WMUV-TV — Oxford	14
WGTE-TV — Toledo	30
Public Schools — Cleveland	25
State University — Bowling Green	—
Community	
Akron	55
Dayton	16
OKLAHOMA*	
KETA-TV — Oklahoma City-Norman	13
KOED-TV — Tulsa	11
Oklahoma A & M — Stillwater	69
Community	
Enid	27
Lawton	28
Muskogee	45

*Network proposed

Educational Area	Channel
NORTH CAROLINA	
WUNC-TV — Chapel Hill	4
State College — Raleigh	4
Woman's College — Greensboro	4
*Studios on campus, relaying programs to Chapel Hill	
NEW YORK	
WTVZ — Albany	17
WQTV — Binghampton	46
WTVF — Buffalo	23
WIET — Ithaca	14
WREG — New York	25
WROH — Rochester	21
WHTV — Syracuse	43
Community	
Malone	66
Poughkeepsie	83
Rome-Utica	26
OREGON*	
KOAC-TV — Corvallis	7
University of Oregon	9
Community	
Portland	10
Salem	18
PUERTO RICO	
WIPR-TV — San Juan	6
Commonwealth — Mayaguez	3
WISCONSIN*	
WHA-TV—Madison	21
WMVS-TV—Milwaukee	10
State Authority	
Adams	58
Chilton	24
Eau Claire	19
La Crosse	32
Marinette	38
Park Falls	18
Shell Lake	30
Superior	8
Wausau	46

Appendix K.—Rollcall of Colleges by States

ALABAMA
- Alabama Polytechnic Institute
- University of Alabama

CALIFORNIA
- College of the Pacific
- San Diego State College
- San Francisco State College
- San Jose State College
- University of California
- University of Southern California

COLORADO
- University of Colorado
- University of Denver

CONNECTICUT
- University of Connecticut
- Yale University

DELAWARE
- University of Delaware

DISTRICT OF COLUMBIA
- American University
- The Catholic University of America
- Georgetown University
- The George Washington University

FLORIDA
- Florida State University
- University of Florida
- University of Miami
- University of Tampa

GEORGIA
- Emory University
- Georgia Institute of Technology
- University of Georgia

*Network proposed

ILLINOIS
- Chicago Junior Colleges
- De Paul University
- Illinois Institute of Technology
- Loyola University
- Northwestern University
- University of Chicago
- University of Illinois

INDIANA
- Butler University
- Indiana State Teachers College
- Indiana University

IOWA
- Iowa State College
- University of Iowa

KANSAS
- Kansas State College (Manhattan)
- University of Kansas

MARYLAND
- The Johns Hopkins University
- University of Baltimore
- University of Maryland

MASSACHUSETTS
- Boston College
- Boston University
- Massachusetts Institute of Technology
- Tufts College
- University of Massachusetts

MICHIGAN
- Michigan State University
- University of Detroit
- University of Michigan
- Wayne University

MISSOURI
- St. Louis University
- Stephens College
- Washington University

MONTANA
- Montana State University

NEBRASKA
- Creighton University
- University of Omaha

NEW JERSEY
- Rutgers University
- Seton Hall University

NEW YORK
- Columbia University
- Cornell University
- New York University
- State University of New York:
  - College for Teachers, Albany
  - College for Teachers, Buffalo
  - Teachers College, Brockport
  - Teachers College, Fredonia
  - Teachers College, New Paltz
  - Teachers College, Oneonta
- Syracuse University
- The University of Rochester
- Union College and University

NORTH CAROLINA
- East Carolina College
- State College — Raleigh
- State Teachers College
- University of North Carolina at Chapel Hill
- Woman's College

OHIO
- Miami University
- The Ohio State University
- University of Cincinnati
- University of Toledo
- Xavier University

OKLAHOMA
- Oklahoma Agricultural and Mechanical College
- University of Oklahoma
- University of Tulsa

OREGON
- Oregon State College
- University of Oregon
- University of Portland

PENNSYLVANIA
- Chatham College
- Duquesne University
- Temple University
- The Pennsylvania State University
- University of Pennsylvania
- University of Pittsburgh

PUERTO RICO
- University of Puerto Rico

RHODE ISLAND
- Brown University
- University of Rhode Island

TENNESSEE
- George Peabody College for Teachers
- Memphis State College
- Southwestern at Memphis
- University of Tennessee
- Vanderbilt University

TEXAS
- St. Mary's University of San Antonio
- San Antonio
- Southwestern University
- Trinity University
- University of Houston
- University of Texas

UTAH
- University of Utah

WASHINGTON
- Gonzaga University
- State College of Washington
- University of Seattle
- University of Washington

WISCONSIN
- Marquette University
- Milwaukee Vocational Schools
- University of Wisconsin

and many others.

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