



1969

The Educational Radio Media

James L. Tungate '69

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The Educational Radio Media
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James L. Tungate
//

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INTRODUCTION TO RADIO: VOICES FROM PAST AND PRESENT

The undeniable effect of radio on the nation's economy, social structure, attitudes and behavior, not to mention marketing, business and industry, and the entertainment field has been great. But the modern broadcaster has a rather unique problem—a problem of communication. All of the national effects of radio have caused the broadcaster to constantly review and up-date his knowledge in legal and social areas of development, as well as technical advancements. Since change occurs so rapidly and so often in all three, the communication problem becomes even more acute. Broadcast texts of five years ago, for instance, only predicted the extensive use of video taping (VTR) in television, and hinted of using tape cartridges in radio; legal developments set forth by the FCC are equally dramatic, as well as recent sociological changes sparked by people like Marshall McLuhan.

It seems that the industry (noncommercial included) all too often ignores this third area of sociology. The questions of "Why?" become overlooked for the "How?"

questions. Whereas "Why?" is often only considered by the commercial broadcaster around the time of license renewal, it is a question that the educational broadcaster should not ignore by virtue of the adjective that classifies his function--"educational."

The noncommercial station really functions the same as any commercial station, with the exception of this "Why?" question; it is a fraternal twin, born of common circumstances, with the same diversity of "parents." The remainder of this chapter will examine and trace the radio heritage.*

In the 1860's James Clerk Maxwell, a Scotsman, pre-
dicted the existence of radio waves. Two decades later Heinrich Hertz in Germany demonstrated that rapid variations of electric current can be projected into space in the form of waves not unlike those of heat and light. In 1895 Marconi transmitted radio signals for a short distance and, at the turn of the century, conducted successful transatlantic tests. In 1907 Lee DeForest patented what is now known as the vacuum tube. The first practical application of radio was for ship-to-ship and ship-to-shore telegraphic communications; this was first termed as use of the "wireless." American use of the term "radio" is

*General material obtained from "Broadcast Primer: Evolution of Broadcasting," Information Bulletin No. 2-B, published by the FCC in 1966; additional FCC documents; and Robert Hillard, Radio Broadcasting (New York: Hastings, 1967).

traced to about 1912 when the Navy, believing that "wireless" was too inclusive, adopted the word "radiotelegraph." Though the British still use the older term, "radio" continues to be the American designation. The word "broadcast" stems from early United States naval reference to the "broadcast" of orders to the fleet.

The first voice broadcast is subject to debate; claims to that distinction range from "Hello Rainey," said to have been sent by Stubblefield to a partner in a demonstration near Murray, Kentucky, in 1892, to an impromptu program from Brant Rock, Massachusetts, by Fessenden in 1906, which was picked up by nearby ships. There were other early experimental audio transmissions, such as DeForest putting the singer Caruso on the air in 1910 and transatlantic tests by the Navy station at Arlington, Virginia, in 1915, but it was not until after World War I that regular broadcasting began. The first broadcasting station is likewise a matter of conflicting claims. This is due largely to the fact that some pioneer AM broadcast stations developed from experimental operations. Although KDKA Pittsburgh did not receive a regular broadcasting license until November 7, 1921, it furnished programs experimentally prior to that date.

Records of the Department of Commerce, which then supervised radio, indicate that the first station issued a regular broadcasting license was WBZ Springfield, Massachusetts, on September 15, 1921.

There was experimental network operation over telephone lines as early as 1922. In that year WJZ now New York, and WNAC Boston, picked up a football game from Chicago. Later that same year WEAJ and WGY were connected with KDKA Pittsburgh, and KYW Chicago, to carry talks made at a dinner in New York. President Coolidge's message to Congress was broadcast by six stations in 1923. In 1926 the National Broadcasting Company started the first regular network with 24 stations. Its first coast-to-coast hookup, in 1927, broadcast a football game. In the latter year, the Columbia Broadcasting System was organized. The first round-the-world broadcast was made from Schenectady in 1930.

The history of broadcasting is filled, of course, with various laws and regulations; there was a Wireless Ship Act of 1910 which applied to use of radio by ships, but the Radio Act of 1912 was the first domestic law for the control of radio in general. It made the then secretary of commerce and labor responsible for licensing radio

stations and operators. Early broadcasting was experimental and, therefore, noncommercial. In 1919 broadcasters were enabled to operate as limited commercial stations. In 1922 the "wavelength" of 360 meters (about 830 kilohertz) was assigned for the transmission of "important news items, entertainment, lectures, sermons, and similar matter." (FCC)

Recommendations of the first National Radio Conference in 1922 resulted in further regulations by the secretary of commerce. A new type of AM broadcast station came into being, with minimum power of 500 watts and a maximum of 1,000 watts. Two frequencies (750 and 833 kilohertz) were assigned for program transmission. But so rapid was the development of aural broadcasting, that upon recommendation of subsequent National Radio Conferences (1923 and 1924), the Department of Commerce allocated 550 to 1500 kilohertz for standard broadcast and authorized operating power up to 5,000 watts.

But, once again, the increase in the number of stations caused so much interference that, in 1925, a fourth National Radio Conference asked for a limitation on broadcast time and power. The secretary of commerce was unable to deal with the situation because of a court decision holding that the Radio Act of 1912 did not give him this authority. As a result, many broadcasters jumped their frequencies and increased their power and

operating time at will, regardless of the effect upon other stations. There was bedlam on the air. In 1926 President Coolidge urged Congress to remedy matters; the result was the Dill-White Radio Act of 1927.

The Radio Act of 1927 created a five-member Federal Radio Commission with certain regulatory powers over radio, including the issuance of station licenses, the allocation of frequency bands to various services, assignment of specified frequencies to individual stations and control of station power. The same act also delegated to the secretary of commerce authority to inspect radio stations, to examine and license radio operators and to assign radio call letters. Much of the early efforts of the Federal Radio Commission were required to straighten out the confusion in the broadcast band. It was impossible to care for the 732 broadcast stations as then operating. New rules and regulations caused about 150 of them to surrender their licenses.

At the request of President Roosevelt, the secretary of commerce in 1933 appointed an interdepartmental committee to study the overall interstate and international electrical communications situation. The committee reported that "the communications service, as far as congressional action is involved, should be regulated by a

single body." Accordingly, it recommended the establishment of a new agency which would regulate all interstate and foreign communication by wire and radio, including telegraph, telephone and broadcasting. The resultant Communications Act of 1934 created the present Federal Communications Commission for this regulation.

The Federal Communications Commission, an independent federal agency composed of seven commissioners appointed by the President, by and with the advice and consent of the Senate, began operation on July 11, 1934. One of the FCC's major activities is the general regulation of broadcasting, visual as well as aural; this takes the form of two phases.

The first phase deals with the allocation of spectrum space to the different types of broadcast services in accordance with commission policies and rules to carry out the intent of international agreements, the Communications Act and other domestic laws affecting broadcasting.

The second phase more directly concerns individual stations. It embraces consideration of applications to build and operate; the assignment of specific frequencies, power, operating time and call letters; the periodic inspection of equipment and the engineering aspects of operation; passing upon transfers and as-

signments of facilities; also changes in existing authorizations; modifying construction permits and renewing licenses; reviewing the general service of each particular station to determine whether it has been operating in the public interest; licensing operators of transmitters, and otherwise discharging domestic regulatory responsibilities.

Broadcast stations are licensed to serve the public interest, convenience and necessity. Because radio channels are limited and are a part of the public domain, it is important that they be entrusted to licensees who have a high sense of public responsibility. The normal broadcast license period is three years.

The Communications Act sets up certain basic requirements which must be met by broadcast applicants. In general, applicants must be legally, technically and financially qualified, and show that their proposed operation will be in the public interest. The broadcast license privilege is limited by law to citizens of the United States. Penalties for broadcast station violations, depending upon the degree of seriousness, range from reprimands, fines up to \$10,000, and short-term (probationary) licenses, to denials of license renewals or revocation of licenses. Cease and desist orders can

also be issued.

In 1965 the commission provided for public inspection of certain records of broadcast stations in the communities they serve, mainly duplicate copies of their records in the public files at the commission's Washington offices.

Under the Communications Act, it is the responsibility of each broadcast station licensee to arrange his program structure so that his operation will be in the public interest. The commission does not prescribe any percentages of time which should be used for particular subjects, such as news, education, religion, music, public affairs, etc. That is something which can vary with the locality and, accordingly, is at the discretion of the individual station licensee. However, the commission does periodically review the overall performance of a station ~~"engineeringly"~~ and otherwise--usually when it applies for renewal of its license, to determine whether it has lived up to its obligations and promises it made in obtaining permission to use the public airwaves.

In 1960 the commission issued a report and statement of policy in connection with its programming inquiry. As to the obligations of a station licensee, it said:

"In the fulfillment of his obligation the broadcaster should consider the tastes, needs and desires of the public he is licensed to serve in developing his programming and should exercise conscientious efforts not only to ascertain them, but also to carry them out as well as he reasonably can. He should reasonably attempt to meet all such needs and interests on an equitable basis. Particular areas of interest and types appropriate in service may, of course, differ from community to community, and from time to time. However, the commission does expect its broadcast licensees to take the necessary steps to inform themselves of the real needs and interest of the areas they serve and to provide programming which in fact constitutes a diligent effort, in good faith, to provide for those needs and interests.

"The major elements usually necessary to meet the public interest, needs and desires of the community in which the station is located as developed by the industry, and recognized by the commission, have included: (1) opportunity for local self-expression, (2) the development and use of local talent, (3) public affairs programs, (4) programs for children, (5) religious programs, (6) educational programs, (7) editorialization by licensees, (8) political broadcasts, (9) agricultural programs, (10) news programs, (11) weather and market reports, (12) sports programs, (13) service to minority groups, (14) entertainment programming.

"The elements set out above are neither all-embracing nor constant. We emphasize that they do not serve and have never been intended as a rigid mold or fixed formula for station operation. The ascertainment of the needed elements of the broadcast matter to be provided by a particular licensee for the audience he is obligated to serve remains primarily the function of the licensee. His honest and prudent judgements will be accorded great weight by the commission. Indeed, any other course would tend to substitute the judgement of the commission for that of the licensee." (FCC, "Policy Report," 1960)

The Communications Act declares that broadcasting is not a common carrier operation; consequently a broadcast

station is not required to sell or give time to all who seek to go on the air. Because programming is primarily the responsibility of broadcast station licensees, the commission does not ordinarily monitor or pass upon individual programs, or require the filing of scripts. However, broadcast stations are required to keep a program log and a technical log, and a record of all requests for political broadcast time. The commission does not maintain surveillance of the day-by-day internal management of broadcast stations, or regulate their time charges, profits, artists' salaries or employee relations. It licenses only the stations and their transmitter operators, not announcers, disk jockeys or other personnel.

I. MEDIA FUNCTION

Harold Lasswell, a political scientist who has done much research in mass communications, has noted three functions of communicative (broadcast) media: (1) surveillance of the environment, (2) correlation of the parts of society in responding to the environment, and (3) transmission of the social heritage from one generation to the next.¹ Using these three categories and adding a fourth (entertainment), Charles R. Wright has formed a sociologist's view of the modern mass communicator.

Surveillance refers to the collection and distribution of information concerning events in the environment, both outside and within any particular society. To some extent it corresponds to what is popularly conceived as the handling of news. Acts of correlation, here, include interpretation of information about the environment and prescription for conduct in reaction to these events. In part, this activity is popularly identified as editorial or propaganda. Transmission of culture focuses on the communicating of information, values, and social norms from one generation to another or from members of a group to newcomers. Commonly it is identi-

¹H. D. Lasswell, "The Structure and Function of Communication in Society," in L. Bryson (ed.), The Communication of Ideas (New York: Harper and Brother, 1948) as cited in Charles R. Wright, Mass Communication (New York: Random House, 1959), p. 18.

fied as educational activity. Finally, entertainment refers to communicative acts primarily intended for amusement irrespective of any instrumental effects they may have.²

These points, in effect, outline a four point area of responsibility for the broadcaster—whether he be involved in commercial or noncommercial activities. As discussed in the section referring to the attitude of the FCC toward the public interests of broadcasting, station management must reflect an awareness of these four areas in order to maintain a favorable position with the audience and the Commission. There is justification for concern here, considering the conservative estimate that the average adult spends 25 to 30 hours a week being influenced by radio and television.³

Consider what it means to society, and to its individual members, to have available a constant flow of data on events occurring within the society and in the larger world. At the level of the total society, two positive consequences of surveillance are, first, that it often provides warnings about imminent dangers and threats in the world—about, say, impending danger from hurricanes or from military attack. Forewarned, the population can mobilize and avert destruction. Second, a flow of data about the environment is instrumental to such everyday activities of the society⁴ as the stock market, navigation, and air traffic.

²Charles R. Wright, Mass Communication (New York: Random House, 1959), p. 16.

³Robert E. Summers and Harrison B. Summers, Broadcasting and the Public (Belmont, Cal.: Wadsworth, 1966), p.2.

⁴Wright, loc. cit., p. 18.

The warning function of a noncommercial station does not vary from that of a commercial operation. The state of Illinois, for example, has created its own voluntary State Emergency Action Notification System in cooperation with the Illinois Association of Broadcasters. Most stations located in Illinois not only participate in this system, but also participate (as required by law) in the National Emergency Action Notification System, often called the Emergency Broadcast System. EBS replaces the antiquated CONELRAD system and like-wise must be activated by direct order of the President of the United States. As far as the instrumental function of broadcasters, it is one of convenience (and commercial desirability) rather than necessity. Further discussion of this is provided in more detail in the section concerning FCC regulations.

The function of surveillance can be enhanced by the service of utility performed and the prestige enjoyed by those individuals who keep themselves informed.. Although news, for instance, is available to all on a mass level, not everyone bothers to keep abreast of all news developments; those who do conform to the societal norm that being informed is important are afforded an enhancing

measure of prestige within their living group.⁵

"Two sociologists, Paul Lazarsfield and Robert Merton, suggest two other functions of mass communications, which seem to be especially applicable to mass communicated news.⁶ These are status conferral and the enforcement of social norms (ethicizing). Status conferral means that news reports about a member of any society enhances his prestige. By focusing the power of the mass media upon him society confers upon him a high public status. Hence the premium placed upon publicity and public relations in modern society. Mass communications have an ethicizing function when it strengthens social control over the individual members of the mass society by bringing deviant behavior into public view.

.
Surveillance through mass communication can prove dysfunctional as well as functional for society and its members. First, uncensored news about the world potentially threatens the structure of any society. For example, information about conditions and ideologies in other societies might lead to invidious comparisons with conditions at home, and hence to pressure toward change. Second, uninterpreted warnings about danger in the environment sometimes lead to panic by the mass audience. Thus, in the frequently cited Orson Welles broadcast of an "Invasion from Mars," the belief that the radio story was actually a news report contributed to the panic reaction of many listeners.⁷

⁵Ibid., p. 19.

⁶Robert K. Merton, Social Theory and Social Structure, Revised Edition (Glencoe, Ill.: The Free Press, 1957) as cited in Charles R. Wright, Mass Communication (New York: Random House, 1959), p. 19.

⁷H. Cantril, H. Gaudet, and H. Herzog, Invasion from Mars (Princeton: Princeton University Press, 1940) as cited in Charles R. Wright, Mass Communications (New York: Random House, 1959), p. 20.

While the first point concerning the threat to societal structure may not be a direct concern of the typical American broadcaster, the second point in regard to panic certainly is. A recent example of this occurred in the summer of 1968 at WMRO-AM-FM Aurora, Illinois. On one particular day, atmospheric conditions had been such as to cause the Environmental Sciences Service Agency (ESSA)⁸ to issue a tornado watch for the Aurora area. In a short time, the watch had been updated to a tornado warning; while there had been other tornado watches previously that summer, this was the first occasion calling for a full tornado warning.

Since the station was already being flooded with calls about the tornado watch, the station manager decided not to panic the remaining audience by announcing the warning immediately.⁹ But when a second, and more severe warning was issued by ESSA, the announcer on duty activated the emergency-disaster procedures outlined by the station management—which was posted, as directed by law, in the main control studio. Unfortunately, the an-

⁸ESSA, better known as the weather bureau, issues a "tornado watch" when the possibility of a tornado exists and a "tornado warning" when a tornado has been sighted moving toward the area.

⁹This could not have been accomplished "immediately" since it takes several minutes to create the circuits necessary to simulcast. In this particular case, the computer operated FM station must be placed on temporary manual control.

nouncer had been "on the board" for five hours when this came across, and was panicked himself at the prospect of his wife and children being in the path of the storm. His announcing of the situation reflected his panic; the station switchboard became overloaded and unusable.

Fortunately, another announcer was in the studios at the time and was able to relieve the announcer and try to calm a very attentive but alarmed audience. Only the most lush and comforting music was played and the announcer's voice was fed through a low-pass filter in order to give a more calm and relaxed atmosphere. Although a tornado did strike a portion of suburban Aurora, there was no loss of life; the local Civil Defense Director, Colonel Buckingham, attributed this directly to the actions of the announcer who soothed the area residents while instructing them in safety procedures. The problem of panic did not end with an Orson Welles production.

Marshall McLuhan sees the warning function of radio as an outgrowth of the emphasis placed upon television:

One of the many effects of television on radio has been to shift radio from an entertainment medium into a kind of nervous information system. News bulletins, time signals, traffic data, and, above all, weather reports now serve to enhance the native power of radio to involve all people equally. It is

the top item on radio, showering us with fountains of auditory space or lebensraum.¹⁰

Wright outlines further the responsibilities of the modern broadcast journalist:

"The chief function of interpretation and prescription is to prevent such undesirable consequences of the mass communication of news as were noted in the preceding section. The selection, evaluation, and interpretation of news—focusing on what is most important in the environment—tend to prevent overstimulation and over-mobilization of the population. Most people are fully aware of the economy to them, in time and effort, of editorial activity. . . . Modern journalists have modified the early twentieth century emphasis on objective reporting of 'facts.' Many journalists now extend the definition of their occupational role to include the responsibility to evaluate and interpret events . . . as by placing them within the larger historical and social context, and evaluating the various sources from which the 'facts' emerged.

"Like surveillance, the activities of news interpretation and prescription for behavior, when performed as mass communications, can also be dysfunctional. On the level of the total society, such activities can operate to impede social change and enhance conformist behavior insofar as the public nature of communication limits its usefulness for social criticism. That is, since any interpretation critical of the existing social order is readily visible when conducted as a mass communication activity, it can be subjected to whatever preventive sanctions exist within the society. The sanctions need not be connected with official censorship or governmental agencies. They may be economic or unofficial, as in the case of a consumer boycott against a sponsor of a television program criticizing the status quo."¹¹

¹⁰Marshall McLuhan, Understanding Media: The Extensions of Man (New York: McGraw-Hill, 1964), p. 298.

¹¹Wright, loc.cit., p. 20.

Wright's point here is quite valid for the non-commercial station as well. KPFK (FM) Los Angeles is such a station, owned and operated by the Pacifica Foundation, a non-profit institute which also owns and operates KPFA (FM) Berkeley and WBAI (FM) New York City. All three are listener supported by contributions; in the case of KPFK (FM) Los Angeles, the "donation" is \$24 a year.¹²

To illustrate Wright's idea of preventive sanctions, consider the example of KPFK ~~losing~~ an estimated fifty per cent of its "income" in 1968 when it became involved in Black Panther terrorism activities in the Los Angeles area. Yet, in 1967 its sponsorship showed an increase when it became involved in a program to help feed the "hippies" in Haight-Ashbury.¹³ As stated previously, interpretation and prescription can become a significant factor for even the noncommercial, educational broadcaster, just as the entire overall view of the sociological implications of his craft must be seen with respect.

¹²Ownership and financial information provided by the Pacifica Foundation (Pacifica Radio for Southern California), Box 38902, Los Angeles, California 90038.

¹³Los Angeles Free Press, September 23, 1968, p. 9.

II. MEDIA FUNCTION FROM THE INSIDE

Now that the role of media (including commercial and noncommercial radio) has been viewed by the "outsiders," that is, the sociologists, it is time for the broadcasters themselves to contribute. Noncommercial broadcasters seem to have as many reasons for broadcasting as there are communities served by their stations. However, only a very few of the more interesting will be presented here.

The NAEB Journal lists seven common concepts that seem to reflect the educational broadcaster's attitude toward the function of his station: (1) to reflect the aims of the college or sponsoring foundation, (2) to provide a training ground for students, (3) to offer programs of entertainment and information of good taste and high quality, (4) to seek development of taste for good music and programming, (5) to be concerned with public relations, (6) to serve the surrounding community, and (7) to provide programming that cannot be received on other types of stations.¹⁴

¹⁴David Eshelman, "About College FM Stations," NAEB Journal, September-October, 1965.

This last area of broadcast function is probably used less than any other, but when it is, the results are rather unusual. One of the previously mentioned stations, KPFK (FM) Los Angeles, sees its role in the community as part of the "counter-culture countdown":

"Culture is communication. Society as an organism is not simply the total of its components but rather a terribly complex, interrelated message, a meaningful pattern of information, "the pattern of society as a whole" that T. S. Eliot, Matthew Arnold and others have defined as culture. As such, society can only be understood by the communications that take place within it, for they are, in a large sense, what makes it identifiable. X

"The communications that we use define and mold the world we think we see and, by extension, the behavior that we find acceptable. We react and act differently when we define the victims of a U. S. bombing attack on a Vietnamese village as "communists" or "women and children." Thus the control of communications systems—those that have determinate importance—is central to control of society.

"The most powerful communications media in any society are its most technologically advanced, and in every society on record they have been controlled by those on top. Royal patronage and licensing power once assured the British crown control over the burgeoning power of the printing press. Today in the United States, reliance on advertising revenues assures corporate America control over television and radio broadcasting. It is no accident that broadcasting depends on advertising, because advertising is the key economic stimulant on which our society depends.

"And every commercial broadcaster knows that as well as he knows his name. 'The primary stimulant is advertising,' Robert Sarnoff has said, 'and among all forms of advertising television has unique capabilities that power the American economy. For television is more than an advertising tool; like advertising, it

creates demand; but with sight, sound, color, and demonstration, it goes further and functions as a direct selling force.' Exactly—it projects a way of life that is consumptive, alienated, ulcerous and totalitarian. The message of an evening of television is clear: the world is a mess, there is nothing one can do about it, trust The Man with The Gun, keep your nose clean, and buy, buy, buy the insulation that will keep you on an even social keel.

"Even totalitarian societies have social forces counter to the mainstream, however, and a corresponding culture counter to the dominant. There seems to be a counter-culture developing in the United States today, represented (in part perhaps) by the hippies, the drop-outs, the student activists, militant blacks, Indians, chicanos, and other unamalgamated, recalcitrant social deviants. They hardly represent a cohesive block, their differences are bitterly enunciated, but they know what they are against. Their future as a workable coalition, as a counter force, depends on the existence of a counter-communications system, for as Karl Kautsky long ago pointed out, "spontaneous movements lead to the domination of bourgeois ideology—read middle-class values if you prefer different jargon—for the simple reason that bourgeois ideology is far older in origin . . . more fully developed and because it possesses immeasurably more opportunities for becoming widespread."

"The proliferation of the underground press seems a step in that direction, although I ought to candidly admit that its domination by hippies disturbs me. Establishment magazines like Fortune and Business Week have pointed out with glee the money that hippies are making selling beads, black lights, psychedelic paraphernalia, and acid rock—confirming my suspicion that if you scratch a hippie you can find an entrepreneur. KPFFK—which has the advantage of being noncommercial and the disadvantage of depending on middle class intellectuals for its core support—is another kind of instance.

"It seems to me essential to have a broadcasting channel available for counter-culture, and we are gradually trying to stimulate its growth, but there are physical limitations in broadcasting. We are licensed by the government and must conform to certain

minimal government standards; that, in turn, requires relatively large amounts of money, and the money we have learned from bitter experience must come from middle class professionals. No radio station can advocate the breaking of a law, for instance, and for that reason alone KPFFK can never be an overt movement station. The movement, in any event, tends to contribute its precious resources to action projects, has its own house organs (The National Guardian, for one) and in the United States has not yet shown an interest in propagandizing others.

"Limitations can be turned into advantages, however. After all, middle class intellectuals and professionals are becoming dissatisfied as they recognize that they are functional parts of a machine that they can no longer control. White dissatisfaction with the universities, the recognition that education is a machine to grind out technicians for the military-industrial complex (don't you bet Ike regrets having coined that term for us?), is an early warning sign of adult despair. It is preliminary to wonder whether or not the middle classes will provide revolutionary agents, but it is not too early to note that they are searching for alternative life styles, alternative sources of values and information. Recognizing its audience, KPFFK can provide an invaluable educational service for them, projecting values of counter-culture consistent with human freedom. And along the way, offer a loudspeaker to the ghettos, a platform for radicals, and an outlet for transcendental culture. It does not have to revolutionize its audience, only neutralize them in the inevitable struggles to come. X

.....
 "In our essential functions we must not compromise. I believe that KPFFK's essential function is enunciated by the First Amendment. We must not allow ourselves to be distracted, threatened, or weened in any way from freedom of speech. Because consciousness is so important, whenever tensions within the United States reach crisis proportions, consciousness will be controlled. KPFFK must then stand there like an indigested lump in the throat of the body politic. By doing so it will make the First Amendment into a

important
 reason

important
 reason

radical tool (rather, re-activate it as the radical tool that its framers intended it to be), and KPFK's audience of liberal, middle class intellectuals will be united with the counter-culture deviants and revolutionaries on the question of KPFK's survival. That would be a good thing for all of us."¹⁵

Further discussion of the functional role of broadcasters in the community will be covered under the chapter dealing with FCC decisions and regulations.

Functions of reflecting a university's philosophy and providing a training ground for students seem to receive varying amounts of attention in educational broadcasting. WETN Wheaton, for example, reflects the Baptist background of Wheaton College; WILL Urbana is strong in public affairs. The idea of training students seems to be found mostly in the high school broadcasting situation.

The three concepts of programming are common to commercial broadcasters as well. Both attempt to offer high quality entertainment and information and both seek a development of appreciation for good music, although the definition of "good music" may vary. Of course, all stations should be interested in public relations. As stated by the FCC, all stations must "serve the surrounding community," although the extent of this "service" is also a matter of definition.

¹⁵Chris Koch, "KPFK & the Counter-Culture Countdown," KPFK's Programming Profile (February 1969), pp. 4-5.

III. EDUCATIONAL RADIO AND THE FCC

The allocation by the FCC of FM frequencies for educational use was not always in effect. Actually, by 1925 there were 171 educational groups holding AM station licenses.¹⁶ However, due to competition from commercial stations, most of these were no longer broadcasting by the time the FCC was created; of the approximately 40 educational stations left on the AM band, only 10 are noncommercial.¹⁷

When regular FM broadcasting was authorized to start in 1941, five channels between 42 and 43 megacycles were allocated for noncommercial educational use. In 1945, as part of an extensive revision of frequency allocations, the commission reserved 20 FM channels between 88 and 92 megacycles for noncommercial educational stations. This educational portion of the FM band is contiguous to that containing the commercial FM stations; FM receivers are capable of tuning in both noncommercial and commercial FM stations within range. The number of these noncommercial

¹⁶U.S., FCC, Broadcast Primer: Evolution of Broadcasting, Information Bulletin No. 2-B, 1966.

¹⁷Ibid.

educational FM stations has grown slowly but steadily.

In 1948 the commission authorized low power (10 watt) operation on educational FM channels. With such low power equipment easily installed and operated, schools may begin broadcasting to a limited area of from two to five miles in radius for an outlay of a few thousand dollars. Higher power equipment may be added when desired. In 1951, as a further aid, the commission authorized remote control operation of low power FM educational stations.¹⁸

The FCC is particularly helpful in cases involving an educational institution applying for a FM broadcast license, especially if the frequency is to be used non-commercially. Whereas a fee of \$75 is charged for licensing any other AM or FM group, there is no charge involved for non-profit institutions (the \$150 fee for TV licensing is also waived for such groups). The \$30 fee for changing call letters or transfer of ownership is also eliminated for operators classified as non-profit.

For a 10 watt station, only a second class operator's license is required, as opposed to a required first class license for commercial engineering work. In Illinois, the necessary examination for a second class "ticket" is administered every Thursday morning in the Federal Building offices of the FCC in Chicago.

The application form involved for noncommercial licensing (for the station itself) requests information such as name and address of applicant, place of broadcast and type of equipment. Four copies of this are filed with the FCC, along with a statement of program service, broadcasting engineering data and some information about the tower and tower site. When the application for a radio facility is granted, the commission issues a formal construction permit; a frequency is assigned and the manufacturer pre-sets the transmitter's wavelength (an AM applicant must search himself for a suitable frequency free from interference restrictions). After the transmitter is installed and tested, the formal license for operation is issued; if available, special call letters are also issued at this time. The license is valid for three years, and can be renewed regularly after that. Public notice must be made of any intention to file or renew a broadcast license.

The records required are relatively simple to maintain and rather routine in nature. These consist of application, ownership reports, and Program, Operating and Maintenance Logs. In the Program Log it is necessary to keep an entry of the time each station identification is made, together with a brief description of each program

broadcast. In the Operating Log, it is required to enter the time the station begins to supply power to the antenna and the time it stops, together with any interruption of the carrier wave, transmitter signal and its duration. Also, three transmitter readings must be recorded every half hour. In the Maintenance Log the licensed second class operator makes notations of operating frequency checks and any adjustments and repairs made to the transmitting equipment. Law requires the station to keep these three logs for at least two years, and make them available to any authorized representative of the Federal Communications Commission.

2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 2679, 2680, 2681, 26

the 1990s, the number of people in the United States who are 65 years of age or older is projected to increase from 20 million to 35 million, and the number of people 75 years of age or older is projected to increase from 10 million to 15 million (U.S. Census Bureau, 1996). The number of people 85 years of age or older is projected to increase from 2 million to 4 million (U.S. Census Bureau, 1996). The number of people 90 years of age or older is projected to increase from 500,000 to 1 million (U.S. Census Bureau, 1996). The number of people 95 years of age or older is projected to increase from 100,000 to 200,000 (U.S. Census Bureau, 1996). The number of people 100 years of age or older is projected to increase from 10,000 to 20,000 (U.S. Census Bureau, 1996).

Date _____

Date _____

Day

Page

LC Live commercial

PS-Public Service

LC Live commercial

RS-Recorded Sustaining

SP-Station Promotion

RC-Recorded Commercial

M-Music N-News

LS-Live Sustaining

S-Sports R-Religious

1
2
3
4
5
6
7
8
9
10

TABLE 2

SAMPLE TECHNICAL LOG

WSRS
OPERATIONS LOG

SHEET NO. _____

DATE _____

OPERATOR SIGN	IN	OPERATOR SIGN	OUT	CARRIER		PROGRAM	
				ON	OFF	ON	OFF

TIME	PLATE CURRENT (ma.)	PLATE VOLTAGE (v.)	OUTPUT	FREQUENCY DEVIATION (kc.)	Monitor Crystal Temp. _____
					MEMORANDA

IV. EDUCATIONAL PROGRAMMING

A statement of program service intentions must be filed with the FCC at the time of initial application for a broadcast license. Creating a program schedule reflecting the needs of the community is not an easy task for the management of a commercial station; creating an educational programming schedule reflecting the public interest and the needs of a community served by a noncommercial broadcaster is a real challenge. On the following pages are the program schedules from two radically differing noncommercial FM stations and the schedule of a carrier current "station." Although the diversity is striking, it is essential to remember that each of these was designed for a specific community with specific needs and interests.

The first to be considered is that of WNTH-FM, a station owned and operated by the New Trier Township Board of Education. Studio locations are in Northfield, Illinois (New Trier West High School) and Winnetka, Il-

linois (New Trier East High School). The transmitter and tower assembly are located at the Winnetka site; the two studio sites are linked by telephone relays. WNTH-FM employs a Gates Model BFE-10C ten watt transmitter (with an effective radiated power of thirty-three watts) and a Gates FM-22 double ring FM antenna. The transmitter can be converted to stereo multiplexing operation with the addition of some low cost equipment. The station is operated by high school students during the academic year, including vacations falling within that period; programming is determined by the station managers from both schools, the faculty advisors from both schools and the program director. The particular program schedule presented here is one that I designed for use by WNTH-FM effective December, 1968.

WNTH-FM begins its broadcast day Monday through Friday at 1:00 PM with a program called "Mid-day." This 2 1/2 hour segment is aimed toward housewives of the wealthy North Shore area and includes regular features on interior decorating, child care, social activities and theatre information, spaced with MOR (middle-of-the-road) music tending more toward Percy Faith and Robert Goulet. With the exception of pre-recorded music

tapes provided by "I-N-T-E-R-M-E-D-I-A productions," the disc jockey work and announcing is done by the students. This student participation is listed among the objectives set forth in the station's sign-on copy: "The objectives of WNTH are to provide material of excellence to all of New Trier Township, to furnish a stimulating, educational experience to the participating student, and to assist the educational programs of New Trier and the Township Elementary Schools." Mid-day programming fulfills the first two objectives.

The 3:30 to 4:00 period can be stripped as "public affairs" programming, although the program titles vary from day to day as noted on the schedule (see TABLE 3). This was done because of the need for being able to use taped programs when school is dismissed; using taped programming eliminates the need for an announcer and the background noise that would result from an open mike picking up the usual after-school confusion. This also permits an easy shift in station personnel. "What Must Be Done" is produced in Milwaukee and concerns ghetto problems (distributed by WHA Madison, Wisconsin); "Sweden Today" is produced by the government owned Swedish radio system, as is "Swedish Spectrum." The former deals with current events while the latter is concerned

with world perspectives. These show a particular audience adaptation for the New Trier Township, which contains many families of Scandinavian background. "Institute on Man and Science" is provided by Chicago-based Argonne National Laboratory, and "Spotlight II" is a pre-recorded, student produced commentary on current events.

The 4:00 o'clock period is reserved for classical music; on Monday, Wednesday and Friday the music is drawn from the extensive record library of the station. On Tuesday and Thursday, "Ernest Bloch: The Man and His Music" is presented on tape from the National Educational Radio Network (NERN). The music of the late Swiss-American composer is presented with commentary by his wife; due to the predominantly "Hebraic feeling" of his material (e.g., the Hebrew rhapsody Schelomo, 1916), this program is another example of programming for the community area served.

Monday through Friday, WNTH-FM presents a half hour of news at 5:00. This is probably one of the more challenging segments for such a station to undertake for several reasons: (1) with so large a staff of announcers (over 100), one individual has little exposure or experience for such work, and thus even a short five minute

newscast usually comes off rather "rough"; (2) wire services rarely provide enough material for so lengthy a time of current national/international news; and (3) the primary listening audience (fellow high school students) is not particularly interested in hearing thirty minutes of news, not to mention the limited number of parents willing to have dinner accompanied by a running commentary on the world situation. The first point requires a rotation system of announcers in order to give an equal opportunity for all the students to participate as much as possible. The problems with wire service coverage (in volume) requires the students to actively "track down" news items of the community and school.

Both "Spotlight I" and "Insight" are news commentary shows produced by New Trier West and New Trier East students, respectively. The format is more or less a round table discussion of current events (mainly national/international) and their effect upon the students or young people in general. Controversial issues are certainly not avoided; students often discuss the "newsmakers" with a remarkable "friend-of-the-family" attitude, due mainly to the fact that many of their parents are nationally known political, social and economic figures.

There have been several cases of national leaders visiting the station to see someone's son or daughter and eventually staying to appear on one of these programs. It was because of this type of opportunity that several of the station personnel at WNTH-FM have been placed on the payroll of one of Chicago's clear channel AM stations in order to provide "inside tips."

"German Press Review," "BBC World Report," and "European Review" are also NERN tapes issued weekly on current events by the German Government, the British Broadcasting Corporation, and a New York press service, respectively. "Close-up" is a debate of some current news problem by members of the school debate teams.

The 6:00 "Music for Dining" is hardly programmed with the usual lush strings and soft chorus normally associated with dinner background music. The student programmers felt music that high school students preferred eating to was hardly lush or soft; therefore, close to rock and the "top forty sound" are often heard at this time. Once again, the idea of actually sitting down and dining to this sort of music is not particularly appetizing to local parents.

The program slides easily enough into the "Solid

Rock" segment at 7:00 on Fridays, although the transition to the language lab series Monday through Thursday is rather abrupt. The fault here in programming is an obvious one, but common enough in educational situations where a bridge between entertainment and scholastic material is difficult. The language tapes are related to the high school French and Spanish courses and are required for all students taking those individual classes. There are also some adults who evidently like to brush-up on their language skills by tuning in as well. There is actually only one new lesson in each language per week; the second time allotted is a rebroadcast of the earlier show. Many educational broadcasters feel this principle of rebroadcast is important. Whereas a commercial broadcaster must constantly present new material in order to maintain an audience (and thus sell products or services), it is often felt that the educational broadcaster must reach as many people as possible with the most "education" transmitted; it seems to me that there are enough creative ways of presenting any given material that this repetition is unnecessary.

In order to form a bridge between the language material and the completely different 7:30 programming,

a newscast is scheduled for 7:25. This is one of the better methods for lending a certain amount of continuity to programming without causing abrupt shifts for the listener. A newscast acts more or less as "neutral territory" between program segments; another commonly used device is a two minute "station break" consisting of one 60 second PSA, one 45 second promotion and a 15 second station identification. Obviously, both methods can become overworked.

"Music 220" is actually a college credit course provided by the radio service and Music Department of Northern Illinois University in De Kalb, Illinois. Although the program is informative and educational in itself, the listener is urged to buy the text and pay the small fee to receive credit from NIU. The final examination, administered by a New Trier teacher, is the only written assignment required. The additional Monday through Thursday programming in the 7:30 to 8:30 slot is provided by NERN.

The 8:30 to 9:00 segment is produced by New Trier students using the WNTH-FM record library. These programs usually have two announcers, a student producer, and a combination engineer-director; often the shows are pre-recorded in one of two production studios available.

Despite a few possibilities for controversy on the discussion shows produced by the students, this schedule is typical of the conservative educational programming policy. Due to the nature of the program runs (once a week) of the NERN tapes, stripping or across the board programming is impossible without repeating the same program five times a week at the same time each day; somehow the lack of stripping becomes less of a sin in this light.

The second noncommercial educational station to be considered is KPFK-FM Los Angeles. KPFK-FM is owned and operated by the Pacifica Foundation, a non-profit institution owning two other noncommercial stations (WBAI New York and KPFA Berkeley). The studios are located at 3729 Cahuenga Blvd., North Hollywood, California; the transmitter is located on Mount Wilson, broadcasting in stereo multiplex with an effective radiated power of 110,000 watts. Programming is determined by a station manager and both the Los Angeles Board of Directors and the National Board of Directors of the Pacifica Foundation. While WNTH-FM Winnetka has a staff numbering slightly under 100, KPFK (FM) Los Angeles lists 118 staff personnel in its February 1969 "Programming Profile," of which

only 18 are paid.¹⁹

While the operating budget of WNTH-FM Winnetka is provided by the New Trier Township Board of Education and the high school student body, KPFK is a listener sponsored operation maintained solely by public donation. The Winnetka station prohibits smoking, drinking and eating within the studios, while the Los Angeles station prohibits none of these, in addition to allowing nudity.²⁰

The broadcast schedule of KPFK provides a view of one of the least conventional programming patterns in use by American broadcasters. The old axiom of stripping is also ignored in several places; probably the greatest amount of unconventionality, however, is found in not how the ~~material~~ is programmed, but rather in what is programmed.

The 6:00 to 10:00 segment, entitled "Good Morning Music" (with Lew Merckelson, one of the few paid staff members) includes a "New Left" news analysis by William Winter at 7:00.²¹ The program guide published by the station for its subscribers—financial contributors—

¹⁹KPFK's Programming Profile (February 1969), p. 2.

²⁰Avant-Garde (Issue No. 5: November 1968), Avant-Garde Media, Inc., New York.

²¹KPFK's Programming Profile (February 1969), p. i.

describes the continuity as "Lew Merkelson and Varda Ullman, who joins Lew about 8—just at the time he's coming apart, play music, maybe requests, talk a little and march around the breakfast table."²²

"The Morning Reading" appearing on the schedule at 10:00 is a program of oral interpretation. For the week starting February 3, 1969, the reading series was This Was a Man, the biography of Shakespeare, presented by Lee Whiting and John Monteverde. The following week (February 11-18), The Fox by D. H. Lawrence was read by Edwina Iredale. The Kreutzer Sonata by Tolstoy and Poem to the Wind translated and read by Jo Jordan completed the February selections.²³

"Gather Round the Stake" takes the place of "The Morning Reading" on Sundays and uses varied formats in exploring contemporary religions. The show of February 9, a discussion panel of local clergy, raised the following questions: "What's real in religious services? Is the Church credible? What of the rebels in the Church?"²⁴

²²Ibid., p. 7.

²³Ibid., pp. 7-21.

²⁴Ibid., p. 11.

This particular program centered around local church officials and types of religious music; the program the following Sunday was of the "talk show" format, encouraging telephone participation of the audience in expressing religious views.²⁵

"The Free Lunch" is produced by Jill Schary (unpaid staff) and Christopher Koch (he's paid) and is usually whatever they happen to feel like doing that day.

Miss Schary is the young lady who often announces the program and interviews guests without her clothes.²⁶

Material ranges from discussing the "philosophy of Friedrich Ernst Daniel Schleiermacher," to Chris and Jill sharing their favorite recipes for cooking-out such as "Seared Roebuck and Eggs en Brochette"; the treat for February 12 was a special reading of "selections from Strom Thurmond in honor of Abraham Lincoln's birthday."²⁷

This assortment is followed by "Children's Programming," various stories and fairy tales taken from commercial recordings. There may be a distinct weakness in following

²⁵Ibid., p. 20

²⁶Avant-Garde, loc. cit.

²⁷KPFK's Programming Profile, loc. cit., p. 13.

"The Free Lunch" with fairy tales; this is another problem of providing a comfortable bridge between diverse programming.

The remaining programs on the schedule are somewhat similar to "The Free Lunch" (underground music and commentary on the New Left Revolution²⁸), with the exception of the classical programs noted; information on "The Savage Breast" program was unavailable. John Carpenter is a somewhat conventional disc jockey type in conducting his show, except he plays underground music instead of "top forty." The program guide also states that the station stays on the air until Mr. Carpenter becomes tired or bored (which is always at least after 3:00 in the morning), except on Sundays when the sign-off time is 2:00. Whereas WNTH-FM Winnetka signs-off with the "Star Spangled Banner," information is not available concerning KPFK's procedure for leaving the air.

As is evident in contrasting these two stations, the role of programming is interpreted by the station management, relative to the needs of the community being served. An obvious problem develops in defining the term "educational" to encompass such a wide variation

²⁸Ibid., p. 7.

in programming as represented by these two stations. In the more traditional sense, WNTN Winnetka symbolizes a typical low power educational operation, and yet prefers to be labeled as a "noncommercial FM station" as opposed to the label of "educational" broadcaster.²⁹ KPDK, however, bills itself as a "non-profit, noncommercial educational station."³⁰

Somewhere on middle ground on the continuum is WSUR Eau Claire, Wisconsin. WSUR is actually a non-station station—it does not "broadcast" in the technical sense of that term; WSUR programming is carried via "carrier current" to the Wisconsin State University buildings.³¹ WSUR starts the broadcast morning at 7:00 in playing the "Top 30 Survey" until 9:00; the station then ceases operation until 6:00 in the evening, when "WSUR Easy Listening" is programmed until 8:00. The 8:00 to 11:00 segment is a request-type program of popular music; 11:00 to 1:00 is reserved for underground music. The Saturday "broadcasting" consists of requests from 12:00 noon to 5:00; "oldies" are played from 6:00 to 11:00 Sunday evenings, followed by underground music from 11:00 to 2:00.

²⁹Allan Seigard, WNTN-FM Chief Announcer 1969.

³⁰KPDK, loc. cit., p. 1.

³¹Electrical sound impulses are "impressed" on 120 v.

Unlike the stations previously discussed, WSUR Eau Claire does not broadcast on a wavelength and is therefore not subject to FCC restrictions. Therefore, the station is run as a commercial enterprise; time costs range from \$2.00 for a one minute spot (given once in a one year period) to \$24.00 for a full hour.³² Multiple time sales (one client running spots over a period of several weeks or months within a one year period) provide proportionately lower rates per spot, depending on the amount of time purchased. Since the equipment and maintenance costs are paid by Wisconsin State University, the revenue from commercial sales goes toward record library development and the rental fee of a teletype news service; membership in the Intercollegiate Broadcasting System is also maintained through time sales, although no IBS programs are aired. WSUR, having filed a noncommercial broadcast license request with the FCC in early 1969, expects an educational channel allocation for 1969-1970, thus eliminating the sale of time.

This chapter has presented the management and programming policies of three differing stations, with their individual community situations. All three show an attempt to serve their respective audience, as demonstrated by the programming profiles that follow.

³²WSUR, Local Rate Card No. 2, effective February 1, 1968.

WNTH-FM Radio 88.1 - New Trier Township High Schools, Winnetka and Northfield, Illinois
PROGRAM PROFILE

Time	Monday	Tuesday	Wednesday	Thursday	Friday
1:00	MID-DAY	MID-DAY	MID-DAY	MID-DAY	MID-DAY
3:30	WHAT MUST BE DONE	SWEDEN TODAY	INSTITUTE ON MAN AND SCIENCE	SWEDISH SPECTRUM	SPOTLIGHT II
4:00	CLASSICAL	ERNEST BLOCH: MAN AND MUSIC	CLASSICAL	ERNEST BLOCH: MAN AND MUSIC	CLASSICAL
5:00	WNTH NEWS	WNTH NEWS	WNTH NEWS	WNTH NEWS	WNTH NEWS
5:30	SPOTLIGHT I	INSIGHT	SCIENCE UNLIMITED	CLOSE-UP	IM REPORT
5:45	GERMAN PRESS REVIEW	INSIGHT	BBC WORLD REPORT	CLOSE-UP	EUROPEAN REVIEW
6:00	MUSIC FOR DINING	MUSIC FOR DINING	MUSIC FOR DINING	MUSIC FOR DINING	MUSIC FOR DINING
7:00	FRENCH LANGUAGE	SPANISH LANGUAGE	FRENCH LANGUAGE	SPANISH LANGUAGE	SOLID ROCK
7:25	WNTH NEWS	WNTH NEWS	WNTH NEWS	WNTH NEWS	WNTH NEWS
7:30	MUSIC 220	LIBRARY OF CONGRESS	US FOREIGN POLICY	MUSIC 220	SOLID ROCK
8:15	COMIC ARTS	LIBRARY OF CONGRESS	US FOREIGN POLICY	LATIN AMERICAN PERSPECTIVES	SOLID ROCK
8:30	MODERN JAZZ	TRADITIONAL FOLK	ROARING 20's	CONTEMPORARY FOLK	SOUL
9:00	WNTH NEWS	WNTH NEWS	WNTH NEWS	WNTH NEWS	WNTH NEWS
9:15	SIGN OFF	SIGN OFF	SIGN OFF	SIGN OFF	SIGN OFF

TABLE 3
WNTH WEEKDAY
PROGRAMMING

KPFK (FM) Radio 90.7 - Pacifica Foundation, 3729 Cahuenga Blvd., North Hollywood, California
PROGRAM PROFILE

Time	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
6:00	GOOD MORNING: MUSIC with LEW MERKELSON AND VARDA					JABBER- WOCKY	KRISHNAMURTI BACH
8:00							
10:00	----MORNING READING-----					MUSIC AND PUBLIC AFFAIRS	GATHER 'ROUND THE STAKE
10:30	----CRYSTAL SET CLASSROOM-----						
11:00	MUSIC, PUBLIC AFFAIRS, DRAMA						OPERA and PUBLIC AFFAIRS
NOON							
12:30							
1:00	THE FREE LUNCH					RON DHANIFU	SATYAGRAHA
2:00							
3:00							SATYAGRAHA
3:30	----CHILDREN'S PROGRAMMING-----					1/24 Second LEONARD BROWN	
4:30	G O I N' H O M E: MUSIC-----						
5:30	NEWS AND VIEWS					LEONARD BROWN	MUSICAL CHAIR
6:00							
6:30							
7:00	MUSIC	THE SAVAGE BREAST		CHRONICLE		LEONARD BROWN	
8:00	CHRONICLE						
9:00	W A R S U M M A R Y-----						
9:15	CHRONICLE		CARLOS HAGEN	PAUL EBERLE	JEFF MILLER	HURVITZ BROTHERS	
10:30	JEREMIAH/ NIGHT PEOPLE	CHRONICLE			JEFF MILLER		
11:00		FRANK GREENWOOD	DARDEN	LA RAZA NUEVA			
12:00	Midnight-----JOHN CARPENTER-----						

WSUR (Carrier current) Wisconsin State University-Eau Claire, Wisconsin						
PROGRAM PROFILE						
Time	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
7:00 am to 9:00	TOP 30 SURVEY					-----
12:00 noon to 5:00 pm	-----					REQUESTS
6:00 to 8:00	EASY LISTENING					-----
8:00 to 11:00	REQUESTS					-----
11:00 pm to 1:00 am	UNDERGROUND					-----

TABLE 5
WSUR PROGRAMMING

V. THE COLLEGE FM "INDUSTRY"

With over 300 educational stations broadcasting in 1969, noncommercial radio has become a medium-sized business. As will be discussed later in this chapter, minimum cost for the most basic of broadcast equipment runs about \$5,000; this figure does not include the costs for studio space, records, tapes, telephone lines, wire service, switching equipment or sound proofing. The technical aspects of all this must be supervised by a licensed faculty or staff member; the activities of the station must be managed effectively in the public interest, and the proper records maintained. The station must also program, which usually means joining one of the educational networks.

This chapter will present survey results and comments showing the general trends of relatively small enrollment colleges and universities in managing four specific areas of operation: technical, administration, programming and financing. This NAEB Journal survey

covered 50 institutions with enrollments ranging from slightly under 1,000 to 5,000 students, picked at random from Broadcasting Yearbook.

Technical

"What is the power of your FM station?

"Twenty-three (46 per cent) of the stations contacted have 10 watts. The others vary greatly, but in general these stations have power and effective radiated power of small to medium stations.

"Do you have a campus limited transmitter?

"Nineteen (38 per cent) stated that they have a carrier-current campus transmitter, and four (8 per cent) have wired-wireless transmission equipment. One institution, Goshen College, indicated that it feeds such transmitters with FM receivers so that students can obtain the FM service on their AM sets in the dormitories. . . .

"How many studios do you operate from? How many control rooms do you operate from?

"The answers to this question ranged from five studios with two control rooms to one studio and one control room. Nine (18 per cent) have one studio with one control room, and another nine (18 per cent) have three studios and one control room. The largest category was twenty-one (42 per cent) stations which have two studios and one control room. The other eleven (22 per cent) stations have the remaining combinations of up to five studios and two control rooms."³³

One frequently employed 10 watt transmitter is

³³David Eshelman, "About College FM Stations," NAEB Journal, September-October, 1965. Reprints available from Gates Radio Company (Quincy, Illinois 62301).

the Gates Radio Company's model BFE-10C (see "PLATE I"). Using the Gates FM-22 omni-directional antenna—double ring—the line-of-sight reception field is approximately 6 miles maximum under normal conditions. Coverage is less with usage of the Gates FM-11—the single ring antenna. Both can easily be mounted on a 2 inch diameter pipe.

Listed below are the products necessary to place a sound source on the air, and their approximate costs. Note that the necessary "extras" such as cable and plugs, often overlooked in establishment estimates, are based upon having the antenna within 100 feet of the transmitter location.

Transmitter:³⁴

Gates Model BFE-10C (10 watt FM)	\$1,700.00
100 per cent spare tubes (TK-391)	42.00
Spare oven and crystal (NE-91)	80.00
Cable plug Type N (10804-36)	2.00
TOTAL	<u>\$1,824.00</u>

Antenna Equipment:³⁵

Gates FM-22 (double ring)	\$ 400.00
100 feet coaxial cable (Type RG-8A/U)	16.00
UHF cable plug (PL259A)	1.15
TOTAL	<u>\$ 417.15</u>
Deduct \$250 for use of FM-11 (single ring) antenna.	

³⁴Broadcast and Communications Equipment (Quincy, Illinois: Gates Radio Company, 1968), p. 50.

³⁵Ibid.

10 AND 50 WATT FM BROADCAST TRANSMITTERS



Model BFE-10C Ten Watt FM Transmitter

PLATE I

THREE MODELS AVAILABLE

Gates has consistently offered the most complete line of low powered wide band FM broadcast transmitters in the industry. Especially designed for educational FM broadcasting and for STL (studio-transmitter link) service, three popular models featuring direct crystal controlled cascade modulation are available. Included are the 10 watt BFE-10C and 50 watt BFE-50C versions for the standard FM broadcast band of 88 to 108 Mc., and the 50 watt Model BFR-50C which operates in the 40 to 220 Mc. FM band. The BFR-50C is specifically designed for high fidelity program relay and STL service and is unusually popular with broadcasters abroad. The same low distortion, wide frequency response and reliability, so characteristic of Gates higher powered FM models, will be found in these three lower powered equipments.

Metering consists of an audio level meter to indicate proper modulation level and individual meters for RF output, plate current and plate voltage. The transmitters are 100% complete without external accessories other than antenna and audio equipment.

MODEL BFE-10C: The BFE-10C ten watt FM transmitter is FCC type approved for educational FM broadcasting and is equally excellent for STL service or in any applications where 10 watts FM output is required. Monaural, stereophonic, single or dual channel multiplexing equipment is optional for use with the BFE-10C transmitter. A compact self-contained unit designed specifically for desk or external mounting, this 10 watt model incorporates the M-6095 exciter featuring direct crystal controlled cascade modulation, the same as employed in all Gates FM transmitters regardless of power. If stereo is desired, the M-6146 stereo generator is added.

Construction and design is pleasing to the eye and convenient to service. Immediate "full view" access is available by re-

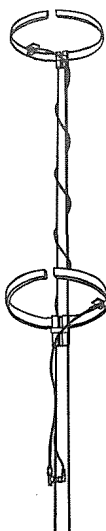
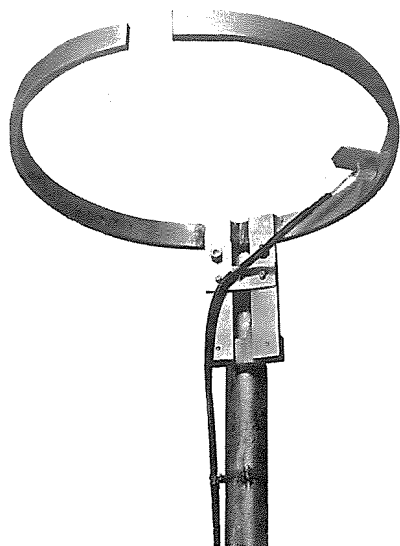
moving the front grill or the rear full length slip-on door. This complete 10 watt FM transmitter is used by many schools, colleges, universities and overseas broadcasters in conjunction with the Gates FM-11 single ring or the FM-22 double ring FM antenna. As part of this FM broadcast package, the Gates Studioette or Yard audio console is recommended. This complete educational broadcasting system is modern and equal only to the best, yet will fit into the conservative budget.

MODEL BFE-50C: For 88 to 108 Mc. FM service, the BFE-50C is similar in design to the BFE-10C transmitter but delivers 5 times as much power or 50 watts. A 50 watt power amplifier is added to the 10 watt section to provide the higher powered output. The amplifier consists of two M-6146 tubes and a 600 volt power supply. Identical in appearance to the standard BFE-10C transmitter, the cabinet easily houses the 50 watt amplifier and power supply.

MODEL BFR-50C: This compact 50 watt transmitter is probably the world's most widely used FM relay transmitter. Designed to relay broadcast programs from studio to transmitter or between special program originating points, the Model BFR-50C operates on any one specific frequency (as ordered) within the 40 Mc. to 220 Mc. band. When operating below 80 Mc., the maximum swing is ± 40 Kc. or less. Above 80 Mc. the frequency swing is ± 75 Kc. The 50 watt amplifier consists of two radio frequency stages powered by a built-in 600 volt power supply. The range of this transmitter is greatly increased by use of a directional antenna. The corner reflector antenna when used at both transmitting and receiving ends, will result in several hundred watts of effective power. A relay link up to nearly 100 miles is possible, depending on the antenna height of both transmitter and receiver as well as terrain.



Front view (cover removed) of Model BFE-10C, ten watt FM transmitter. Models BFE-50C and BFR-50C are essentially identical in appearance.



Left, FM-11 single ring omni-directional antenna with power gain of 0.8 db. Right, two bay FM-22 omni-directional antenna with gain of 1.3 db. These are broad band, easy to install antennas.



Front view (cover removed) of BFE-50C fifty watt FM transmitter.

SPECIFICATIONS

POWER OUTPUT:

BFE-10C, 10 watts; BFE-50C, 50 watts; BFR-50C, 50 watts.

FREQUENCY RANGE:

Models BFE-10C and BFE-50C, 88-108 Mc., as ordered. Model BFR-50C, 40 to 220 Mc., as ordered.

STABILITY:

0.001% or better.

MODULATION:

Direct crystal controlled cascade modulation.

RESPONSE:

Within 1 db. of standard 75 microsecond pre-emphasis curve or flat ± 1 db., 50-15,000 cycles. Note: Will supply with 75 microsecond pre-emphasis curve unless ordered for flat curve.

FREQUENCY SWING:

± 100 Kc.: (± 75 Kc. = 100% modulation in FM broadcasting). Model BFR-50C. Models below 80 Mc. have maximum swing of ± 40 Kc. or less, as desired. Above 80 Mc. may be ± 75 Kc. or less, as desired.

DISTORTION:

1% or less 30-15,000 cycles. $\frac{1}{2}\%$ 100-10,000 cycles.

RF HARMONICS:

Suppression meets or exceeds all FCC requirements.

INPUT:

+ 10 dbm. ± 2 db. at 600 ohms impedance.

POWER:

117 volts, 50/60 cycles. BFE-10C, 120 watts; BFE-50C, 230 watts; BFR-50C, 230 watts.

RF OUTPUT:

50 ohms (Type N connector).

OSCILLATOR:

Direct crystal controlled.

NOISE:

65 db. below 100% modulation (FM).

TEMPERATURE:

— 20° to + 50° C.

TUBES:

BFE-10C: (6) 6AU6, (3) 6J6, (3) 6201, (3) 7025, (2) OA2, and (1 each) 12AX7, 6AO5, GZ34/5AR4, 6080, 6360.

BFE-50C: Same as above, with (2) 6146 and (1) 5R4GYA tube added.

BFR-50C: Same as BFE-10C with (1) 5894, (1) 6AQ5, and (1) 5R4GYA tube added.

ALTITUDE:

7500 feet.

FINISH:

Medium gloss gray with trim in brushed aluminum and black.

SIZE:

26 $\frac{1}{2}$ " high, 28" wide, 14" deep.

WEIGHT (Packed):

BFE-10C (domestic) 100 lbs.; (export) 205 lbs.; 15 cu. ft.

BFE-50C (domestic) 125 lbs.; (export) 230 lbs.; 16 cu. ft.

BFR-50C (domestic) 125 lbs.; (export) 230 lbs.; 16 cu. ft.

ORDERING INFORMATION

BFE-10C, 10 Watt FM Transmitter, 88-108 Mc, with tubes and crystalM-5594B
Spare 100% tube kit for BFE-10CTK-319
Manufacturer's recommended minimum tube kit for BFE-10CTK-488
BFE-50C, 50 Watt FM Transmitter, 88-108 Mc, with tubes and crystalM-5595B
Spare 100% tube kit for BFE-50CTK-489
Manufacturer's recommended minimum tube kit for BFE-50CTK-490

BFR-50C, 50 Watt Relay Transmitter for 40-220 Mc, with tubes, crystal and ovenM-5599B
Spare 100% tube kit for BFR-50CTK-310
Manufacturer's recommended minimum tube kit for BFR-50CTK-458
FM-11 Single Ring Educational (88-108 Mc) FM AntennaM-5765
FM-22 Double Ring Educational (88-108 Mc) FM AntennaM-5766
State carrier frequency when ordering all models and antennas and frequency swing desired when ordering Model BFR-50C transmitter.



GATES

GATES RADIO COMPANY • QUINCY, ILLINOIS • 62301 • U.S.A.
A subsidiary of Harris-Intertype Corporation

The studio equipment necessary for broadcast is, naturally, dependent upon the programming, the number of control rooms and studios, and the amount of money available. Keeping in mind this last consideration, the following is an equipment list for a one studio, one control room station operation. Note that this list encompasses only "technical" equipment, and does not include the costs for actually creating the necessary studio space; this equipment would be adequate for a one studio, one control room operation.

Studio Equipment:³⁶

Gates "Studioette" console (M-5381A)	\$1,350.00
Spare tube kit (990-0444)	22.50
2 Gates turntables complete with cabinet	1,353.90
2 Gates 8" monitor speakers	17.90
2 Electro-Voice transformers (TR-15)	9.60
2 Speaker wall cabinets	12.00
Gates cardioid microphone (Type G-300)	53.50
Gates dynamic microphone (Type G-100)	33.00
Boom stand	42.00
Floor stand	17.70
Desk stand	3.60
2 Cannon XLR-3-35 wall receptacles	15.70
3 Cannon XLR-3-12C microphone plugs	5.04
3 Cannon XLR-3-11C connectors	6.45
100 feet No. 20 microphone cable	18.00
Trimm headphones (Type 107)	6.90
Phone plug (No. 511) for Type 107	.80
500 feet shielded audio wire	30.00
TOTAL	\$2,997.99

The "Studioette" console or board is extremely flex-

³⁶ Ibid., pp. 116, 154, 155, 157, 169.

ible in providing 13 inputs into four mixing channels; multiple circuit combinations can be created with use of the 14 tab keys. Four microphones may be key selected into two preamplifiers; three turntables, two tape recorders, three remote lines and network are also accommodated. Dual muting relays handle speaker and warning light functions; a 4" illuminated VU meter is flush mounted.³⁷

The equipment listed is representative of various types available now. Even the lowest power FM station must be capable of flexible operation despite the possible fluctuations of financial and programming restrictions. The microphones listed, for instance, provide this necessary diversity; the G-100 is omnidirectional for general use, whereas the G-300 is a cardioid microphone providing discrimination against undesired background sound. Creative programming can often become restricted without such versatility in technical equipment.

Administration

"Who is the owner of the station?

"As required by FCC regulations, all of the institutions had some control over the "ownership" of the station. However, there was some deviation as to the

³⁷ Ibid., p. 116.

method and extent of administration 'control.'

"Three replies (6 per cent) indicated that the station was owned in the name of the trustees and the president; four (8 per cent) indicated the trustees only; two (4 per cent) indicated the student body; three replies (6 per cent) stated that the owner was a college broadcasting company or association; one state teachers college station was owned by the state itself. The remainder of the replies indicated that the radio station was owned and in the name of the college or university (74 per cent).

"Do you have a faculty sponsor?

"Only three (6 per cent) replies said they did not have a faculty advisor or sponsor, with the other forty-seven (94 per cent) indicating that the station did have a faculty sponsor. However, this is where the statistical similarity ended.

"What is his relationship to the school?

"The faculty advisor's relationship to the school varied greatly; however three trends were revealed. Eight (16 per cent) schools had as their advisor a 'director of broadcasting' (or of radio and TV) who might also have teaching responsibilities in radio or TV courses. Faculty advisors in twelve (24 per cent) schools held teaching positions in various school departments not in the speech or radio-TV departments. Sixteen (32 per cent) of the schools had speech or radio-TV professors.

"To what extent is he connected with broadcasting?

"Great variety was indicated in the advisor's connection with broadcasting as well. Six (12 per cent) schools said he had no connection at all; another six (12 per cent) indicated an 'advise and consent' arrangement, while still another six (12 per cent) indicated more direct supervision of operations and policy guidance, but not to the extent of direct control. In eight (16 per cent) the advisor was the 'manager' (or equivalent) of the station. Another type of reply came from eleven (22 per cent) schools which indicated that

the extent which the advisor was connected with broadcasting was that he was the instructor of radio and TV, which might be a very direct or rather indirect relationship.

"Is there a regulating body other than the station staff?

"Twenty-six (52 per cent) stations have no regulating body other than the station staff. The remaining stations have many types of regulating bodies, such as the college administration, college trustees, 'special activities committee of the university,' the speech department and dean of the college, and advisory boards with a faculty member from the department of speech, department of physics and the public relations director. Four (8 per cent) of the replies indicated that there was some type of committee, council, or board to regulate broadcasting, probably made up of students and faculty, and sometimes including college administration members.

"To what extent is it (the regulating body) connected with broadcasting?

"There was little correlation found among the duties of these regulating bodies. In a few instances, the body was responsible in some manner for hiring and firing of managers and staff members. All of them had some control over policy and finances.

"Who determines station policy?

"This varied from single individuals to committees or boards or the university administration. In eight (16 per cent) instances, the station manager, either a faculty manager or a 'senior' student, determined policy. Faculty advisors and student staff members were responsible for policy in six (12 per cent) of the replies. The remaining replies varied greatly. It is interesting to note, however, that in the smaller private and church-aff-

filiated colleges more administration approval is required for policy and other decisions of importance.

"What is the organizational structure of your station?

"Replies to this question ranged from the very brief and meaningless to the very detailed and informative. I expected to find some correlation between positions, and whether filled by faculty or students, and the size of the institution, but did not find this to be true. Only in two colleges among the larger schools were part-time professionals or full-time professionals employed. These were for positions of engineering, director, and secretary.

"In forty-five (90 per cent) replies the faculty advisor headed the operations, either as station manager or director, or as an advisory person. In one instance, three faculty members filled the positions of director of broadcasting, station manager, and chief engineer. However, the answers to this question do not correlate with the statistics nor with replies to the question regarding the extent that the sponsor is connected with broadcasting—unless this position of 'head of operation' was quite remote from actual operations.

"Eight (16 per cent) replies indicated that a student held the position of station or general manager.

"In nearly every case students held such positions as program director, technical director, head announcer, special programs director, traffic manager, tape and music librarian, sports and news director, production manager, publicity, and secretarial work. The line of command was structured so that students were responsible to student department heads, and they in turn responsible to the student or faculty manager. If the station manager was a student, he then was responsible to the faculty advisor or board."³⁸

"Are there requirements for filling these positions?

"Wherever professionals were employed they were

³⁸Eshelman, loc. cit.

hired by the school on the basis of their experience and training. Faculty members of course held the positions by virtue of their training, experience, and instructional duties. Twenty-five (50 per cent) replies indicated that students were required to have training and experience or to be in training at the time in radio and TV courses. The other stations required only willingness to learn and work. Three universities indicated that a credit point average equal to a 'C' average was a prerequisite. In larger schools, which had many volunteers, systems of seniority were implemented, and major student positions were filled by upperclassmen only.

"Which positions are paid . . . ?

"Faculty positions were, of course, always paid positions. Faculty sponsors generally were granted teaching load reductions from three hours to one-third or one-half of their total teaching load for their broadcasting responsibilities. However, one university out of the fifty indicated that both faculty members and students worked on a volunteer basis.

"Student rewards varied from 'educational experience' alone to yearly, semester, monthly, or hourly payments. Students participating through classroom instruction received class credit and 'points.' Hourly salaries ranged from \$.75 to \$1.25, and one college advised a raise with each year of experience. Weekly salaries varied from \$25 to \$75 for such jobs as production manager, traffic manager, music librarian and engineer. Semester or yearly honorariums were allowed in several instances for student positions of manager, program director, and chief engineer, ranging in amount from \$50 to \$150 a semester, and \$200 to \$300 yearly.

"Only twenty (40 per cent) of the stations paid student help and of these, fourteen (78 per cent of total) paid only the two or three top positions of manager, program director, and chief engineer."³⁹

³⁹ Ibid.

With the exceptions of a sales department and a corporate Board of Directors, noncommercial administrative positions are identical to those found in commercial broadcasting.⁴⁰ The official titles for these jobs may differ from station to station, but the actual functions remain the same. The supervising faculty advisor or "special committee" act as a Board of Directors in having final authority over station policy and responsibility to the FCC for operating "in the public interest, convenience or necessity." A general manager is hired (or selected) to interpret and activate the policies set forth. He must use as his goals the objectives for broadcast listed for the FCC on the initial license application.

The manager appoints a number of assistants in "executive" positions to supervise programming, news, sports, announcing and continuity. If there is any choice in the matter of engineering, the general manager also has the responsibility of selecting the "Chief Engineer"; with the exception of some larger university stations, the number of qualified operators (FCC licensed) is rather limited.

⁴⁰KTIS-AM-FM Minneapolis; KNWS-AM-FM Waterloo, Iowa; KFNW-AM-FM Fargo, N. D.; and KNWC Sioux Falls, S. D. present a notable exception, being owned by Northwestern College Stations, Inc. (Broadcasting Yearbook 'Washington: Broadcasting Publications, Inc., 1968, p. A-114.)

Programming

"How many hours is your station on the air?

"All fifty stations replied that they broadcast on at least a Monday-through-Friday schedule. The range was from three to twelve hours daily with an average of 6.31 hours per day.

"Only thirty-six (72 per cent) stations broadcast regularly on Saturdays, but of these, the average broadcast time each Saturday was 7.62 hours in a range from two to eighteen hours. Several other stations reported that Saturday broadcasts depended upon home sports or special events.

"There was another drop for Sunday broadcasting, with only thirty-two (64 per cent) stations on the air regularly. The range of time on the air Sundays for these stations was from one to twelve hours, with the average time of 7.70 hours.

"Are you a member of the (IBS)----
Intercollegiate Broadcasting System?

"Thirteen stations reported yes (26 per cent).
Thirty-seven reported no (74 per cent).

"Are you a member of the (NAEB)----
National Association of Educational Broadcasters?

"Thirty stations reported yes (60 per cent).
Twenty stations reported no (40 per cent). Program schedules, when submitted, tended to substantiate answers to this question.

"Do you subscribe to any other program source?

Nineteen (36 per cent) indicated that they did subscribe to other program sources, some of which are:

- French Broadcasting Corporation
- Canadian Broadcasting Corporation (CBC)
- Radio Netherland
- South African Radio Service
- Broadcasting Federation of America
- Radio Sweden
- British Broadcasting Corporation (BBC)
- Various record subscription sources
- Local radio stations in their respective areas

"What is your programming policy?

"Only four stations (8 per cent) returned copies of programming policy, but these and other statements reveal certain concepts in general policies: to reflect the aims of the college (especially noted in church-affiliated colleges); to provide a training ground for students; to serve the surrounding community; to offer programs of entertainment and information of good taste and high quality; to seek to develop taste for good music and programming; to be concerned with public relations; to provide programming that cannot be received on other types of stations.

"The breakdown of later questions in this category will reflect further trends in policy in specific areas of programming. There was, of course, no way to evaluate whether and with what effectiveness stations were meeting their policies."⁴¹

The table on the following page represents the results of the survey in calculating the number of hours used each week in airing various program types.

"Here the columns represent type of programming, the range of all fifty participating stations in hours per week, the average of all fifty stations in amounts of hours per week, the number of stations programming this type of program, the range of amount of this type aired each week, and the average for those stations carrying the particular type of programming.

"Five schools specifically mentioned that they broadcast sports events in season, not included in the statistics. Others mentioned that their amount of sports was dependent upon home football or basketball games and other special events."⁴²

Table 7 shows the category listings for music programming; the columns should be interpreted as in Table 6.

⁴¹Eshelman, loc. cit.

⁴²Ibid.

TABLE 6

PROGRAM TYPES BROADCAST

TYPE OF PROGRAMMING	RANGE OF ALL	AVERAGE OF ALL	NUMBER OF STATIONS	THEIR RANGE	THEIR AVERAGE
Campus News	0-7	.89	33	1/4-7	1.33
Outside News	0-7	1.35	27	1/4-7	2.46
Instructional (Educational and other)	0-20	4.30	34	2-20	6.20
Sports	0-5	.85	19	1/4-5	2.21
Music	10-98	26.42	37	10-98	35.00
Drama	0-5	.55	18	1/2-5	1.50

TABLE 7
MUSIC PROGRAMMING

TYPE OF MUSIC	RANGE OF ALL	AVERAGE OF ALL	NUMBER OF STATIONS	THEIR RANGE	THEIR AVERAGE
Popular	0-30	7.48	31	1/2-30	11.83
Folk Music	0-15	.93	33	1/2-15	1.39
Jazz	0-10	1.51	30	1/2-10	2.46
Mood	0-33	3.36	25	1/2-33	6.60
Rock 'n' Roll	0-15	1.16	8	1-15	7.12
Light Classical	0-14	3.89	32	1-15	5.96
Heavy Classical	0-40	10.36	41	2-40	12.39
Religious	0-9	.75	15	1/2-9	2.46
Religious Classical	0-2	.18	5	1-2	1.80
Other	0-4	.26	7	1-4	1.85

Eshelman makes the following comments concerning the results of his survey presented on the previous page:

"While it is true that each station would interpret the questionnaire types differently, I believe that there was probably enough variety to delineate the general concept, and that there was probably enough consistency that the statistical averages are fairly representative of the several stations included in this report. My belief is based on notations on the returned forms in addition to analysis of the program guides or schedules. This comment also applies to the former question regarding program types.

"Note that rock 'n' roll music is aired on only eight (16 per cent) of the stations. All the others indicated that they very definitely did not broadcast such music.

"Three stations indicated that they considered Christmas music as religious music, and this, due to its seasonal quality, was not included in the preceding tabulations.

"Of the seven stations that broadcast 'other' types of music, these notations were made: two included show music, two included Broadway music, and four stations included opera, which other stations probably included in their reports under other categories.

"Though no general correlations could be determined as to how much more church-affiliated colleges broadcast 'religion' specifically, the following correlation could be noted. Non-church-affiliated institutions broadcast more hours on Sunday and programmed all types of broadcasts, whereas church-affiliated institutions broadcast fewer hours and more religious programming, such as church services, chapel talks, and religious music.

"Do you have a regular broadcast schedule?

"Twenty-seven (54 per cent) of the replies in-

cluded a copy of their broadcast schedule or program guide. Only one station specifically indicated that it had no schedule. The schedules ranged from simple, mimeographed sheets to a 100-page yearly guide (from the University of Alaska). Of the twenty-seven forwarded to us, 46 per cent were mimeographed or duplicated and 54 per cent were printed. Some had attractive covers and art work. Schedules ranged from weekly programs to those covering a whole year; 70 per cent were seasonal or semester guides, and listed special events and sports events to be broadcast. Most of the weekly, monthly, or even bi-monthly guides extensively listed specific musical compositions and the dates of their broadcast.

"As mentioned earlier, I asked stations to include copies of both a program guide and programming policy if they were available. Twenty-nine (56 per cent) stations did provide either one or both of the documents. Twenty-seven (54 per cent) included copies of program guides or schedules and it was implied that policy could be determined from a study of the guide. Four (8 per cent) stations sent more detailed information as follows.

"KUOP of the University of the Pacific in Stockton, California, included mimeographed statements of its philosophy and objectives in broadcasting.

"WSBF of Clemson College in Clemson, South Carolina, replied with copies of its constitution and by-laws, basic policy, and a program guide.

"WETN of Wheaton College in Wheaton, Illinois, returned a program schedule and a copy of its public relations and broadcasting policies.

"KWAR of Wartburg College in Waverly, Iowa, attached a list of 'rules, regulations, do's and don'ts, suggestions, instructions, etc.' which could be reviewed as programming policy.

"Do you syndicate any programs?

"Five (10 per cent) institutions reported that they syndicate some programs, such as 'programs of special interest to local commercial stations,' 'College-Faculty Interview' series, 'Political Com-

mentary from Bonn,' 'Washington Reports to the People,' 'Mountain Meditations' (a free, 30 minute period of devotional talks and music, non-sectarian), 'Sounds of 20th Century,' and one five-minute program of college news for the local stations. Syndication is obviously not a trend in intercollegiate broadcasting."⁴³

The "pioneer" educational stations were college owned AM operations. In particular those stations affiliated with the state universities of Wisconsin, Iowa, Minnesota, Illinois, Ohio and Oklahoma, as well as WNYC, the municipally-owned and operated station in New York City, competed frequently and successfully with the networks in winning awards for superior educational programming.⁴⁴ With the development of FM radio after World War II and the FCC allocation of the 88-92 megahertz band for educational use, the orientation of noncommercial programming shifted. The shift from live drama and ^Corchestras was similar to changes taking place in the commercial realm. As the previously presented statistics apparently indicate, the educational programmer is airing little more than his commercial counterpart. The high number of hours used for entertainment seems to indicate the average college-

⁴³Ibid.

⁴⁴Giraud Chester, Garnet R. Garrison, and Edgar Willis, Television and Radio (New York: Appleton-Century-Crofts, 1963), p. 202.

affiliated station has become a "follower" of commercial trends rather than a "leader" in educating through use of the media. One of the more outstanding reasons for this is the view that an educational station is an "education" for those students participating in management, programming or engineering. In a sense, then, the ~~work~~ is educational, not the message. These college-affiliated stations have excellent opportunities for broadcasting the orchestral and choral presentations of their music departments, as well as original compositions, theatre drama, radio drama, and choral readings. Producing programs such as these will give the student unique challenges in the areas of management and engineering, in addition to providing programming of possible instructional value.

Financial

"Seventeen stations (43 per cent) reported that they received their funds entirely and directly from the college budget. Three (6 per cent) institutions indicated that their budget was included in the speech department budget. Ten (20 per cent) reported that all their funds were received from the Student Senate or Council on campus. The remaining stations have varying combinations of college budgeted income and student body allocations, but these generally depended more heavily on the college budget. Several institutions (state colleges or state universities)

received half their funds from the student fund and half directly from the state itself.

"Other supplemental sources of income listed were gifts from alumni and friends, rental of records and equipment (as for record hops), and feeding FM music systems to stores.

"Do you have an annual operating budget?

"All but two universities indicated that they had an annual budget, but only twenty-two (44 per cent) elaborated on expenditures.

"Amounts of the budgets varied all the way from \$550 to \$35,000. Here notable correlations may be seen with the size of the institution, with two exceptions. State institutions tended to have much larger budgets than even the larger schools in the survey. Also, eastern 'ivy-league' or 'prestige' schools also tended to have larger budgets, especially as several of these have limited student bodies in comparison.

"Generally, budgets for schools with about 1,000 enrollment ranged from less than \$1,000 to \$4,000, including student salaries if applicable. Several reports advised starting with at least \$1,000. Those trying to operate on this or less had found it nearly impossible to provide even a minimal service. The norm was between \$3,000 and \$4,000 per year.

"It was indicated that faculty salary, studio housing or rental, and electrical power were provided for in the general college budget and not included in the station operating budget. When specifically mentioned, the telephone bill was considered a part of the operating budget.

"Allotments were made in budgets for the following expenses: student salaries; new equipment; maintenance and repairs; records and tapes; publicity, printing, and office supplies; postage; contracts and subscription dues. If student help was paid, this was usually the largest single item of expense. Otherwise records and tapes were ordinarily the biggest expense, and maintenance and equipment the second largest. Exceptions to this trend were sta-

tions which subscribed to programming sources. Station advisors also warned of many small hidden expenses that add up to a big piece of the operating budget."⁴⁵

The legal sources of revenue for a noncommercial station are dependent upon the guidelines established by the FCC. Entire programs may actually be "sponsored" by a commercial concern if the proper wording is used. A tag similar to the following could be used once, at the conclusion of the programming: "Production assistance and consideration for this broadcast was provided by ____."

A lawyer, preferably a broadcast attorney, should be sought for the acceptable phrasing in accordance with the most recent FCC rulings. Stations affiliated with tax-exempt or non-profit institutions are also capable of using this status to receive donations of equipment, tapes, and records. The feeding of FM music systems ("Muzak") is usually unprofitable for a low power station due to the limited range and expense of multiplexing (SCA) equipment.

⁴⁵Eshelman, loc. cit.

VI. SIGNING-OFF

Since TV, radio has become a personal medium--it has turned to the individual needs of its audience.⁴⁶ In meeting listener desires, the commercial broadcaster has developed new programming techniques, most notably the "talk show" format with guests of various professional backgrounds, and the radio news documentary. These trends indicate a change toward the educational commercial station.

But what has happened to the educational noncommercial station? Despite an estimated broadcast coverage of more than half of the American people, the actual audience of these stations is very small in comparison with the potential audience.⁴⁷ Certainly the educational broadcaster has been limited by inadequate budgets and the resultant shortage of technical equipment. He has also been restricted by often clinging to a philosophy emphasizing noncommercial radio as a training ground for technicians rather than an educational experience for his audience. Oftentimes he does not even know his

⁴⁶McLuhan, loc. cit., p. 306.

⁴⁷Chester, Garrison, and Willis, loc. cit., pp. 203-4.

audience, or worse, he does not fully comprehend his function in the community. He may even forget that "educational" does not mean "dull."

It is time for the educational FM "industry" to re-examine its history and formulate a realistic view of its role as a modern medium; to formulate programming combining audience appeal and educational value; and to seek new forms of financial stability. It is time for the educational broadcaster to take his cue from Patrick Henry: ". . . we are not weak if we make a proper use of those means which the God of nature hath placed in our power."

APPENDIX I

The following is a glossary of terms and phrases common to the broadcaster's language. It must be noted that this list is incomplete, having been designed to cover specific areas mentioned within the text.

GLOSSARY OF TERMS

ACROSS THE BOARD=program or type of program scheduled every day; also known as stripping.

AD LIB=talk without script.

AIR CHECK=monitor (and usually record) a program as broadcast; an "air check tape" is usually sent with an application for station employment.

AUDITION=test a person, record or program for station suitability; also, a switching position on most control boards for communicating on monitors within a station, without broadcasting on the air.

B. G.=background, usually a sound or music background.

BLAST=distortion of sound caused by high gain setting.

BOARD=the engineering console with "pots" and sound level meter(s) through which all sounds are fed before going to the transmitter.

BOOM=type of microphone stand consisting of an extension bar connected to a perpendicular bar attached to a heavily weighed floor base; the arrangement allows for up and down and circular movement of a microphone.

BREAK=segment of time between programs for commercials and station identification.

BRIDGE=short music fill used to connect segments of a program.

COLD=performed without preparation or prereading.

CONTROL ROOM=portion of station containing the BOARD and related transmitting equipment.

CUE=the giving of a starting signal for music or announcing; more commonly used to describe the technique of placing a tone arm on record grooves so that the record starts without dead air and without dragging.

CUSHION=extra program material used in the event the regular programming runs short; also known as "fill."

CUT=stop a program or portion of a program; often synonymous with "kill."

CROSS FADE=lowering one sound level while increasing another sound level; usually applied to fading out one record while fading in another. This is generally considered rather unprofessional.

DEAD MIKE=a microphone not turned on.

ET=electrical transcription; a recording on a plastic disc.

FADE IN=turning a POT from 0 to desired program level.

FADE OUT=turning POT from program level to 0.

FCC=Federal Communication Commission; the governmental agency and regulatory board of American broadcasting; duties include the right to renew and allocate broadcast channels (AM-FM-TV-Microwave) in the public interest.

FEED=send programming from remote facilities to station, from network to station or from station to station.

FILTER=electronic engineering device which has the effect of cutting highs and/or lows off programming; can create the effect of a telephone or an unusually deep voice for announcing.

GAIN=volume intensity controlled by POT.

ID=station identification required by law; call letters and city of broadcast (studio location) must be announced every half hour.

LIVE=performed directly on the air; not taped or recorded.

LIVE MIKE=microphone turned on; also called "open mike."

N. A. B.-National Association of Broadcasters; a politically influential group of commercial personnel and executives who function as a self-regulatory body of the industry.

N. A. E. B.-National Association of Educational Broadcasters; the non-commercial counterpart of the N. A. B.

NERN-National Educational Radio Network; a tape network headquartered at the University of Illinois.

ON MIKE-performed directly in front of a microphone; normal microphone technique.

OFF MIKE-performed away from a microphone to denote distance.

ON THE NOSE-exactly on time.

PLAYBACK-the playing of a previously recorded material.

POT-control for volume level (GAIN) of any programming source.

PSA-public service announcement; a type of SPOT made in the public interest without charge.

REMOTE-program material originating from a source outside the physical structure of a station; accomplished by telephone line(s) or shortwave mobile transmitter(s).

RIDE GAIN-re-adjusting the programming level to maintain a consistent GAIN.

SEGUE (pronounced "seg-way")-switching from one program source to another without pause; also known as "running a tight BOARD."

SPOT-any announcement, commercial or PSA.

STRETCH-slow down rate, lengthen programming; necessary if program material is going too fast or will end before planned time limit. It is more desirable to STRETCH than to CUSHION.

STRIKE-remove and store equipment.

STINGER-music or sound used to accent a conclusion;
usually used to end a spot.

STRIPPING-see ACROSS THE BOARD.

SUSTAINER-programming aired regularly without sponsorship;
all "stripped" programs on a non-commercial station
are SUSTAINERS.

TAG-music or announcement at conclusion of a program;
TAGS are also added by the announcer to previously
recorded SPOTS.

TALK BACK-see second section of AUDITION.

TP-record a program or SPOT on audio tape.

TRICK-an announcer's or engineer's working shift.

UNDER-music or sound of lower level than central action
or announcing.

VO-voice over music or sound background.

VU-volume units; a marking system used on the meter(s)
located on a BOARD to maintain consistent sound
levels.

APPENDIX II

The following section consists of listings of all educational noncommercial FM stations within the jurisdiction of the Federal Communications Commission. In cases where the noncommercial licensee also owns and operates an AM facility, the noncommercial AM station has also been included.

DIRECTORY OF EDUCATIONAL FM STATIONS

Key

Information has been corrected to October 15, 1967.
Listings are made as follows: call letters, initial operation date, megahertz position, wattage, tower footage, address, telephone number, owner. Stations are listed by state and town (direct-dial area code appears after town name).

Alabama

TUSCALOOSA (205) Tuscaloosa County

WUOA-FM 1949 (temporarily off the air): 91.7 mc; 15 kw.
Ant 120 ft. Box X, University of Alabama (35486). 348-6210.
Board of Trustees of the University of Alabama.

Alaska

COLLEGE

KUAC (FM) Sept. 20, 1962: 104.9 mc; 2.7 kw. Ant minus 125 ft.
Dept. of Speech & Radio, University of Alaska (99701).
479-7255. University of Alaska.

Network: NER

Charles Northrip, mgr; Sue Pittman, prog dir;
Richard Dowling, chief engr.

Arizona

PHOENIX (602) Maricopa County

KFCA (FM) 1951: 91.5 mc; 10 w. 1202 W. Thomas Rd. Phoenix
College (85013). 264-2492.

Special programs: C&W 2 hrs weekly.

Charles Buzzard, gen mgr; Robert Crandel, prog dir;
Tom Chambers, chief engr.

Arkansas

JONESBORO (501) Craighead County

KASU (FM) 1956: 91.9 mc; 3.5 kw. Ant 185 ft. Box 4B,
State College, Arkansas (73467). WE 5-5972. Arkansas
State University.

Charles Rasberry, dir bcstg & gen mgr; Darrel
Cunningham, opns mgr; Gene Boucher, chief engr.

California

ANGWIN (707) Napa County

KANG (FM) May 20, 1961: 88.1 mc; 10 w. Pacific Union
College (94508). WO 5-2421, ext. 261. Pacific Union
College Association for Educational Broadcasting.

E. H. Wallace, pres; Elmore Murphy, gen mgr;
Jerré Iverson, prom mgr; Walt Bolinger, engr.

ARCATA (707) Humboldt County

KHSC-FM June 1, 1960: 90.5 mc; 10 w. Division of Creative
Arts, Humboldt State College. VA 2-1771. Humboldt State College.

California

BERKELEY (415) Alameda County
KALX (FM) July 1967: 90.7 mc 10 w. Chancellor's Office,
 U. Of California (94720). TH5-6000. The Regents of the
 U. of Calif.

CLAREMONT (714) Los Angeles County
KSPC (FM) February 1956: 88.7 mc; 3 kw. Ant minus 255 ft.
 Sumner Hall. NA6-8511, ext 3060. Pomona College.

LA CANADA (213) Los Angeles County
KUNF (FM) 88.9 mc; 10 w. La Canada Unified School District.

LOMA LINDA (714) San Bernardino County
KEMR (FM) Sept. 8, 1961: 88.3 mc 10 w. Loma Linda U.
 Church (92354). 796-0258. Loma Linda Educational Bcstg
 Corp.

Spec progs: Fr. $\frac{1}{2}$ hr; Sp $\frac{1}{2}$, both wkly.
 Edwin Collins, D.D.S., pres; Ellis Rogers,
 stn mgr; James Mershon, chief engr.

LONG BEACH (213) Los Angeles County
KLON (FM) Jan. 2, 1950: 88.1 mc; 1.2 kw. Ant 425 ft.
 1305 E. Pacific Coast Hwy. (90806). 599-2421. Long
 Beach United School District.
 Dr. Frank George, pres; Lovell Johnson, mgr.

LOS ALTOS (415) Santa Clara County
KFJC (FM) Dec. 4, 1959: 89.7 mc; 10 w. 12345 El Monte
 Ave. Foothill College. (94022) 948-8590. Foothill Col-
 lege District.
 Stuart Roe, mgr.

LOS ANGELES (213) Los Angeles County
KUSC (FM) 1946: 91.5 mc; 2.9 kw. Ant 150 ft. U. of
 Southern Calif. (90007). RI6-2168. U. of Southern Calif.
 Kenneth Harwood, gen mgr; Allen Klaus, prog
 dir; Stephen Berry, chief engr.

KXLU (FM) March 3, 1957: 89.1 mc; 710 w. Ant 12 ft.
 Stereo. 7101 W. 80th Street (90045). SP6-0400.
 Loyola U. of Los Angeles.
 Rep: Vance
 Very Rev. Charles Casassa, S.J., pres;
 Richard Kallenberger, gen mgr; V. Talbot, engr.

NORTHRIDGE (213) Los Angeles County
KEDC-FM November, 1963: 88.5mc; 320 w. Ant minus 235 ft.
 18111 Nordhorff St. (91324). 349- 1200, ext 557. San
 Fernando State College.
 Dennis Broderick, gen mgr.

PASADENA (213) Los Angeles County
KPCS (FM) Sept., 1957: 89.3 mc; 370 w. Ant. minus 540 ft.
 1570 E. Colorado (91106). SY5-6961. Pasadena City Junior
 College District.
 Paul Smith, gen mgr; John Gregory, stn mgr;
 A. K. Johnson, chief engr.

California

REDLANDS (714) San Bernadino County
 KUOR (FM) May, 1966: 89.1 mc; 700 w. Ant minus 500 ft.
 Univ. of Redlands. (92373). 792-8570, ext 283. U of Red-
 lands.

Spec progs: Fr 1 hr; Ger 1 hr; Sp 1 hr; all
 weekly.
 George Armacost, pres; Bob Treadway, gen mgr;
 Ken Moody, coml mgr; Allison Jones, prog dir;
 James R. Rosa, chief engr.

RIVERSIDE (714) Riverside County
 KUCR-FM October, 1966: 88.1 mc; 10 w. Chancellor's
 Office, University of California. (92502). 684-2210.
 Regents of Univ. of Calif.
 Net: Intercollegiate Bestg.
 Robert Clevenger, gen mgr; V. Coleman, prog dir.

SAN BERNARDINO (714) San Bernadino County
 KVCR (FM) 1953: 91.9 mc; 4.85 kw. Ant minus 280 ft.
 701 S. Mt. Vernon Ave. (92403). TU5-0231, Ext. 249.
 San Bernardino Valley College.
 Net: NER. Spec progs: Sp 1 hr. weekly.
 J. W. McDaniel, pres; Edward Rothhaar,
 gen mgr; Fred Burgess, prog dir; James Curtiss,
 chief engr.
 KVCR-TV affil.

SAN DIEGO (714) San Diego County
 KEBS (FM) Sept. 12, 1960; 89.5 mc; 780 w. Ant 110 ft.
 San Diego State College. (92115). 286-6050. TWX 714-
 583-8100. State of Calif., San Diego State College.
 Net: NERN.
 Kenneth Jones, Jr., prof in chg bestg; John
 Witherspoon, gen mgr; Joseph Johnson, dir;
 John C. Merino, chief engr.

KSDS (FM) September, 1952: 88.3 mc; 830 w. Ant 170 ft.
 1425 Russ Blvd. (92101). 234-1062. San Diego Unified
 School District.
 Charles Parker, gen mgr & chief engr.

SAN FRANCISCO (415) San Francisco County
 KALW (FM) 1940: 91.7 mc; 3.3 kw. Ant 70 ft. 21st &
 Harrison Streets (94110). MI8-1326. San Francisco
 United School District.
 K. M. Nielson, gen mgr.

KCMA (FM) April, 1964: 90.3 mc; 10 w. 801 Silver Ave.
 (94134). 586-6888. Simpson Bible College.
 Russel Marshall, gen mgr; Robert Rhoads,
 chief engr.

KXXK (FM) 88.5 mc; 110 kw. Ant 1270 ft. 286 Divisadero
 (94117). 863-7200. San Francisco Theological Seminary.
 Net: NER
 Charles A. Black, gen mgr; Wayne Loerke, engr.

California

SAN JOSE (408) Santa Clara County
 KSJS (FM) Feb., 1963: 90.7 mc; 85 w. Ant minus 170 ft.
 San Jose State College (95114). 294-6414, ext. 2550.
 State of California--San Jose State College.

Net: NAEB

Clarence Flick, faculty advisor.

SAN MATEO (415) San Mateo County
 KCSM (FM) October, 1964: 90.9 mc; 350 w. Ant 330 ft.
 1700 Hillsdale Rd. (94402). 341-5685. San Mateo Junior
 College District.

Dr. Julio Bortolazzo, pres; Dr. Jacob Wiens,
 gen mgr; Douglas Montgomery, prog dir; Joe Morgan,
 chief engr.

SANTA MONICA (213) Los Angeles County
 KCRW (FM) January 1, 1946: 89.9 mc; 1.4 kw.
 Ant minus 300 ft. 1723 Fourth Street (90401). EX3-
 2785. Santa Monica Unified Schools. (acq 3-6-48).

Dr. Alfred A. Artuso, pres; Earl Didle, gen mgr;
 Hillis Brown, chief engr.

STANFORD (415) San Mateo County
 KZSU (FM) Oct. 10, 1964: 90.1 mc; 10 w; Memorial Hall
 (94305) 321-2300, ext. 4000. Leland Stanford Junior U.
 Michael Heathman, gen mgr; Bill Lundell, engr.

STOCKTON (209) San Joaquin County
 KUOP (FM) 1947: 91.3 mc; 30 kw. Ant 215 ft. 3601 Pacific
 Avenue (95204). 466-4841, ext 259. U of the Pacific.
 STEREO

Dr. Robert Burns, pres; Wade Springborn, dir
 of bcstg; Rod Rigg, chief engr.

Colorado

COLORADO SPRINGS (301) El Paso County
 KRCC(FM) 1951: 91.3 mc; 280 w. Ant minus 770 ft.
 Colorado College (80903). 473-2233. Colorado College.
 Spec progs: Fr 3 hrs; Ger 3 hrs; Sp 3 hrs,
 All Weekly.

Woodson Tyree, gen mgr; John Shearer, engr.

KSHS (FM) Feb. 15, 1957: 90.5 mc; 610 w. Ant 1760 ft.
 301 N. Nevada (80902) ME5-1466. School District #11,
 El Paso County, Colo.

FORT COLLINS (303) Larimer County
 KCSU-FM Sept. 20, 1964: 90.9 mc; 800 w. Ant minus 110 ft.
 Student Center, Colorado State U. (80521). 484-3525.
 State Board of Agriculture.

Robert Cowan, gen mgr.

Colorado

GREELEY (303) Weld County
 KCBL (FM) December 1966: 91.3 mc; 10 w. Colorado State
 College (80631). 351-3333. Associated Students of CSC.
 Frank Jamison, gen mgr; C. M. Hall, prog dir;
 Estel Haning, chief engr.

Connecticut

BRIDGEPORT (203) Fairfield County
 WPKN (FM) Oct. 1963: 88.1 mc; 10 w. 200 University Ave.
 (06602). 334-2682. U. of Bridgeport.
 Net: IBS
 Richard Florman, gen mgr; Charles King, engr.

FAIRFIELD (203) Fairfield County
 WSHU (FM) Sept. 1954: 91.1 mc; 600 w. Ant 620 ft.
 5229 Park Ave. 374-6191. Sacred Heart U.

HARTFORD (203) Hartford County
 WRTC-FM February 1958: 89.3 mc; 350 w. Ant 63 ft.
 Box 1368, Trinity College. (06106). 527-0447. Trinity C.
 Spec prog: Fr 1 hr; Ger 1 hr, both wkly.
 William Eliot, stn mgr; Sam Edsall, chief engr.

MIDDLETOWN (203) Middlesex County
 WESU (FM) February 1961: 88.1 mc; 10 w. Box 269, Wes-
 leyan Station. (06457). DI6-4000. Wesleyan U.
 Robert S. Tarleton, gen mgr; Charles Ziff,
 prog dir; Douglas Smith, chief engr.

STORRS (203) Tolland County
 WHUS (FM) 1956: 90.5 mc; 10 w. Hillside Rd. GA9-4726.
 Board of Trustees, U. of Conn.
 Net: ABC. Rep: College Radio Corp.
 Barry Kircher, gen mgr; Al Miner, chief engr.

Delaware None.

District of Columbia

WASHINGTON (202)

WAMU-FM Oct. 1961: 88.5 mc; 13.5 kw. Ant 420 ft.
 American University (20016). 966-6506. American U.
 Net: NER, EERN. Spec progs: Fr 3/4 hr;
 Ger 1/4 hr; Ital 1/4 hr; Russian 1/4 hr;
 Greek 1 hr, all weekly.
 Dr. D. M. Williams, dir of bestg; Dr. R. Penn,
 gen mgr; Alexander Hendrickson, chief engr.

WETA (FM) January, 1968: 90.9 mc; 75 kw. 2600 Fourth St. N.W.
 387-1300 TWX 710-822-9510. Greater Washington Educational
 TV Assn., Inc. *STEREO*
 Net: NER: EER. Spec progs: Fr 1/4 hr; Ger 1/4 hr;
 Ital 1/4 hr; Sp 1/4 hr, all weekly.
 William McCarter, VP & gen mgr; George Geesey,
 prog dir; Charles Prohaska, dir of engrg.

District of Columbia

WASHINGTON Continued:

WGTV-FM November 7, 1960: 90.1 mc; 771 w. Ant 230 ft.
Georgetown University. (20007). FE7-3300, Ext. 275.
The President and Director of Georgetown U.

Florida

MIAMI (305) Dade County
WTHS (FM) February, 1949: 91.3 mc; 8.4 kw. Ant 400 ft.
1410 N. E. Second Ave. FR7-4311. Dade County Schools.
George Dooley, gen mgr; Arthur Hafer, engr.

TALLAHASSEE (904) Leon County
WFSU-FM May, 1954: 91.5 mc; 3 kw. Ant 205 ft. Music
Building, Florida State U. 599-2395. Fla. State U.
Edward Herp, dir of bcstg; Thomas Brask, engr.

TAMPA (813) Hillsborough County
WUSF (FM) September, 1963; 89.7 mc; 21.17 kw. Ant 820 ft.
4202 Fowler Ave. 988-4131, ext 341. U. of S. Fla.
Net: NAEB, NERN. Spec progs: Fr $\frac{1}{4}$ hr;
Sp $\frac{1}{4}$ hr; Japanese $\frac{1}{4}$ hr; Negro $\frac{1}{4}$ hr; C&W $\frac{1}{2}$ hr,
all weekly.

WINTER PARK (305) Orange County
WPRK (FM) Dec. 8, 1952: 91.5 mc; 330 w. Ant 90 ft.
Rollins College (32791). MI7-1393. Rollins College.

Georgia

ATLANTA (404) Fulton County
WABE (FM) September, 1948: 90.1 mc; 4.6 kw. Ant 320 ft.
740 Bismarck Rd., N.E. (30324). 873-4471. Board of Educa-
tion of the City of Atlanta.

Hawaii

HONOLULU, Honolulu County
KVOK (FM) 88.1 mc; 10 w. The Kamehameha Schools.

Idaho

MOSCOW (208) Latah County
KUID (FM) September 1, 1963: 91.7 mc; 1.2 kw.
Ant 1000+ ft. Radio-TV Center, University of Idaho.
TU3-0110. University of Idaho.
Gordon Law, gen mgr; J. Walter Johnson, engr.

NAMPA (208) Canyon County
KCHR-Not on Air, target date unknown: 91.5 mc.
Northwest Nazarene College.

POCATELLO (208) Bannock County
KBGL (FM) May 12, 1962: 88.7 mc; 10 w. Dept of Radio-TV,
Idaho State U. 236-3661, Ext 3661. Idaho State U.
Herbert Everitt, dir.

Illinois

CARBONDALE (618) Jackson County

WSIU (FM) September 15, 1958: 91.9 mc; 37 kw.
Ant 290 ft. Southern Illinois U. (62901). 453-4343.
TWX 618-549-3121. Southern Illinois U.

Net: Natl Educ Radio

Dr. D. W. Morris, pres; Buren Robbins, gen mgr.

CHICAGO (312) Cook County

WBEZ (FM) 1942: 91.5 mc; 16 kw; Ant 550 ft. 228 La-Salle St. (60601). DE2-7800, ext. 251. Board of Education, City of Chicago.

Elizabeth Marshall, dir of radio-tv.

DE KALB (815) De Kalb County

WNIC (FM) April, 1954: 89.7; 2.5 kw. Ant 260 ft.
Northern Illinois U. (60115). 7531323.

Rep: NAEB

Dr. Rhoten A. Smith, pres; Walter Utz, Jr.,
sup; Dr. Clair Tettener, dir comm ser; Fred
Pyle, prog dir; Walter Kaszynski, chief engr.

ELGIN (312) Kane County

WEPS (FM) 1959: 90.0 mc; 364 w. Ant 24 ft. 4 S. Gifford (60120). SH1-6800. Board of Education, Union School District 46.

Net: Natl Educ Radio.

ELMHURST (312) Du Page County

WRSE-FM Dec., 1962: 88.7 mc; 10 w. 190 Prospect Ave. (60126). BR9-4100. Elmhurst College.

Donald Low & Charles Schmidt, advisors.

EVANSTON (312) Cook County

WNUR (FM) May 10, 1950: 89.3 mc; 1.04 kw. Ant 45 ft. Speech Bldg. (60201). 492-7101. Northwestern U.

Robert W. Thomas, faculty advisor; Ronald
Kramer, gen mgr; Gary DePalma, chief engr.

FLOSSMOOR (312) Cook County

WHFH (FM) September, 1965: 88.5 mc; 10 w. 999 Kedzie Ave. SY8-1140. Community High School District No. 233.

Jerold Garber, mgr.

GALESBURG (309) Knox County

WVKC (FM) April, 1962: 90.5 mc; 10 w. Knox College. 343-1121, ext. 347. Knox College.

Dr. Wayne Green, fac advisor; Alan Birkner, engr.

GREENVILLE (618) Bond County

WGRN (FM) Sept. 26, 1966: 89.3 mc; 10 w. 315 E. College. 664-1840, ext. 211. Greenville College Educational Bcstg Foundation, Inc.

Glenn Richardson, pres; Jack Clark, engr.

Illinois (continued)

LA GRANGE (312) Cook County

WLTL (FM) Nov. 20, 1967: 88.3 mc; 10 w. Ant 50 ft.
 100 S. Brainard. (60525). 354-4220. Lyons Township H. S.
 Spec progs: Fr 1 hr; Ger 1 hr; C&W 48 hrs,
 all weekly.
 James Fisher, faculty dir; D. D. Reber, principal;
 Terry Marsal, gen mgr; Wayne Terrell, engr.

MACOMB (309) McDonough County

WWKS (FM) May 23, 1956: 91.3 mc; 17 kw. Ant 280 ft.
 899-2473. Western Illinois U.
 E. C. Haddock, dir.

NORMAL (309) McLean County

WGLT (FM) Feb. 4, 1966: 91.7 mc; 10 w. Illinois State U.
 (61761). 438-2176. Illinois State U.
 G. Ben Paxton, Jr., faculty sponsor;
 David Claeys, chief engr.

PARK FOREST (312) Cook County

WRHS (FM) January 21, 1960: 88.5 mc; 10 w. Sauk Trail &
 Westwood (60466). P13-8889. Rich Township High School.
 Dale Zahn, pres, gen mgr, prom mgr; Eric
 Jay Toll, prog dir; Steve Vance, engr.

PARK RIDGE (312) Cook County

WMTH (FM) September 20, 1960: 88.5 mc; 10 w. Dempster &
 Potter Rds. (60068). 825-4484. Board of Education,
 Maine Township.
 Cynthia Schaulis, gen mgr & prog dir;
 Theron Whitfield, chief engr.

ROCK ISLAND (309) Rock Island County

WVIK (FM) Feb., 1963: 90.9 mc; 10 w. Augustana College.
 (61201). 788-9511. Augustana College.
 Clarence Meyer, dir; Wayne Kempe, gen mgr;
 Lane Morgan, chief engr.

URBANA (217) Champaign County

WILL April, 1922: 580 kc (AM); 5 kw-Daytime, Directional
 Pattern. 228 Gregory Hall (61801) 333-0850. U. Of Illinois.
 David D. Henry, pres; Frank Schooley, gen mgr;
 John Regnell, prog dir; Rob Beldon, chief engr.

WILL-FM September 1, 1941: 90.9 mc; 300 kw. Ant 500 ft.
 Duplicates WILL-AM 100%. *STEREO* Construction Permit.
 WILL-TV Affil.

WHEATON (312) DuPage County

WETN (FM) Feb., 1962: 88.1 mc; 10 w. 682-5074.
 Wheaton College. (60187) Trustees of Wheaton College.

Illinois (continued)

WINNETKA (312) Cook County
 WNTH (FM) 88.1 mc; 10 w. Ant 105 ft. 385 Winnetka Ave.
 (60093). HI6-7000. Board of Education.
 Spec progs: Fr $\frac{1}{2}$ hr weekly.
 Thomas Stewart, stn mgr; David DeFord, engr.

Indiana

BLOOMINGTON (812) Monroe County
 WFIU (FM) Sept., 1950: 103.7 mc; 75 kw. Ant 245 ft.
 337-3818. Trustees of Indiana University.
 Net: NER
 Donley Fedderson, gen mgr; L. J. Rolfe, engr.

CARMEL (317) Hamilton County
 WHJE (FM): 91.3 mc; 10 w. Carmel-Clay Schools

CRAWFORDSVILLE (317) Montgomery County
 WNDY (FM) Aug., 1953: 106.3 mc; 1 kw. Ant 58 ft.
 301 West Wabash Ave. (47933) 362-6664. Wabash College
 Radio. (acquired 10-22-64).
 William Degitz, pres; Lee Grogg, exec, dir;
 Jeff Moon, prog dir; Donald Reed, engr.

EVANSVILLE (812) Vanderburgh County
 WEVC (FM) June, 1964: 101.7 mc; 3 kw. Ant 140 ft.
 1800 Lincoln Ave. (47714). 476-1341, ext. 80.
 Evansville College.
 Robert Harmon, gen mgr; Ed Yarbrough, engr.

WPSR (FM) September, 1957: 90.7 mc; 4.5 kw. Ant 100 ft.
 726 Wedeking Ave. (47711). 425-1801. Evansville Van-
 derburgh School Corp.

FRANKLIN (317) Johnson County
 WFCI (FM) Oct., 1960: 89.3 mc; 10 w. Franklin College.
 RE6-6181. Franklin College of Indiana.

GARY (219) Lake County
 WGVE (FM) January, 1954: 88.7 mc; 295 w. Ant 83 ft.
 415 W. 45th Ave. 887-5251. School City of Gary.
 Lawrence Ventura, gen mgr.

GOSHEN (219) Elkhart County
 WGCS (FM) Oct., 1958: 91.1 mc; 390 w. Ant 65 ft.
 Goshen College (46526). 533-3161. Goshen College
 Broadcasting Corporation.
 Paul Minninger, pres; J. F. Swartzendruber,
 sec-tres & chief engr; Roy Umble, prog dir.

GREENCASTLE (317) Putnam County
 WGRE (FM) April, 1949: 91.5 mc; 115 w. Ant 160 ft.
 OL3-9721, ext 276. DePauw University.
 Net: Intercollegiate Broadcasting System
 Spec progs: Fr $2\frac{1}{2}$ hrs; Ger $2\frac{1}{2}$ hrs; Ital $2\frac{1}{2}$ hrs;
 Sp $2\frac{1}{2}$ hrs; Russian $2\frac{1}{2}$ hrs, all weekly.

Indiana (continued)

HARTFORD CITY (317) Blackford County
 WHCI (FM) December, 1954: 91.9 mc; 10 w. 701 North High St.
 348-2010. School City of Hartford City.

HUNTINGTON (219) Huntington County
 WVSH (FM) Jan. 1, 1950: 91.9 mc; 10 w. John & Gil-
 ford Streets. 356-7818. Huntington County Community School.
 Net: LNER
 Richard DeFore, dir; Ted Rogers, engr.

INDIANAPOLIS (317) Marion County
 WAJC (FM) Sept. 3, 1949: 104.5 mc; 36 kw. Ant 360 ft.
 46th & Sunset. WA3-3451. Butler University.
 Alexander Jones, gen mgr; John Krom, engr.

WBGD (FM) Sept., 1965: 90.9 mc; 10 w. 1200 N. Girls
 School Road. Metropolitan School District.
 Robert Berry, gen mgr.

WIAN (FM) Oct., 1954: 90.1 mc; 10 kw. Ant 36 ft.
 3401 N Meridan St. 923-2534. Board of School Commissioners
 of Indianapolis.
 Miss Nancy Hendricks, supvr, radio-tv;
 John Krom, chief engr.

WICR (FM) Aug., 1962: 88.7 mc; 10 w. 4001 Otterbain
 Avenue. (46227). 787-6301. Indiana Central U.
 Neil Butcher, gen mgr; Larry Hill, engr.

MUNCIE (317) Delaware County
 WBST (FM) Sept., 1960: 90.7 mc; 10 w. Radio & TV Center,
 Ball State U. (47306) 285-1833. Ball State U.
 Net: NAEB
 Dr. William Tomlinson, dir & gen mgr;
 Michael K. Rogers, asst to dir; George Howard,
 chief engineer.

WWHI (FM) 1950: 91.5 mc; 10 w. 2000 S. Franklin St.
 288-6626. Wilson Jr. High School
 James F. Bailey, gen mgr.

NEW ALBANY (812) Floyd County
 WNAS (FM) 1949: 88.1 mc; 800 w. Ant minus 32 ft.
 1020 Vincennes St. 944-2216, ext. 29. New Albany-
 Floyd County Consolidated School Corp.
 Net: NER. Spec progs: Fr 1 hr; Ger $\frac{1}{4}$ hr;
 Sp 1 hr, all weekly.

NORTRE DAME (219) St. Joseph County
 WSND-FM Sept., 1962: 88.9 mc; 10 w. Box 532. (46556).
 284-7425. The U. of Notre Dame.
 Net: NER.
 Richard Riley, stn mgr; David Morrison, engr.

Indiana (continued)

RICHMOND (317) Wayne County

WECI (FM) September, 1964: 91.5 mc; 10 w. Box 630
Earlham College (47374). 9626161, ext. 268.
Earlham College.

Net: NER. Spec progs: Negro 3 hrs weekly.
Landrum Bolling, pres; Robert Sherwood, engr.

SOUTH BEND (219) St. Joseph County

WETL (FM) 1958: 91.9 mc; 290 w. Ant 43 ft. 620 W. Wash-
ington Ave. 288-4787. South Bend Community School Corp.
Howard Uhrig, gen mgr & engr.

TERRE HAUTE (812) Vigo County

WISU (FM) September, 1964: 89.7 mc; 11.5 kw. Ant 360 ft.
Crawford 6311. Indiana State U. Board of Trustees.
Net: NAEB.
Joe Duncan, faculty advisor.

VALPARAISO (219) Porter County

WVUR (FM) Sept. 25, 1967: 89.5 mc; 10 w. Box 246.
(46383). Valparaiso U. Assn., Inc.

WABASH (219) Wabash County

WSKS (FM) March, 1953: 91.3 mc; 10 w. Wabash High School.
563-3705. City of Wabash.
James Oliver, gen mgr, prog dir, engr.

WEST LAFAYETTE, Tippecanoe County

WBAA-AM April 4, 1922: 920 kc; 5 kw daytime (unrestricted
pattern), 1 kw night with directional pattern.
Purdue University (47907). 92-2385. Purdue U.
Dr. Frederick Hovde, pres; John DeCamp, mgr;
Ralph Townsley, chief engr.

Iowa

AMES (515) Story County

WOI (AM) 1922: 640 kc; 5 kw-D(daytime special service
authorization; 1 kw specified hours). Iowa State U.
294-5555. TWX 520-1152. Iowa State U.
W. Robert Parks, pres; Rober Mulhall,
gen mgr; Keith Ketcham, chief engr.

WOI-FM July, 1949: 90.1 mc; 16 kw. Ant 480 ft.
Duplicates WOI 20%. *STEREO*
WOI-TV affil.

BOONE (515) Boone County

KFGQ 1927: 1260 kc (AM); 1 kw-D. 924 W. 2nd St.
GE2-2092. Boone Biblical College.

KFGQ-FM 1950: 99.3 mc; 310 w. Ant 200 ft.
Duplicates KFGQ-AM 100%.

CEDAR FALLS (319) Black Hawk County

KTCK (FM) 1960: 88.1 mc; 10 w. U. of Northern Iowa.
CO6-1721, ext. 7272. U. of Northern Iowa.
J. W. Maucker, pres; H. V. Hake, mgr.

Iowa (continued)

DAVENPORT (319) Scott County
 KALA (FM) 1967: 90.1 mc; 518 W. Locust St. (52803).
 324-1681. St. Ambrose College.
 Msgr. S. B. Menke, pres; Charles Vorderberg, gen mgr; Leslie Wright, chief engr.

DECORAH (319) Winneshiek County
 KWLC (AM) December, 1926: 1240 kc; 1 kw day, 250 w night
 (shares time with KDEC-commercial station). Luther College.
 382-3621, ext 227. Luther College.
 Spec progs: Norwegian $\frac{1}{2}$ hr weekly.
 Curtis Lutz, gen mgr & chief engr.

DE MOINES (515) Polk County
 KDPS (FM) 1952: 88.1 mc; 5.2 kw. Ant 285 ft. 1800 Grand Ave.
 284-7768. Des Moines Independent & Community School Dist.
 John Montgomery, gen mgr; D. Saveraid, engr.

IOWA CITY (319) Johnson County
 WSUI 1919: 910 kc (AM); 5 kw with day and night differing
 directional patterns; 338-0511. State U. of Iowa.
 Carl Menzer, gen mgr; S. J. Ebert, engr.

KSUI (FM) 1940: 91.7 mc; 17.5 kw. Ant 90 ft.
 Same licensee as WSUI.

MOUNT VERNON (319) Linn County
 KRNL-FM 1966: 89.7 mc; 10 w. Cornell College.

PELLA (515) Marion County
 KCUI (FM) 1961: 89.1 mc; 10 w. (50219). 628-4151.
 Central College.
 Spec prog: Dutch 1 hr weekly.
 Loren G. Vanderzyl, dir of bcstg.

WATERLOO (319) Blackhawk County
 KNWS (AM) 1090 kc; 1 kw daytime only; AD3-3108.
 Northwestern College (50702). Acquired in 1953.
 Owned by Northwestern College Stations (chain).
 William Bernston, pres; Cornelius Keur, dir;
 Robert Bowman, chief engr.
 KNWS-FM 1965: 101.9 mc; 26 kw. Ant 150 ft.
 Same licensee as KNWS.

WAVERLY (319) Bremer County
 KWAR (FM) September 15, 1951: 89.1 mc; 10 w. (50677)
 352-1200, ext. 306. Wartburg College of the American
 Lutheran Church.
 Richard Wiederanders, advisor.

Kansas

BALDWIN (913) Douglas County
 KNBU (FM) November, 1965: 88.9 mc; 10 w. Box 657.
 594-6451. Baker University.
 Spec prog: C&W 10 hrs weekly.
 Dale Kimble, gen mgr; Dave Allen, chief engr.

EMPORIA (316) Lyon County
 KSTE (FM) Feb., 1958: 88.7 mc; 10 w. Kansas State
 Teachers College. DI2-5000, ext 234. Kansas State
 Teachers College.

LAWRENCE (913) Douglas County
 KFKU (AM) 1924: 1250 kc; 5 kw nighttime directional antenna;
 U. of Kansas. (66045) UN4-3046. U. of Kansas.
 W. Clarke Wescoe, chancellor; Edwin Browne, dir;
 Mildred Seaman, prog dir; James Hocker, engr.
 KANU (FM) September, 1952: 91.5 mc; 108 kw. Ant 660 ft.
 Programs separate from KFKU (AM).

MANHATTAN (913) Riley County
 KSAC (AM) Dec. 1, 1924: 580 kc; 5 kw-D, 500 w-N. Nichols
 Gymnasium, Kansas State U. (66504). JE9-2211, ext. 259.
 Kansas State U.
 Dr. James McCain, pres; Jack Burke, mgr;
 Howard Hill, news dir.

KSDB-FM 1950: 88.1 mc; 10 w. Same Licensee as KSAC.

OTTAWA (913) Franklin County
 KTJO-FM May, 1951: 88.1 mc; 10 w. Ant 84 ft. Box 19.
 Ottawa U. (66067). CH2-5200, ext 212. Ottawa U.
 Stuart Laird, mgr; Keith Petzer, engr.

PARSONS (316) Labette County
 KPPS-FM March, 1960: 91.1 mc; 10 w. Parsons Junior College.
 GA1-5090. Board of Education.

WICHITA (316) Sedgwick County
 KMWU (FM) April, 1949: 89.1 mc; 220 w. Ant 140 ft.
 1751 N. Fairmont. 682-1382. Wichita State U.
 Frank Kelly, dir.

Kentucky

GEORGETOWN (502) Scott County
 WRVG (FM) Oct., 1963: 90.1 mc; 10 w. Georgetown College.
 863-7222.

Net: Mutual Broadcasting System
 Robert Lively, gen mgr; John Embay, stn mgr;
 Jack Wilson, prog dir; Sue Hurley, traffic.

LEXINGTON (606) Fayette County
 WBKY (FM) 1944: 91.3 mc; 3 kw. Ant 165 ft. McVey Hall,
 U. of Ky. (40506). 258-9000, ext. 2565. U. of Ky.
 John Oswald, pres; Donald Wheeler, gen mgr.
 D. J. Everett, news; Barry Atwood, engrg.

Kentucky (continued)

LOUISVILLE (502) Jefferson County
 WFPK (FM) Oct., 1954: 91.9 mc; 20 kw. Ant 245 ft.
 4th & York Streets. JU4-4156. Louisville Free Public
 Library.

Net: NAEB
 C. R. Graham, pres; Miss Dorothy Day, gen mgr;
 Charles Landers, chief engr.

WFPL (FM) Feb., 1950: 89.3 mc; 150 w. Ant 360 ft.
 Same licensee & staff as WFPK (FM).

Spec prog: Fr 13½ hrs weekly.
 WFPK-TV affil.

MOREHEAD (606) Rowan County
 WMKY-FM July, 1965: 91.9 mc; 10 w. Box 911. Morehead
 State U. (40351). 784-4181, ext 371. Morehead State U.

Net: NER
 Dr. Adron Doran, pres; Donald Holloway,
 gen mgr; Leslie Davis, chief engr.

RICHMOND (606) Madison County
 WEKU-FM not on air: 88.9 mc Eastern Kentucky U.

SOMERSET (606) Pulaski County
 WSCC (FM) Jan., 1967: 90.7 mc; 808 Monticello Rd.
 (42501). 678-8174, ext 38. University of Kentucky,
 Sommerset Community College.

Don Orwin, gen mgr; John Howard, engr.

Louisiana

LAFAYETTE (318) Lafayette Parish
 KRVS (FM) 88.3 mc; 10 w. Box 74. (70501) USI Student Corp.

Maine

BRUNSWICK (207) Cumberland County
 WBOR (FM) September, 1949: 91.1 mc; 10 w. Moulton Union,
 Bowdoin College. (04011) 725-8731, ext 210. Pres and
 Trustee of Bowdoin College.

Dana Harknett, gen mgr; Russell Harknett, engr.

LEWISTON (207) Androscoggin County
 WRJR (FM) Oct., 1958: 91.5 mc 10 w. Box 339. Bates College.
 784-9340. Pres & Trustees of Bates College.

Net: IBS
 Dr. Richard Warye, faculty advisor.

Maryland

BALTIMORE (301) Independent City
 WBJC (FM) April, 1951: 91.5 mc; 17.5 kw. Ant 185 ft.
 2901 Liberty Heights Ave. 523-2151. Baltimore Junior
 College. *STEREO*

Maryland (continued)

TAKOMA PARK (310) Montgomery County
 WGTS-FM May, 1957: 91.9 mc; 30.15 kw. Ant 115 ft.
 Columbia Union College. (20012) 589-2135. Columbia
 Union College, Inc.

Spec progs: Fr 1 hr; Sp $\frac{1}{2}$ hr, both weekly.
 Dr. W. H. Beaven, pres; Dr. S. S. Hiten,
 gen mgr, coml & prom mgr; D. Medvee, engr.

Massachusetts

AMHERST (413) Hampshire County
 WAMF (FM) 1955: 89.5 mc; 10 w. Pratt Hall, Amherst
 College. (01002). 542-2288. Trustees of Amherst College.
 John Popejoy, gen mgr; Milford Smith, engr.

WFCR (FM) May, 1961: 88.5 mc; 34 kw. Ant 740 ft.
 Five College Radio, Hampshire House, U. of Mass.
 545-0100. U. of Mass. *STEREO*
 Spec progs: Fr $\frac{1}{2}$ hr; Ttal $\frac{1}{2}$ hr, both weekly.
 Horace Hewlett, pres; Al Hulsen, stn mgr;
 Charles Ferguson III, opns mgr; F. S. Dresser, engr.

WMUA (FM) Oct., 1949: 91.1 mc; 10 w. Engineering Bldg.,
 U. of Mass. (01003). 545-2425. U. of Mass.
 George Hungerford, stn mgr; H. K. Agnew, engr.

ANDOVER (617) Essex County
 WPAA (FM) May, 1965: 91.7 mc; 10 w. Phillips Academy
 (01810). 475-3400, ext 86. Trustees of Phillips Academy.
 Richard Healy, P.E., faculty advisor.

BOSTON (617) Suffolk County
 WBUR (FM) March, 1950: 90.9 mc; 20 kw. Ant 160 ft.
 630 Commonwealth Ave. (02215). CO6-1000. Trustees of
 Boston University.

Net: Educ Radio Net. Spec prog: Ger 1 $\frac{1}{2}$ hr.
 Will Lewis, dir of bestg & gen mgr;
 James H. Bonney, chief engr.

WERS (FM) October, 1949: 88.9 mc; 19 kw. Ant 55 ft.
 130 Beacon Street (02116). CO7-7821. Emerson College.
 Gerald Kroeger, gen mgr & prog dir;
 Charles Phillips, chief engr.

WGBH-FM October, 1951: 89.7 mc; 70 kw. Ant 650 ft.
 125 Western Ave. Allston, Mass. UN4-6400. WGBH Ed-
 cational Foundation.

Net: Educ Radio Net.
 Ralph Lowell, pres; Hartford Gunn, Jr.,
 gen mgr; Bill Whalen, news dir; Jack Beck, engr.

WGBH-TV Affil.

Massachusetts (continued)

CAMBRIDGE (617) Middlesex County

WTBS (FM) April, 1961: 88.1 mc; 10 w. 3 Ames St.
(02142). WTBS Foundation, Inc.

Rep: Ivy

Brian Harvey, gen mgr; Neil Slavin, engr.

SOUTH HADLEY (413) Hampshire County

WMHC (FM) May, 1957: 90.7 mc; 10 w. Box 729, Mount
Holyoke College (01075). 536-4000. Trustees of Mount
Holyoke College.

Net: Pioneer

Pamela Grenfell, stn mgr; Carol Saloman, engr.

SPRINGFIELD (413) Hampden County

WAIC-FM Feb., 1967: 91.9 mc. 40 Amaron St. (01109).
737-5331, ext 232. American International College.

Donald Lehan, gen mgr; Pater Hammond, engr.

WILLIAMSTOWN (413) Berkshire County

WCFM (FM) January, 1957: 91.3 mc; 34 kw. Ant minus 760 ft.
Baxter Hall, Williams College (01267). GL8-4820. Pres &
Trustees of Williams College.

Net: Ivy

William Sander, pres; Philip Taylor, engr.

WINCHESTER (617) Worcester County

WHSR-FM May, 1956: 91.9 mc; 10 w. Winchester Senior
High School. (01890). PA9-4300. Winchester School Dept.

Thomas Morse, gen mgr; Joseph Aversa, stn mgr.

Michigan

ANN ARBOR (313) Washtenaw County

WUOM (FM) 1948: 91.7 mc; 230 kw. Ant 470 ft. 764-9210.
The Regents of U. of Michigan.

Garnet Garrison, dir of bcstg; Frank Nader, engr.

DETROIT (313) Wayne County

WDET - FM Dec., 1948: 101.9 mc; 79 kw. Ant 450 ft.
5035 Woodward Ave. (48206). Wayne State U. (acq5-52).

STEREO

Daniel Logan, gen mgr; Dr. Laszlo Boehm,
dir of mus; Orin Hood, prog dir; Walter Mauric, engr.

WDTR (FM) Jan., 1948: 90.9 mc; 17 kw. Ant 175 ft.
9345 Lawton Ave. 833-7900, ext 2441. Board of Education
of Detroit.

Net: NAEB

Mrs. Ethel Tincer, gen mgr; Michael McCarroll,
chief engr.

Michigan (continued)

EAST LANSING (517) Ingham County

WKAR (AM) Aug., 1922: 870 kc; 5 kw-D. Michigan State U.
355-6542. Board of Trustees of Michigan State U.
Richard Estell, gen mgr; John Blakeslee, engr.
WKAR-FM Oct., 1948: 90.5 mc; 125 kw. Ant 930 ft.
Prog sep from WKAR (AM).

FLINT (313) Genesee County

WFBE (FM) Oct., 1953: 95.1 mc; 3.7 kw. Ant 115 ft.
Flint Public Schools, Oak Grove Campus. 238-1631.
Flint Board of Education.

Net: NER

Fred Harrington, gen mgr; E. A. Rauch, engr.

GRAND RAPIDS (616) Kent County

WVGR (FM) Dec., 1961: 104.1 mc; 107.5 kw. Ant 600 ft.
Cherry Valley Ave., Middleville, Mich. 795-3358.
Regents of the U. of Michigan.
Garnet Garrison, dir of bestg; E. G. Burrows,
mgr; Richard Clarke, chief engr.

HIGHLAND PARK (313) Wayne County

WHPR (FM) May, 1954: 88.1 mc; 10 w. 12541 2nd Ave.
TO8-1264. School District of the City of Highland Park.

INTERLOCHEN (616) Grand Traverse County

WIAA (FM) July, 1963: 88.3 mc; 115 kw. Ant 350 ft.
947-9800. National Music Camp.
Richard Goerz, stn mgr; Larry Page, engr.

KALAMAZOO (616) Kalamazoo County

WMUK (FM) Jan., 1951: 102.1 mc; 39 kw. Ant 160 ft.
Western Michigan University. *STEREO*
P. Glenn Bishop, gen mgr & chief engr.

MARQUETTE (906) Marquette County

WNMR (FM): 90.1 mc; 275 w. Ant minus 37 ft. Lee Hall.
225-5811, ext 2128. Northern Michigan U.
Net: NER
William Mitchell, coordinator; D. C. Smith, engr.

MOUNT PLEASANT (517) Isabella County

WCMU-FM April, 1964: 90.1 mc; 10 w. Central Michigan U.
(48858). 774-3250. Central Michigan U.
James L. Mead, faculty advisor.

SOUTHFIELD (313) Oakland County

WSHJ (FM) Feb., 1967: 88.3 mc; 10 w. Ant 105 ft.
24675 Lahser Rd. EL8300. Bd of Education Southfield Pub-
lic Schools.
Richard Fishbeck, supervisor.

Michigan (continued)

SPRING ARBOR (517) Jackson County
WSAE (FM) Oct., 1963: 89.3 mc; 10 w. 787-1200
Spring Arbor College.

WARREN (313) Macomb County
WPHS (FM) 1964: 91.5 mc; 10 w. Warren Consolidated Schools.

Minnesota

COLLEGEVILLE (612) Stearns County
KSJR (FM) January, 1967: 90.1 mc; 150 kw; St. John's
University (56321). 363-7702. Order of St. Benedict, Inc.
STEREO

William Kling, gen mgr; D. B. Rieder, engr.

DULUTH (218) St. Louis County
KUMD (FM) July 15, 1961: 89.1 mc; 200 w. Ant 35 ft.
2400 Oakland Ave. (55812) RA4-2118. Board of Regents.
U. of Minnesota.

J. P. Zesbaugh, faculty advisor & gen mgr;
Donald Monge, chief engr.

MANKATO (507) Blue Earth County
KMSU (FM) 90.5 mc; 10 w. Mankato State College.
(56001). 389-2922. Mankato State College.
Charles Connolly, advisor; Bill Sederburg,
gen mgr; Ron Dick, chief engr.

MINNEAPOLIS-ST. PAUL (612) Hennepin-Ramsey
Counties

KTIS (AM) Feb. 7, 1949: 900 kc; 1 kw-D. 50 Willow St.
Minneapolis (55403). 338-7881. Northwestern College.
Owned by Northwestern College Stations (chain).
W. B. Bernsten, interim pres; Spencer Brown,
dir of radio; Don Malley, chief engr.
KTIS-FM May, 1949: 98.5 mc; 5.3 kw. Ant 250 ft.
Duplicates KTIS(AM) 85%.

KUOM Jan. 13, 1922: 770 kc (AM); 5kw (shares time with
WCAL). Eddy Hall, U. of Minn., Minneapolis (55455).
373-3177. U. of Minnesota.
Burton Paulu, gen mgr; Larry Brogger, engr.

WCTS-FM June, 1965: 100.3 mc; 21.5 kw. Ant 430 ft.
2105 N. Freemont Ave, Minneapolis. (55411). 522-1051.
Central Baptist Theological Seminary.
Net: Bible
Dr. Richard Clearwaters, pres; Don Odens,
prog dir; John Sutherland, engr.

NEW BRIGHTON (612) Ramsey County
KSJN-FM July, 1967: 91.1 mc; 3 kw; Ant 340 ft.
c/o William Kling, KSJR(FM), Collegeville, Minn.
363-7702. Order of St. Benedict, Inc. St. John's U.
STEREO

Minnesota (continued)

NORTHFIELD (507) Rice County
 WCAL(AM) November, 1918: 770 kc; 5 kw. (shares time with KUOM). (55057). 645-5621. St. Olaf College.
 Spec prog: Ger $\frac{1}{2}$ hr; Swedish $\frac{3}{4}$ hr; Norwegian $\frac{3}{4}$ hr, all weekly.
 Milford Jensen, grn mgr; Paul Peterson, prog dir; John Mikaelson, chief opr.
 WCAL-FM Oct., 1967: 89.3 mc; Duplicates WCAL 25%
 STEREO

Mississippi None.

Missouri

BUFFALO (417) Dallas County
 KBFL (FM) Aug., 1965: 91.3 mc; 10 w. (65622).
 345-8315. School District No.1, Dallas County.
 Dillard Mallory, supt of schools;
 Wayne Lemons, engr.

 CLAYTON (314) St. Louis County
 KFUD-AM Dec. 14, 1924: 850 kc; 5 kw (LSR to SS Denver, Colo.)
 801 De Mun Ave., St. Louis (63105). PA 5-3030.
 Lutheran Church-Missouri Synod.
 Rev. Dr. Oliver Harms, DD, pres; Emerson Russell, gen mgr; John Fischer, engr.
 KFUD-FM Jan., 1948: 99.1 mc; 6.7 kw. Ant 260 ft.
 Duplicates KFUD.

KANSAS CITY (816) Jackson County

KCUR-FM October 1957: 89.3 mc; 40 kw. Ant. 110 ft.
 5100 Rockhill Rd. CR6-1551. University of Missouri at Kansas City.
 Sam Scott, mgng dir; Gloria Scott, prog dir;
 Billy Hunnacutt, engr.

 KTSR (FM) Nov., 1960: 90.1 mc; 10 w. 1700 E. Meyer Blvd.
 DE3-6254. Nazarene Theological Seminary Radio Corp.
 Eugene Stowe, pres; Tom Jackson, engr.

ROLLA (314) Phelps County

KMSM (FM) January, 1964: 88.5 mc; 10 w. U. of Missouri at Rolla. 364-5201. Curator of U. of Missouri.
 Robert Schwab, stn mgr; D. A. Wayne, engr.

ST. JOSEPH (816) Buchanan County

KSLH (FM) April, 1950: 91.5 mc; 12.5 kw. Ant 400 ft.
 1517 S. Theresa Ave. PR2-4322. St. Louis Board of Education.
 Gertrude B. Hoffsten, gen mgr;
 Ernest Vogel, chief engr.

Montana

MISSOULA (406) Missoula County

KUFM (FM) January 1965: 88.1 mc; 10 w. School of Journalism. 243-4701. U. of Montana.

Net: ABC; MBS; IMN.

Philip Hess, dir; C. E. Meyer, chief engr.

Nebraska

OMAHA (402) Douglas County

KGBI-FM November 1965: 100.7 mc; 29 kw. Ant 220 ft. 1515 S. 10th St. 342-3377. Grace Bible Institute Inc.

Waldo Harder, pres; Frank Harder, bus mgr.

Nevada

RENO (702) Washoe County

KUNR (FM) Oct. 1963: 88.1 mc; 10 w. U. of Nevada. 784-6591. U. of Nevada.

Dr. Donald Potter, dir; Jerome Wilhemi, engr.

New Hampshire

DURHAM (603) Strafford County

WUNH (FM) July, 1963: 90.3 mc; 10 w. Memorial Union. UN8-2541. U. of New Hampshire.

Net: IBS. Spec progs: C&W 1 hr. wkly.

Stephen Thompson, pres & gen mgr;

Robert DeBold, chief engr.

New Jersey

EAST ORANGE (201) Essex County

WFMU (FM) 1958: 91.1 mc; 1.44 kw. Ant 360 ft. OR2-5251. Upsala College.

Charles Lundgren, dir; Albert Helfrick, engr.

FRANKLIN LAKES (201) Bergen County

WRRH(FM) Feb., 1963; 88.7 mc; 10 w. Ramapo Regional High School, George St. TW1-1500. Ramapo Regional High School Bd. of Ed.

Spec prog: C&W $\frac{1}{2}$ hr wkly.

Joseph Sereno, principal; Donald Lawshe, gen mgr and chief engr.

GLASSBORO (609) Gloucester County

WGLS-FM January 1964: 89.7 mc; 190 w. Ant 87 ft.

Glassboro State College. TU1-8400, ext 332.

Glassboro State College.

Net: IBS

Dr. Thomas Robinson, pres; Bruce Selb, engr.

New Jersey (continued)HACKETTSTOWN (210) Warren County

WNTI (FM) 1958: 91.9 mc; 4.8 kw. Ant 510 ft. Centenary College for Women. 425-3951. Centenary College for Women.

Dr. Edward Seay, pres; Robert Boswell, stn mgr;
Stefan Straka, chief engr.

NEWARK (201) Essex County

WBGO (FM) 1948: 88.3 mc; 20 kw. Ant 220 ft. Central H. S. Building. Newark Board of Education.

SOUTH ORANGE (201) Essex County

WSOU (FM) 1948: 89.5 mc; 2 kw. Ant 370 ft. Seton Hall U. (07079). South Orange 2-9000, ext. 342. Seton Hall U.

Spec progs: Ital $\frac{1}{2}$ hr; Pol $1\frac{1}{2}$ hrs; Irish $\frac{1}{2}$ hr;
Port $\frac{1}{2}$ hr; Ukranian $\frac{1}{2}$ hr; Lithuanian $\frac{1}{2}$ hr,
all weekly.

Rev. James Pindar, dir of radio; Joseph Maguire,
stn mgr; Richard Koziol, dir engr.

ZAREPHATH (201) Somerset County

WAWZ-AM March, 1931: 1380 kc; 5 kw (24 hour directional;
night conflict WBNX) Alma White College. EL6-0102.
Pillar of Fire.

Arthur K. White, pres; N. L. Wilson, engr.

WAWZ-FM August, 1954: 99.1 mc; 20 kw. Ant 175 ft.
(Construction permit 10 kw. Ant 420 ft.) Duplicates WAWZ.

New MexicoALBUQUERQUE (505) Bernalillo County

KANW (FM) 1950: 89.1 mc; 350 w. Ant minus 55 ft.
Albuquerque Board of Education.

KUNM (FM) 1966: 90.1 mc; 3.7 kw. Ant minus 78 ft.
New Mexico Union (87106). 277-4806. Regents of the
University of New Mexico.

Harry Joseph, manager.

UNIVERSITY PARK, Dana Ana County

KRWG (FM) 1964: 91.7 mc; 740 w. Ant minus 195 ft.
Drawer J. University Park Stations (88001). 646-3505.
Regents of New Mexico State University.

New YorkALBANY (518) Albany County

WAMC (FM) 1958: 90.3 mc; 10 kw. Ant 1970 ft. Albany
Medical College of Union University.

Net: EERN; NER.

Albert Fredette, gen mgr; J. A. Berger, engr.

WCWP (FM) 1965: 88.1 mc; 100 w. Ant 190 ft. Greenvale, N. Y.
Trustees of Long Island University.

James F. McConnochie, dir; Bill Mozer, engr.

New York (continued)

BUFFALO (716) Erie County

WBFO (FM) January 1959: 88.7 mc; 770 w. Ant 215 ft.
(construction permit 6.3 kw. Ant 240 ft.). Baird Hall,
3435 Main st. 831-3406. State U. of New York at
Buffalo.

William Siemering, gen mgr; H. L. Tenenbaum,
prog dir; Fred Winters, chief engr.

CANTON (315) St. Lawrence County

WSLU (FM) December 1964: 96.7 mc; 2.6 kw. Ant 993 ft.
St. Lawrence U. (13617). 386-4551. St. Lawrence U.

Net: NAEB

Dr. Foster Brown, pres; Richard Hutto, dir;
Francis Murphy, chief engr.

CENTRAL SQUARE (315) Oswego County

WCSQ (FM) May 1961: 89.3 mc; 1.5 kw. Ant 81 ft.
Paul V. Moore High School. 668-2611. Central Square
School Board of Education.

Spec progs: Fr $\frac{1}{4}$ hr; C&W $\frac{1}{2}$ hr, both weekly.
Hugh B. White, dir.

CLINTON (315) Oneida County

WHCL-FM Feb. 18, 1963: 88.7 mc; 10 w. Minor Theatre,
Hamilton College (13323). 853-5511. The Trustees of
Hamilton College.

Jeremy B. Clark, stn mgr; Gary Drum, prog dir;
Michael Greenspan, chief engr.

ELMIRA (607) Chemung County

WECW (FM) January 1959: 88.1 mc; 10 w. Elmira College.
RE4-8111. Elmira College.

Warren Board, gen mgr; T. G. Greene, chief engr.

FLORAL PARK (516) Nassau County

WSHS (FM) October 1964: 90.3 mc; 350 w. Ant 112 ft.
820 Hempstead Turnpike, Franklin Square, N. Y.
Board of Education, Sewanhaka High School.

GENESEO (716) Livingston County

WGSU (FM) March 15, 1963: 88.1 mc; 2 kw. Ant minus 7 ft.
Speech Department, State University College. (14454).
245-5586. State U. of New York.

William Berry, dir; John Davlin, gen mgr;
Fred Ambrose, chief engr.

HEMPSTEAD (516) Nassau County

WVHC (FM) May 11, 1959: 88.7 mc; 320 w. Ant 105 ft.
1000 Fulton Ave. Hofstra U. (11550). IV 9-8870.
Hofstra U.

Net: NAEB; IBS.

David Lambie, stn mgr; Jeffrey Kraus, gen mgr;
Theodore Ronneburger, chief engr.

New York (continued)

ITHACA (607) Tompkins County

WICB (FM) January 14, 1947: 91.7 mc; 10 w. 124 Buffalo St.
274-3215. Ithaca College.

Howard Dillingham, pres; David Allen chief engr.

LOUDONVILLE (518) Albany County

WVCR-FM April 26, 1963: 89.1 mc; 10 w. Siena College.
ST 5-0764. St. Bernardine of Siena College.

Rev. Brian Duffy, OFM, pres; Phillip Bullwinkel,
stn mgr; Thomas Wiesnewski, prog dir.

NEW YORK (212) New York County, Bronx County,
Richmond County, Kings County, Queens County.

WBAI (FM) 1954: 99.5 mc; 5.4 kw horizontal, 3.85 kw vertical.
Ant 1220 ft. 30 E. 39th St. (10016). OX 7-2288. WBAI-FM, Inc.
(Pacifica Foundation Station)

Spec progs: Fr $1\frac{1}{2}$ hrs; C&W $\frac{1}{2}$ hr, both weekly.
Ann McMillan, music dir; Frank Millspaugh, gen mgr.

WFUV (FM) July 1947: 90.7 mc; 3.5 kw. Ant 200 ft.
Fordham University, Bronx, New York. 933-2233. Fordham U.

Spec progs: Fr $1\frac{1}{2}$ hrs; It $\frac{1}{2}$ hr, both weekly.
Rev. William Trivett, S. J., dir; Robert Jewell, engr.

WKCR-FM April 1956: 89.9 mc; 4.2 kw. Ant 640 ft. 208 Ferris
Booth Hall, Columbia U. (10027). MO 6-3182. Trustees
of Columbia U. in the City of New York. *STEREO*

Net: Ivy. Spec progs: Fr $\frac{1}{2}$ hr; Russian $\frac{1}{2}$ hr;
Hungarian $\frac{1}{2}$ hr; Hebrew $\frac{1}{2}$ hr, all weekly.
Peter Hill, pres; Roger Berkley, gen mgr;
Jeffrey H. Derby, chief engr.

WNYC (AM) July 7, 1924: 830 kc; 1 kw, directional daytime
(conflicts with WCCO, Minneapolis). 2539 Municipal Bldg/
City of New York Municipal Bestg System.

Seymour Siegel, dir; Morris Kunins, chief engr.

WNYC-FM February 5, 1941: 93.9 mc; 5.3 kw horizontal,
3.8 kw vertical. Ant 1220 ft. Duplicate WNYC 50%.

STEREO

WNYE (FM) November 1938: 91.5 mc; 20 kw. Ant 415 ft.
29 Fort Greene Place, Brooklyn (11217). 596-3335.
Board of Education, City of New York.

James Macandrew, dir; Harry Hirsch, tech opns.

WRVR (FM) January 1961: 106.7 mc; 10 kw. Ant 460 ft.
490 Riverside Dr. (10027). Riverside Church.

Net: NERN

Spec prog: Sp $2\frac{1}{2}$ hrs. weekly.

Jack Summerfield, gen mgr; John Smith, engr.

....(FM): 89.1 mc; 20 kw. Ant 500 ft. Frequency
reserved for United Nations station.

POTSDAM (315) St. Lawrence County

WTSC-FM November 1963: 91.1 mc; 2.5 w. Clarkson College
of Tech. (13676). 265- 9756. Thomas S. Clarkson Memorial
College of Technology.

New York (continued)

ROCHESTER (716) Monroe County
 WIRO (FM) January 1960: 90.9 mc; 10 w. 260 Cooper Rd.
 266-7351. Board of Education Central School District.
 Eric Young, dir; Fred Filbrich, prog dir;
 Robert Kruppenbacher, chief engr.

SPRINGVILLE (716) Erie County
 WSPE (FM) 88.1 mc; 10 w. Board of Education.

SYRACUSE (315) Onondaga County
 WAER (FM) January 1946: 88.3 mc; 3.5 kw. Ant 180 ft.
 Television and Radio Center, Syracuse University (13210).
 476-5541. Syracuse University.

TROY (518) Rensselaer County
 WHAZ (AM) August 1922: 1330 kc; 1 kw, (shares time with
 WPOW and WEVD, both of New York City). 110 Eighth St.
 (12181). 270-6431. Rensselaer Polytechnic Institute.
 Dr. Richard Folsom, pres; Dennis Jackson, engr.

WRPI (FM) November 1957: 91.5 mc; 710 w. Ant minus 120 ft.
 15th Street Lounge. (12181). 270-6430. TWX 518-241-6390.
 Rensselaer Polytechnic Institute.
 Net: ABC. Rep: CRC.
 Charles Phelan, pres & bus mgr; Eliot Graham,
 gen mgr & chief engr.

North Carolina

CHAPEL HILL (919) Orange County
 WUNC(FM) September 1952: 91.5 mc; 50 kw. Ant 822 ft.
 Dept. of Radio, TV and Motion Pictures, U. of N. C.
 (27515). 933-2085. University of North Carolina.
 Dr. Wesley Wallace, dept. chairman;
 Donald Upham, faculty advisor & chief engr.

GREENSBORO (919) Guilford County
 WUAG (FM) July 1964: 89.9 mc; U. of N. C. at Greensboro.
 (27412). BR 4-0052. U. of N. C. at Greensboro.
 Emil Young, dir & chief engr.

GREENVILLE (919) Pitt County
 WECU (AM) April 1957: 570 kc; 3.95 kw. Ant 135 ft.
 East Carolina College. Pl 8-4250. TWX 181-0156-530.
 East Carolina College.
 Rep: Collegiate Radio Corp.
 J. Nick Barnes, gen mgr; Charles Cowan, chief engr.
 WWWS-FM April 1957: 91.3 mc. Prog sep from WECU.
 WECU-TV affil.

HIGH POINT (919) Guilford County
 WHPS (FM): 89.3 mc; 10 w. Board of School Commissioners
 of High Point.

RALEIGH (919) Wake County
 WKNC January 1945: 600 kc. Box 5748. N. C. State U. at Raleigh.
 755-2400. N. C. State U. at Raleigh.
 Net: Intercollegiate.
 David Brown, stn mgr; W. S. Poindexter, engr.

North Carolina (continued)RALEIGH (continued)

WKNC-FM September 1965: 88.1 mc; 10 kw. Prog. sep.
from WKNC (AM).

WINSTON-SALEM (919) Forsyth County

WFDD-FM March 13, 1961: 88.5 mc; 36 kw. Ant 410 ft.
Box 7405. Reynolda Station (27109). Trustees of Wake
Forest University.

Net: NER.

Julian Burroughs, assoc. prof. of speech.

North DakotaFARGO (701) Cass County

KDSU(FM) 91.9 mc; 1.20 kw. Ant 110 ft. (58102). 237-8321.
North Dakota State University.

Net: NERN.

H. R. Albrecht, pres; C. H. Logan, dir;

E. G. Anderson, chief engr.

KFNW (AM) October 25, 1955: 900 kc; 1 kw-directional.
AD 2-5949. Northwestern College.

Cornelius Keur, dir of radio; Dave Kersey, gen mgr;

Mike Heuberger, engr.

KFNW-FM March 12, 1965: 97.9 mc; 28 kw. Ant 230 ft.

Duplicates KFNW (AM) 56%.

GRAND FORKS (701) Grand Forks County

KFJM (AM) 1923: 1370 kc; 1 kw-directional. 777-2577.
Box 8116. (58202). University of North Dakota.

John S. Penn, chmn, Dept. of Speech; E. W. Olson,

bus mgr; Myron Curry, stn dir; David Beach,

prog dir; C. J. Thomforde, chief engr.

OhioAKRON (216) Summit County

WAPS (FM) 1955: 89.1 mc; 1.3 kw. Ant 44 ft. 70 N. Broadway.
BL 3-2111. Board of Education, Akron City School District.

Robert Boyd, dir; Earl Coolman, engr.

WAUP (FM) December 10, 1962: 88.1 mc; 2.88 kw. Ant 120 ft.
302 East Buchtel Ave. 762-2122. University of Akron.

Net: NERN.

Dr. Ruth Lewis, gen mgr.

ASHLAND (419) Ashland County

WRDL-FM August 24, 1967: 88.1 mc; 10 w. 401 College Ave.
324-4561. Ashland College.

Dr. Glenn Clayton, pres; Richard Leidy, mgr;

William Winter, chief engr.

ATHENS (614) Athens County

WOUB (AM) September 15, 1957: 1340 kc; 250 w. 29 S. College St.
594-5321. Ohio University.

WOUB-FM December 13, 1949: 91.5 mc; 10 w. Duplicates WOUB 80%.

Ohio (continued)

BEREA (216) Cuyahoga County

WBWC (FM) March 2, 1958: 88.3 mc; 10 w. Box A-2,
College Union. (44017). 234-5000, ext 325. Baldwin-Wallace College.
Fred Owens, gen mgr; Tim Bratton, prog dir;
John Bowman, chief engr.

BOWLING GREEN (419) Wood County

WBGU (FM) November 1951: 88.1 mc; 1.35 kw. Ant 110 ft.
South Hall, Bowling Green State University. 353-8411, ext. 539.
Bowling Green State University.
Sidney Stone, dir; William Lentz, chief engr.

CEDARVILLE (513) Grenee County

WCDR-FM December 1, 1962: 90.1 mc; 10 w. (Construction
Permit 3.6 kw. Ant 155 ft.). Cedarville College. (45314).
766-2231.

James Jeremiah, pres; Paul Gathany, gen mgr & engr.

CINCINNATI (513) Hamilton County

WGUC (FM) September 21, 1960: 90.9 mc; 5.3 kw. Ant 615 ft.
475-4443. University of Cincinnati.
Spec progs: Fr 1 $\frac{1}{4}$ hrs; Ger 3/4 hr, both weekly.
J. Sagmaster, dir; James Eberhart, chief engr.

CLEVELAND (216) Cuyahoga County

WBOE (FM) October 1938: 90.3 mc; 15 kw. Ant 360 ft.
1380 E. Sixth St. (44114). 579-0600. Board of Education,
Cleveland City School District.

Paul Briggs, supt of schools; Wolcott Louis, engr.

WCRF (FM) November 23, 1958: 103.3 mc; 38 kw. Ant 570 ft.
8200 Snowville Rd. Moody Bible Institute of Chicago.

James Draper, dir, radio dept; J. R. Florence, mgr.

COLUMBUS (614) Franklin County

WCBE (FM) September 26, 1956: 90.5 mc; 11 kw. Ant 530 ft.
270 E. State St. (43215). CA 8-3821. School District of Co-
lumbus.

John Sittig, dir; Fred Ufferman, chief engr.

WOSU (AM) April 20, 1920: 820 kc; 5 kw (sunrise/sunset only).
215 W. 19th Ave. (43210). 293-2831. Ohio State University.
WOSU-FM December 1949: 89.7 mc; 14 kw. Ant 300 ft.
Duplicates WOSU (AM) 50%.

Novice Fawcett, pres; Richard Hall, dir;
W. B. Steis, gen mgr; A. J. Boggioni, chief engr.

DE GRAFF (513) Logan County

WDEQ-FM September 1, 1967: 91.1 mc; Moore St. (43318).
585-5981. Riverside Local Board of Education.
Bob Armstrong, chief engr.

DELAWARE (614) Delaware County

WSLN (FM) April 28, 1952: 91.1 mc; 1.9 kw. Ant 105 ft.
Radio Building, Ohio Wesleyan University. (43015).
363-1261. The Trustees of Ohio Wesleyan University.

Ohio (continued)

GRANVILLE (614) Licking County
 WDUB (FM) February 7, 1962: 91.3 mc; 10 w. Doan Administration Bldg. (43023). 582-9181. Denison University.

KENT (216) Portage County
 WKSU-FM July 19, 1950: 89.7 mc; 7.5 kw. Ant 320 ft. 673-1211. Kent State University.

Dr. Robert White, pres; Walton Clarke, dir;
 Anthony Liberatore, chief engr.

MARIETTA (614) Washington County
 WCMO (FM) October 1, 1960: 89.3 mc; 10 w. Marietta College. 373-4646. The Trustees of Marietta College.
 Bernard Russi, dir of bostg.

NEW CONCORD (614) Muskingum County
 WMCO (FM) January 28, 1961: 91.1 mc; 10 w. (43762). 826-7679. Muskingum College.

Spec progs: Fr 1 hr; Ger 1 hr; Sp 1 hr;
 Russian 1 hr, all weekly.
 Dr. W. Stanley Schultz, faculty advisor;
 John W. McCance, engr.

OBERLIN (216) Lorain County
 WOBC-FM September 1961: 88.7 mc; 10 w. Wilder Hall (44074). 774-1059. Oberlin College Student Network.
 John Heckenlively, pres; Clark Hyde, prog dir;
 Thomas Ammons, chief engr.

OXFORD (513) Butler County
 WMUB (FM) 1950: 88.5 mc; 820 w. Ant 260 ft. Miami U., Spring & Oak Streets. (45056). 529-3521. Miami University.
 Net: NAEB. Spec progs: Fr $\frac{1}{2}$ hr; Ger $\frac{1}{2}$ hr;
 It 1 hr, all weekly.
 Dr. Stephen Hathaway, dir; Andrew Bruck, engr.

SPRINGFIELD (513) Clark County
 WEEC (FM) December 15, 1961: 100.7 mc; 77 kw. Ant 280 ft. 1135 Bechtel Ave. (45504). 325-1596. World Evangelistic Enterprise Corporation.
 Paul Pontis, pres; Ken Anderson, chief engr.

STRUTHERS (216) Mahoning County
 WKTL (FM) September 6, 1965: 90.7 mc; 328 w. Ant minus 13 ft. Struthers High School (44471). 755-39-7. Board of Education, Struthers City School District.
 Spec progs: Ital 1 hr; Pol 1 hr; Yugoslav 1 hr, all weekly.
 Lee Ellsworth, supt of schools, gen mgr;
 Lewis Mohler, chief engr.

WESTERVILLE (614) Franklin County
 WOBN (FM) October 8, 1958: 91.5 mc; 10 w. Grove & Park Sts. (43081). 882-3611. Otterbain College.
 Net: NAEB.
 Dr. J. A. Grissinger, pres; Rober Fisher, gen mgr.

Oklahoma

NORMAN (405) Cleveland County
 WNAD-FM February 1, 1949: 90.9 mc; 3.6 kw. Ant 390 ft.
 Duplicates WNAD (AM) 20% (WNAB-AM is a commercial station
 owned and operated by the University of Oklahoma under
 the management of Bill Boren).

OKLAHOMA CITY (405) Oklahoma County
 KOKH-FM January 4, 1952: 88.9 mc; 11 kw. Ant 155 ft.
 1801 N. Ellison (73106). CE 2-0581. Independent School
 District No. 89.

Dr. Mervel S. Lunn, stn mgr; Clyde Miller, engr.

STILLWATER (405) Payne County
 KOSU-FM September 1956: 91.7 mc; 220 w. Ant 63 ft.
 Dept. of Radio and Television, Communications Building,
 Oklahoma State U. (74075). FR 2-6211. Oklahoma State U.
 Malachi Topping, faculty advisor; John Mason, engr.

TULSA (918) Tulsa County
 KWGS (FM) 1947: 89.5 mc; 3.2 kw. Ant 335 ft. 600 S. College.
 (74104). WE 9-6351. University of Tulsa.
 Edward Dumit, gen mgr; Lloyd Draheim, engr.

Oregon

CORVALLIS (503) Benton County
 KBVR-FM October 26, 1965: 90.1 mc; 10 w. Speech Dept.,
 Oregon State U. (97331). 754-2461. State Board of
 Higher Education.
 David Matson, faculty advisor; B. Wohlwend, engr.

KOAC (AM) December 7, 1922: 550 kc; 5 kw (directional).
 Covell Hall, Oregon State U. (97331). 754-1311.
 State Board of Higher Education.

Net: NERN.

Dr. Luke Lamb, dir; Robert Hinz, gen mgr.
 Ben Ballard, chief engr.

EUGENE (503) Lane County
 KPNW (FM) February 17, 1967: 90.3 mc; 440 w. Ant minus 61 ft.
 Lane Community College, 200 N. Monroe. (97402). 342-4931.
 Lane Community College.

Roger Houghlum, gen mgr; James Huntington, engr.

KRVM (FM) December 8, 1947: 91.9 mc; 324 w. Ant minus 28 ft.
 200 N. Monroe St. (97402). 342-5611. School District No. 4.
 Net: NERN.

KWAX (FM) March 1951: 91.1 mc; 10 w. Villard Hall,
 U. of Oregon. 342-1211. State Board of Higher Education.
 Net: NERN.

Dr. J. R. Shepherd, dir; Frank Murphy, engr.

KLAMATH FALLS (503) Klamath County
 KTEC (FM) 1951: 88.1 mc; 10 w. The State Board of Higher Ed.

Oregon (continued)

PORTLAND (503) Multnomah County
 KBPS (AM) March 23, 1923: 1450 kc; 250 w-sunrise/sunset.
 546 N. E. 12th Ave. (97232). BE 4-5469. Benson Poly-
 technic School (acquired in 1929).

KOAP-FM 1958: 91.5 mc; 57 kw. Ant 960 ft. 2828 S.W. Front Ave.
 CA 6-6601. State of Oregon acting by and through the
 State Board of Higher Education. (acquired 4-30-62).

Dr. Luke Lamb, dir; Lester Mock, gen mgr;
 Anton Schmidt, chief engr.

KRRC (FM) May 1958: 89.3 mc; 10 w. Reed Institute.
 PR 1-2180. The Reed Institute.

Beth Berry, stn mgr; Bruce Franklin, chief engr.

Pennsylvania

BEAVER FALLS (412) Beaver County
 WGEV (FM) November 15, 1965: 88.3 mc; 10 w. (15010).
 846-5100. Geneva College.

David Eshelman, dir; Stephen Conti, chief engr.

HAVERTOWN (215) Delaware County
 WHHS (FM) December 6, 1949: 89.3 mc; 10 w. Mill Rd &
 Leedom Ave. HI 6-7111. School District of Havertown.

MEADVILLE (814) Crawford County
 WARC (FM) February 3, 1963: 90.3 mc; 33 w. Ant 79 ft.
 Box 28, Allegheny College. (16335). 337-3251.
 Allegheny College.

NEW WILMINGTON (412) Lawrence County
 WKPS (FM) November 1, 1967: 88.9 mc; 39 w. Ant minus 28 ft.
 Westminster College. (16142). 946-1900. Board of Trustees
 of Westminster College.

Thomas Wensel, gen mgr; Gail Smith, chief engr.

PHILADELPHIA (215) Philadelphia County
 WPWT (FM) January 1950: 91.7 mc; 180 w. Ant 10 ft.
 1533 Pine St. (19102). KI 6-0745. Philadelphia Wireless
 Technical Institute.

H. A. Raske, gen mgr; W. W. Zerfing, chief engr.

WRTI-FM July 9, 1953: 90.1 mc; 790 w. Ant 125 ft.
 Temple U. 1949 N. Broad St. (19122). 765-9132. Temple U.
 Richard Bayha, stn mgr; Michael Muderick, tech. dir.

WUHY-FM 1954: 90.9 mc; 20 kw. Ant 460 ft. 4548 Market St.
 (19139) EV 2-9300. TWX 215-569-9815. WHYI Inc.
 Net: Eastern Educ. Radio.
 William Goldman, pres; Warren Kraetzer, gen mgr;
 Robert Hall, chief engr.

WXPN (FM) September 1957: 88.9 mc; 3.9 kw, Ant 115 ft.
 3417 Spruce St. (19104). 594-5601. U. of Pennsylvania.
 Spec progs: Fr 1 hr; Sp 1 hr, both weekly.
 Stuart Bulman, gen mgr; Wilfor Hilimire, tech dir.

Pennsylvania (continued)PITTSBURGH (412) Allegheny County

WDUQ (FM) December 15, 1949: 91.5 mc; 2.75 kw. Ant minus 5 ft.
Duquesne U. (15219). 471-4600. Duquesne University.

B. Kendall Crane, dir; Fred McWilliams, engr.

SCRANTON (717) Lackawanna County

WUSV (FM) September 1946: 89.9 mc; 1.35 kw. Ant minus 390 ft.
U. of Scranton (18510). 347-3321. U. of Scranton.

Lawrence Scavlon, gen mgr; J. A. Risse, engr.

STATE COLLEGE (814) Centre County

WDFM (FM) December 6, 1953: 91.1 mc; 870 w, horiz;
850 w, vert. Ant minus 78 ft. 304 Sparks Bldg. Penn. State U.
University Park, Penn. (16802). 865-2381. Penn. State U.

Dr. Harold Nelson, gen mgr.

TELFORD (215) Montgomery County

WBMR-FM June 1967: 89.7 mc; 10 w. 145 N. Third St.
723-7700. United Educational Bcstg., Inc. *STEREO*

Richard Dean, pres; Arthur Lawn, chief engr.

Rhode Island (All Area Code 401)KINGSTON, Washington County

WRIU (FM) February 16, 1964: 91.9 mc; 10 w. Memorial Union.
University of Rhode Island.

Steve Dreyfuss, gen mgr; Andre Beaubin, engr.

WARWICK-EAST GREENWICH, Kent County

WBHS (FM) August 25, 1966: 90.5 mc; 10 w. Bishop
Hendricken High School.

Frederick Higham, gen mgr & chief engr.

South CarolinaCLEMSON (803) Oconee County

WSBF-FM March 16, 1961: 88.1 mc; 10 w. Box 2156.
Clemson University. (29631). 654-3706. Clemson U.

Walter Cox, advisor.

COLUMBIA (803) Richland County

WUSC-FM 1952: 89.9 mc; 10 w. U. of South Carolina (29208).
AL 2-5641. Extension Div. of U. of South Carolina.

South DakotaSIOUX FALLS (605) Minnehaha County

KNWC (AM) 1946: 1270 kc; 1 kw. Box 205A. 332-5792.
Northwestern College (acquired 3-61).

Harv Hendrickson, stn mgr.

VERMILLION (605) Clay County

KUSD (AM) 1922: 690 kc; 1 kw (directional). (57069).
677-5277. U. of South Dakota.

Martin Busch, dir; James Prusha, chief engr.

KUSD-FM October 1, 1967: 89.9 mc; 10 w. Same licensee as KUSD.

TennesseeCOLLEGEDALE (615) Hamilton County

WSMC-FM November 1961: 90.7 mc; 79 kw. Box 280. (37315).
 EX 6-2320. Southern Missionary College, Inc.

STEREO

James C. Hannum, dir; Curtis Carlson, mgr;
 Ray Minner, news dir; R. K. McReynolds, engr.

KNOXVILLE (615) Knox County

WKCS (FM) December 1952: 91.1 mc; 310 w. Ant 73 ft.
 2509 Broadway, N.E. (37917). 524-3001. Fulton High School.

WUOT (FM) October 1949: 91.9 mc; 67 kw. Ant 570 ft.
 14 Ayres Hall, U. of Tennessee.

Dr. Kenneth Wright, dir; Robert Bachus, chief engr.

NASHVILLE (615) Davidson County

WPLN (FM) December 17, 1962: 90.3 mc; 15 kw. Ant 350 ft.
 Eighth Avenue North & Union. 244-4700. Public Library
 of Nashville & Davidson County.

Net: NER

David Marshall Stewart, chief librarian;
 Alvin Lewis Bolt, mgr; William Hill, engr.

TexasAUSTIN (512) Travis County

KUT-FM November 10, 1958: 90.7 mc; 4.1 kw. Ant 225 ft.
 Box 7158. (78712). GR 1-1631. U. of Texas.

Joe M. Gwathmey, stn mgr; N. W. Willet, engr.

BROWNWOOD (915) Brown County

KHPC (FM) October 15, 1959: 88.1 mc; 10 w. (76801).
 645-2601. Howard Payne College.

Guy Newman, college pres; Ray Karrer, stn mgr;
 Cliff Browning, stn engr.

DALLAS (214) Dallas County

KVTT (FM) January 26, 1950: 91.7 mc; 780 w. Ant 135 ft.
 1316 W. Commerce St. (75208). RI 8-6055. Texas Trade School.
 E. P. Bender, chief engr.

EL PASO (915) El Paso County

KVOF-FM September 14, 1950: 88.5 mc; 10 w. U. of Texas at
 El Paso (79999). 542-5153. U. of Texas at El Paso.

Virgil Hicks, supvr; Jerry Beard, engr.

FORT WORTH (817) Tarrant County

KTCU-FM October 5, 1964: 89.1 mc; 10 w. Texas Christian U.
 WA 6-2461. Texas Christian University.

R. C. Norris, stn mgr; Dale Hughes, prog dir.

HOUSTON (713) Harris County

KUHF (FM) November 6, 1950: 91.3 mc; 9.8 kw. Ant 320 ft.
 4513 Cullen Blvd. (77004). 748-6600. U. of Houston.

Roy Barthald, gen mgr; Dr. William Hawes, stn mgr.

Texas (continued)

LUBBOCK (806) Lubbock County
 KTXT-FM April 1, 1961: 91.9 mc; 10 w. Speech Dept.,
 Texas Tech College. (79409). PO 2-8811. Texas Tech College.
 William Shimer, dir; Joe Robbins, gen mgr.

PLAINVIEW (806) Hale County
 KHBL (FM) 1952: 88.1 mc; 10 w. (79072). CA 4-5521.
 Wayland Baptist College.
 Jack Gibson, gen mgr.

WACO (817) McLennan County
 KWBU-FM March 15, 1966: 89.9 mc; 870 w. Ant 65 ft.
 Div of Radio-TV-Film; Dept of Oral Communication,
 Baylor Station (76703). PL 3-4511. Baylor University.
 J. S. McElhaney, gen mgr; Paul Wagenschein, engr.

Utah

LOGAN (801) Cache County
 KUSU-FM 1953: 91.5 mc; 1 kw. Ant minus 570 ft. Utah State U.
 (84321). 752-4100. Utah State University.
 Gerald Allen, mgr; Boyd Humphreys, chief engr.

OGDEN (801) Weber County
 KWCR-FM May 21, 1966: 88.1 mc; 10 w. Department of Speech,
 Weber State College. 394-3491. Weber State College Board
 of Trustees.
 Spec prog: Fr 2 hr weekly.
 Earl Sanders, dir; Don Godfrey, gen mgr.

PROVO (801) Utah County
 KBYU-FM May 5, 1960: 88.9 mc; 570 w. Ant minus 1,320 ft..
 Harris Fine Arts Center. Brigham Young U. (84601). 374-1211.
 Brigham Young University.
 STEREO

Lee Stott, gen mgr; Ralph Silver, engr.

SALT LAKE CITY (801) Salt Lake County
 KUER (FM) June 6, 1960: 90.1 mc; 1.1 kw. Ant 2,950 ft..
 116 Kingsbury Hall. U. of Utah. (84112). 322-6625.
 U. of Utah.
 Rex Campbell, gen mgr; Don Smith, engr.

Vermont

BURLINGTON (802) Chittenden County
 WRUV-FM October 3, 1965: 90.1 mc; 10 w. U. of Vermont.
 (05401). UN 4-4511. U. of Vermont & State Agricultural College.

Virginia

CHARLOTTESVILLE (703) Albemarle County
 WTJU (FM) April 1, 1957: 91.3 mc; 750 w. Ant 105 ft.
 P. O. Station No. 1, U. of Virginia (22904).
 295-2166. U. of Virginia.
 J. Michael Lloyd, prog dir; L. R. Whitehurst, engr.

Virginia (continued)

CHESAPEAKE (703) independent city
 WFOS (FM) May 2, 1955: 90.5 mc; 10 w. 2500 Rodgers St.
 KI 5-9261. Chesapeake School Board.
 Richard Hewitt, gen mgr; Sam Craven, engr.

HAMPTON (703) independent city
 WHOV (FM) March 5, 1964: 88.3 mc; 10 w. Hampton Institute.
 (23368). PA 3-6581.

HARRISONBURG (703) Rockingham County
 WEMC (FM) 1957: 91.7 mc; 10 w. Eastern Mennonite College.
 434-7331. Eastern Mennonite College.

NORFOLK (703) independent city
 WMTI (FM) 91.5 mc; 21 kw. (construction permit 50 kw).
 Ant 115 ft. Old Dominion College.

RICHMOND (703) independent city
 WRFK-FM May 1957: 106.5 mc; 16 kw. Ant 235 ft. 3401 Brook Rd.
 (23227). EL 5-7252. Union Theological Seminary in Va.
 Robert Kirkpatrick, dir; Samuel Straus, engr.

WILLIAMSBURG (703) James City County
 WCWM (FM) September 28, 1959: 89.1 mc; 10 w. College of
 William and Mary (23185). College of William and Mary.
 James Sawyer, advisor; Thomas Wright, prog dir;
 James Slate, chief engr.

Washington

CHENEY (509) Spokane County
 KEWC-FM November 11, 1963: 89.9 mc; 10 w. 235-6221.
 Eastern Washington State College (99004).
 Dr. Howard Hopf, chmn, Dept. of Radio-TV.

COLLEGE PLACE (509) Walla Walla County
 KGTS (FM) October 5, 1963: 91.3 mc; 200 w. Ant minus 59 ft.
 525-7562. Walla Walla College.
 Loren Dickinson, grn mgr; Glenn Masden, engr.

ELLENSBURG (509) Kittitas County
 KCWS-FM October 1962: 91.5 mc; 10 w. 963-1931. Central College
 P. O. (98926). Central Washington State College.
 John Giles Hoglin, gen mgr; John Blackman, prog dir.

PULLMAN (509) Whitman County
 KWSC (AM) June 1922: 1250 kc; 5 kw-directional. ED 5-5030.
 TWX 510-774-1092. Washington State University.
 Robert Mott, gen mgr; Burt Harrison, stn mgr;
 Bea Fry, prom mgr; Jim Dunne, news dir;
 Dale Babbit, chief engr.

SEATTLE (206) King County
 KUOW-FM January 16, 1952: 94.9 mc; 86 kw. Ant 730 ft.
 U. of Washington (98105). 543-2710. U. of Washington.
 Ken Kager, mgr; Hal Syrstad, chief engr.

Washington (continued)

TACOMA (206) Pierce County

KCPS-FM February 1, 1955: 90.9 mc; 550 w. Ant 150 ft.
4500 Steilacoom Blvd. S.W. (98499). JU 8-5261.
Clover Park District 400.

Clifford Campbell, gen mgr; Bill Evans, engr.

WTOY (FM) June 1, 1950: 91.7 mc; 3.5 kw. Ant 280 ft.
1101 S. Yakima St. (98405). BR 2-9367. Tacoma School District 10.
Charles Ellsworth, gen mgr; Ken Keigley, engr.

West Virginia

HUNTINGTON (304) Cabell County

WMUL (FM) November 1, 1961: 88.1 mc; 10 w. Marshall U.
(25701). 523-3411. Marshall U.

Spec progs: It 30 hrs weekly.

Stephen Buell, dir educ radio-TV; William O'Brien,
gen mgr; George Mendenhall, chief engr.

Wisconsin

APPLETON (414) Outagamie County

WLFM (FM) March 10, 1956: 91.1 mc; 10.5 kw; Ant 120 ft.
115 Park Ave. (54910). RE 9-3681. Lawrence U.

BELOIT (608) Rock County

WBCR (FM) November 30, 1965: 88.1 mc; 10 w. (53511).
365-3391. Beloit College.

Carl Balson, dir of radio-TV.

CHILTON (414) Calumet County

WHKW (FM) January 1, 1949: 89.3 mc; 51 kw. Ant 740 ft.
Radio Hall, U. of Wis., Madison. (53706). 608-262-2720.
State of Wisconsin. See WHA, Madison.

COLFAX (715) Dunn County

WHWC (FM) June 28, 1950: 88.3 mc; 50 kw. Ant 700 ft.
Radio Hall, U. of Wis., Madison. See WHA, Madison.

DELAFIELD (414) Waukesha County

WHAD (FM) May 30, 1948: 90.7 mc; 75 kw. Ant 700 ft.
Radio Hall, U. of Wis., Madison. See WHA, Madison.

HIGHLAND (608) Iowa County

WHHI (FM) September 14, 1952: 91.3 mc; 43 kw. Ant 628 ft.
Radio Hall, U. of Wis., Madison. See WHA, Madison.

HOLMEN (608) La Crosse County

WHLA (FM) November 21, 1950: 90.3 mc; 38 kw. Ant 840 ft.
Radio Hall, U. of Wis., Madison. See WHA, Madison.

MADISON (608) Dane County

WHA (AM) 1922: 970 kc; 5 kw-directional. Radio Hall,
U. of Wisconsin (53706). 262-2720. State of Wisconsin-
U. of Wisconsin.

Net: NAEB; Wisconsin State Network.

James Robertson, dir; Karl Schmidt, gen mgr;
John Stiehl, chief engr.

Wisconsin (continued)

MADISON (continued)

WHA-FM March 30, 1947: 88.7 mc; 72 kw. Ant 670 ft.
 State of Wisconsin-State Radio Council.
 Duplicates WHA (AM) 100%.

MARINETTE (715) Marinette County

WHMD (FM) January 12, 1965: 91.5 mc; 2 kw. Ant 240 ft.
 Radio Hall, U. of Wis., Madison. See WHA, Madison.

MILWAUKEE (414) Milwaukee County

WUWM (FM) September 28, 1964: 89.7 mc; 3.4 kw. Ant 380 ft.
 (construction permit: 4 kw. Ant 140 ft.). U. of Wis.-Milwaukee.
 Net: NERN.

Dr. Ruane Hill, gen mgr; Ernest Behagen, chief engr.

PLATTEVILLE (608) Grant County

WSUP (FM) February 25, 1964: 90.5 mc; 275 w. Ant 115 ft.
 Wisconsin State U. (53818). 348-2950. Board of Regents.
 Paul Gauger, gen mgr.

RIPON (414) Ford Du Lac County

WRPN-FM 1961: 90.1 mc; 10 w. Ripon College (54971).
 748-8147. Board of Trustees of Ripon College.
 Charles Bartel, stn mgr; Richard Domanik, engr.

WAUSAU (715) Marathon County

WHRM (FM) June 10, 1949: 91.9 mc; 75 kw. Ant 1,120 ft.
 Radio Hall, U. of Wis., Madison. See WHA, Madison.

WHITEWATER (414) Walworth County

WSUW (FM) 91.7 mc; 10 w. Wisconsin State U., Whitewater.

Wyoming

LARAMIE (307) Albany County

KUWR (FM) September 10, 1966: 91.5 mc; 10 w. Box 3661,
 University Station (82070). 766-2112. U. of Wyoming.
 Net: NERN.

Ken Haines, gen mgr; Ken Barnes, chief engr.

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Quincy, Illinois: Gates Radio Company, 1968.

This hard-bound catalog contains one of the most complete directories of professional equipment available; helpful, hard-to-remember, physics formulas are also included.

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Television and Radio. 3rd ed. New York: Appleton-Century-Crofts, 1963.

These knowledgeable authors present an excellent text covering all aspects of broadcasting, although weak in the specific educational practices of non-commercial stations; the technical glossary of terms is superior.

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Profound insights into the medium are drawn from the outstanding sociologists of this century and combined with a superior section of reference notes.

Articles and Periodicals

Broadcasting: The Businessweekly of Television and Radio. 1968 yearbook edition. Washington, D. C.: Broadcasting Publications, 1968.

It is hard to find a station without the yearly addition of facts, survey results, regulations and codes.

Eshelman, David. "About College FM Stations," NAEB Journal (September-October, 1965).

This authoritative survey is available in reprints from Gates Radio Company, Quincy, Illinois 62302.

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North Hollywood, California: Pacifica Foundation.

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Los Angeles Free Press. September 23, 1968.

Overlooking the muckraking approach to news, the paper has very informative columns written by media participants on the California scene; newspaper is associated with the Pacifica Foundation.

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The following materials should be of interest to the legal and technical practitioner.

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