TELEVISION

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TELEVISION ACTIVITIES

CBS

By ADRIAN MURPHY

Executive Director of Television

Columbia Broadcasting System

The Columbia Broadcasting System will completely revise and to a large extent replace its initial studio equipment in preparation for actual television broadcasting. More sensitive studio cameras have been ordered, major revisions will be made in the present studio facilities, and work is going forward on a new-type mobile unit for covering outside events.

Since November the CBS high power television transmitter atop the Chrysler Building has been sending test patterns, and constant adjustments have been made, producing a marked improvement in the quality of transmission.

Four of the new cameras to be installed will employ a new kind of electronic tube which is expected to require only a fraction of the light needed for present cameras and which will have truer black and white response to the color spectrum. A fifth camera, developed in the Columbia laboratories, is serving as a test unit for new optical and physical controls later to be incorporated in the other four.

These special controls, according to Gilbert Seldes, CBS director of television programs, have proved essential for the optical and physical flexibility required by Columbia's approach to the program problem. The five additional cameras when used for multiple pickup will permit production of highly complex programs.

Work is now under way on a new-type mobile unit which, when completed in 1940, CBS will use to cover outside events. Application for a construction permit for this mobile unit, which will operate between 336,000-348,000 kilocycles, has been made to the Federal Communications Commission. The unit will carry three new-type cameras of its own and will be completely independent of outside power sources, enabling it, while in motion, to pick up and transmit both pictures and sound.

NBC

By THOMAS H. HUTCHINSON

Manager, Television Program Division,

National Broadcasting Company

Writing of progress in television program production during 1939 is to chronicle its beginning under the rigorous demands of public service telecasting. For it was in this year that all the experience gathered in three years of experimental telecasting was put to test in the day-to-day operations of a going television service.

With this backlog of experience, which will undoubtedly be of vast importance to other telecasters when they decide to go on the air, was inaugurated NBC's regular program service on April 30. Four days later, on May 3, American television's historic "First Night" went out over the air through Station W2XBS. Since that time eight months have passed.

Progress there has been. I am sure that everyone who has followed NBC service from its inception will agree that in December it had a certain finesse that was absent in May. In part this has been due to a closer cooperation between director and technician, in part to the facility that comes of handling cameras and program materials five days a week. Finally, we have explored more thoroughly than ever before the limitations and qualities inherent in present-day television.

Our choice of material has likewise taken a turn for the better. We realized as well as the most critical viewer that the variety programs of May and June were not the answer to television's problem. Straight vaudeville, in fact, is unsuited to the new art, at least within the technical framework of today's television. The telecast drama, on the other hand, has definitely proved itself. We have accordingly concentrated much attention on it. Our next problem is to bring other types of program up to the quality of these drama-casts.

Looking to the immediate future, I believe that we cannot too soon establish an experimental laboratory series for the testing of all sorts of program material prepared especially for television. That, we believe, is the only way we shall learn exactly what it is that distinguishes television from radio, the theater and motion pictures.

TELEVISION

BROADCASTING STATIONS

As of January 1st, 1940

The term "television broadcast station" means a station licensed for the transmission of transient visual images of moving or fixed objects for simultaneous reception and reproduction by the general public on an experimental basis.

Group A—2000 to 2100 kc.; *Group B*—42000 to 56000 kc.; *Group C*—60000 to 86000 kc.; *Group D*—Any 6000 kc. frequency band above 110000 kc. excluding 400000 to 401000 kc.

Licensee and Location	*Call Letters*	*Frequency (kc) or Group*	*POWER Visual*	*POWER Aural*
Columbia Broadcasting System New York, N. Y.	W2XAB	B, C	50 w	(CP only)
Don Lee Broadcasting System Los Angeles, Calif.	W6XAO	B, C	C.P. 7500 w 1000 w	7500 w 150 w
C.P. T-Hollywood	(44000-50000)			
Don Lee Broadcasting System Portable-area of Los Angeles, Calif.	W6XDU	(321000-327000)	6.5 w	
Allen B. DuMont Laboratories, Inc. Portable-area of New York, N. Y.	W10XKT	D (156000-162000)	50 w	(CP only)
Allen B. DuMont Laboratories, Inc. Passaic, N. J.	W2XVT	B	50 w	(CP only) 50 w
First National Television, Inc. Kansas City, Mo.	W9XAL	B, C	300 w	150 w
General Electric Co. Albany, N. Y.	W2XB	C	10000 w	3000 w
General Electric Co. Bridgeport, Conn.	W1XA	C	10000 w	(CP only) 3000 w
General Electric Co. Schenectady, N. Y.	W2XH	B	40 w	(CP only)
General Television Corp. Boston, Mass.	W1XG	B, C	500 w	(CP only)
National Broadcasting Co., Inc. New York, N. Y.	W2XBS	B, C	12000 w	15000 w
National Broadcasting Co., Inc. Portable—Camden, N. J. and New York, N. Y.	W2XBT	D (92000, 175000-180000) S. A. (156000-162000)	400 w	100 w
Philco Radio & Television Corp. Philadelphia, Pa.	W3XE	B, C	10000 w	10000 w
Philco Radio & Television Corp. Philadelphia, Pa.	W3XP	D (204000-210000)	15 w	
Purdue University West Lafayette, Ind.	W9XG	A	1500 w	
Radio Pictures, Inc. Long Island City, N. Y.	W2XDR	B, C	1000 w	500 w
RCA Mfg. Co., Inc. (Portable) Bldg. No. 8 of Camden Plant, Camden, N. J.	W3XAD	(321000-327000)	500 w	500 w

Licensee and Location		Frequency	Visual	Aural
RCA Mfg. Co., Inc. Camden, N. J.	W3XEP	B, C	30000 w	30000 w
University of Iowa Iowa City, Iowa	W9XK	A	100 w	
University of Iowa Iowa City, Iowa	W9XUI	B, C	100 w	
Zenith Radio Corp. Chicago, Ill.	W9XZV	B, C	1000 w	1000 w

Pending Applications

		POWER	
Earle C. Anthony, Inc. Los Angeles, Calif.	50000-56000	1000 w	1000 w
Balaban & Katz Corp. Chicago, Ill.	66000-72000	1000 w	1000 w
Bamberger Broadcasting Service New York, N. Y.	84000-90000	1000 w	1000 w
Columbia Broadcasting System, Inc.	Visual: 336,000-348,000	25 w	
Portable-area of New York, N. Y.	Aural: 180,000-186,000		10 w
Crosley Corp. Cincinnati, Ohio	55000-56000	1000 w	1000 w
Don Lee Broadcasting System San Francisco, Calif.	44000-50000	1000 w	1000 w
Allen B. DuMont Laboratories, Inc. Washington, D. C.	44000-50000	1000 w	1000 w
Allen B. DuMont Laboratories, Inc. New York, N. Y.	78000-84000	1000 w	1000 w
R. B. Eaton Des Moines, Ia.	44000-50000	100 w	100 w
Farnsworth Television & Radio Corp. Fort Wayne, Ind.	66000-72000	1000 w	
General Electric Co. New Scotland, N. Y.	156000-162000	10 w	
Grant Union High School District Sacramento, Calif.	50000-56000	1000 w	1000 w
The Journal Co. Milwaukee, Wisc.	50000-56000	1000 w	1000 w
Kansas State College of Agriculture and Applied Science Manhattan, Kans.	44000-50000	100 w	100 w
B. B. Shapiro, F. P. Shapiro & H. Shapiro, d/b as Leroy's Jewelers Los Angeles, Calif.	66000-72000	1000 w	1000 w
May Department Stores Co. Los Angeles, Calif.	78000-84000	1000 w	1000 w
Metropolitan Television, Inc. New York, N. Y.	102000-108000	1000 w	1000 w
Midland Broadcasting Co. Kansas City, Mo.	50000-56000	1000 w	500 w
Television Productions, Inc. Los Angeles, Calif.	66000-72000	1000 w	1000 w
The Travelers Broadcasting Service Corp. Avon, Conn.	66000-72000	1000 w	1000 w
Henry Joseph Walczak Springfield, Mass.	1550	250 w	250 w
WCAU Broadcasting Co. Philadelphia, Pa.	78000-84000	1000 w	1000 w
WDRC, Inc. Meriden, Conn.	66000-72000	1000 w	1000 w

TELEVISION STATIONS

IN THE UNITED STATES

LOCATION — PERSONNEL — FACILITIES

W2XAB

NEW YORK CITY

FREQUENCY: Sight 51.25 Mcs. SOUND, 55.75 Mcs. POWER: Sight, 15,000 Watts (measured at peak of synchronizing pulses); Sound, 7,500 Watts. OWNED AND OPERATED BY: Columbia Broadcasting System. BUSINESS ADDRESS: 485 Madison Ave. PHONE: Wickersham 2-2000. STUDIO ADDRESS: Grand Central Terminal Bldg., 15 Vanderbilt Ave. TRANSMITTER AND ANTENNA LOCATION: Chrysler Bldg.

Personnel

Executive Director of Television, Adrian Murphy
Manager of Television Operations, Leonard Hole
Director of Television Programs..Gilbert Seldes
Chief Engineer.....Dr. Peter C. Goldmark
Assistant Chief Engineer.....John N. Dyer

FACILITIES

The transmitter facilities of Station W2XAB are located on the 73, 74 and 75 floors of the Chrysler Building. The video transmitter radiates a single side band signal of negative polarity with a frequency band width of 30 cycles to 4.25 Mc. DC transmission is employed. The transmitter radiates about 15 kw on the peaks of the synchronizing pulses. The audio transmitter radiates about 7.5 kw of carrier power. Pre-emphasis of the high audio frequencies is used in accordance with suggested standards. The video and the audio input and monitoring equipment is located in a shielded room on the 74 floor where the transmitters also are situated. On the 73 floor transformers, reactors, motor generators and water cooling equipment is placed, while the air conditioning equipment and the single side band filter are on the 75 floor.

The video antenna consists of horizontal dipoles parallel to the building surface, located on each of the four sides of the building. The audio antenna is similar and is located above the video antenna. All antennas are electrically heated and thermostatically controlled so that detuning due to ice formation is prevented.

A coaxial cable carries the video signals from the studio to the transmitter.

The studio facilities of WCXAB are located in the Grand Central Terminal Building. Nearly one half of an available floor space of 270 ft. long by 60 ft. wide has been sound treated and air conditioned for use as a studio. The main control room is located at the east end of this studio and is practically as wide. An adequate number of studio cameras and telecine channels of these facilities with several more camera channels and mobile equipment is now under way.

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W6XAO

LOS ANGELES—EST. 1931

FREQUENCY: Sight, 45,250 Kc: Sound, 49,750 Kc (Channel). POWER: Sight, 150 Watts; Sound, 150 Watts. OWNED AND OPERATED BY: Don Lee Broadcasting System. BUSINESS ADDRESS: Don Lee Bldg., Seventh & Bixel Sts. PHONE: VAndike 7111. STUDIO AND TRANSMITTER LOCATION: Same. TIME ON THE AIR: Nightly (except Sundays and holidays), 8:00 to 9:00 P.M. or later depending upon program content: Tuesday and Thursday afternoons from 3:00 to 4:00 P.M.; and Saturday afternoons from 5:30 to 6:30 P.M.

Personnel

President.....Thomas S. Lee
Director of Television.....Harry R. Lubcke
Assistant Director of Television Wilbur E. Thorp
Television Engineer.....William S. Klein
Television Engineer.....Harold W. Jury
Television Engineer.....Robert L. Pitzer
Television Producer..Thomas Conrad Sawyer
Public Relations Producer.....Ray Coffin
Assistant Directors, Whit Waldgrave, Estelle Van Sooey
Cameramen.....M. C. Edwards, K. Meade, J. Anderson, G. Landcaster
Makeup Men.....R. Novarro, L. Turner

FACILITIES

SYSTEM IN USE: 441 line 30-60 frame RMA United States Standard, cathode-ray. Horizontal Polarization. Film equipment for broadcasting newsreels, shorts, and test items.

Mosaic live-pickup camera equipment for studio pickup. Portable television cameras

and equipment for outside events. (W6XDU) RCA Manufacture.

DEVELOPMENTS OF 1938-1939: Fletcher Bowron, Mayor of Los Angeles, accompanied by Morton Downey, Maxine Gray (well known singer on Radio and Television in the East as well as the West), Betty Jane Rhodes (first Lady of Television), the King Sisters, Alvino Rey and his orchestra officially opened W6XAO to sustained program service and also the Los Angeles Automobile Show at the Pan Pacific Auditorium on October 14, 1939. Twenty-five thousand persons saw television images for three hours daily including Sunday at the Show, 5½ miles from W6XAO.

Interviews with popular personalities such as Bobby Breen, The Brewster Twins, Max Reinhardt, Rube Wolfe, Edith Fellows, James Finlayson, Commander E. P. Sauer of U. S. Navy, Jimmy Starr, Rob Wagner, Martha Hilton, Clarence Muse, Buron Fitts and many other notables.

Max Reinhardt and his players have produced several dramas which are becoming a regular feature.

The Shirley Thomas Players have presented all types of plays varying from light comedy to Shakespearian dramas.

U. S. C. has a weekly program consisting of activities of the school, interviews with the Heads of different departments and demonstrations from the Physical Education Department.

Geo. Fisher, of Mutual Broadcasting System, has presented his Hollywood news program about the various notables of the film industry.

The Sons of The Pioneers, a musical group, are on a weekly program.

Weekly News broadcasts have been televised throughout the entire year.

Numerous fashion shows from the large department stores commentated by Jean Markel have been televised.

There has also been a variety of singers, dancers, impersonators, dramatic readers, and demonstrations such as archery, Indian Jewelry, Oriental Art, Rare Laces and unmerous other items of interest appearing weekly during the past year.

RECEIVERS: Receivers are on sale to the public in large department stores and radio dealers. A few hundred receivers are estimated to be in operation in Los Angeles, Hollywood, Inglewood, West Hollywood, North Hollywood, Burbank, Glendale,, Pasadena, Long Beach and Pomona. The greatest distance of public reception is recorded at the city of Pomona which is thirty miles airline east of W6XAO and behind a range of hills.

PUBLIC DEMONSTRATIONS: Public demonstrations of the Don Lee television transmission are held almost daily by large downtown department stores and radio dealers.

PATENTS: United States and foreign patents covering film and live pickup, amplification, scanning sources, synchronization, receivers and cathode-ray tubes of Harry R. Lubcke are used in the work. The methods and equipment of the Don Lee System, though producing RMA Standard images functions considerably differently from those of other television organizations.

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W2XVT

PASSAIC, N. J.—EST. 1938

FREQUENCY: Sight, 42,250 Kc.; Sound, 49,750 Kc. POWER: 50 Watts (Sight and Sound). OWNED AND OPERATED BY: Allen B. DuMont Laboratories, Inc. BUSINESS ADDRESS: 2 Main Ave. STUDIO ADDRESS: Same. TRANSMITTER AND ANTENNA LOCATION: Same.

FACILITIES

The transmitter is being used to test out the features of the DuMont Television System which does away with the necessity of the standardization of the number of pictures per second or lines per picture. This system requires approximately one-half the frequency band over that required by conventional systems now in use. At the end of 1939 transmitter was testing with 735 lines and 15 pictures per second. Test schedule: midnight to 9:00 A.M.

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W10XKT

AREA OF PASSAIC, N. J.

PORTABLE

FREQUENCY: Sight 157, 250 Kc.; Sound, 161,750 Kc. POWER: 50 Watts (Sight and Sound). OWNED AND OPERATED BY: Allen B. DuMont Laboratories, Inc. BUSINESS ADDRESS: 2 Main Ave., Passaic, N. J. STUDIO ADDRESS: Variable. TRANSMITTER AND ANTENNA LOCATION: Variable. TIME ON THE AIR: No stated schedule.

FACILITIES

This transmitter is used to pick up outside events.

W9XAL

KANSAS CITY, MO.—EST. 1932

FREQUENCY: Sight, 42000 to 56000 Kc. and 60000 to 86000 Kc.; Sound, same. POWER: Sight, 300 Watts; Sound, 150 Watts. OWNED AND OPERATED BY: First National Television Inc. BUSINESS ADDRESS: 22nd floor, Fidelity Bldg., Ninth and Walnut Sts. STUDIO LOCATION: Same. TRANSMITTER LOCATION: 34th floor, Fidelity Bldg.

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W2XB

SCHENECTADY—EST. 1939

FREQUENCY: Sight, 67,250 Kc.; Sound, 71,750 Kc. (Channel 3). POWER: Sight, 10,000 Watts; Sound, 3000 Watts. OWNED AND OPERATED BY: General Electric Co. BUSINESS ADDRESS: 1 River Road. STUDIO ADDRESS: Same. TRANSMITTER AND ANTENNA LOCATION: Helderberg Mountains, 12 miles south of Schenectady.

Personnel

Technical Supervisor.....W. J. Purcell
Program Director.....J. G. T. Gilmour
12 miles south of Schenectady. TIME ON THE AIR: No stated schedule.

FACILITIES

G. E. will use a system similar to the RCA-NBC equipment but contemplates several entirely new variations. This includes low level modulation with radio relay link between studio and transmitter and linear Class B R. F. amplifiers to bring the power up to 40 kilowatts block level. It is an all-electric system designed to produce a 441-line definition, 30 frames per second, 60 fields per second with an aspect ratio of 4 to 3. General Electric has developed high power transmission at television frequencies and proper modulation of the television carrier signal. It has also developed improved vacuum tubes which exhibit more favorable characteristics, developed wide band output coupling circuits without sacrificing plate efficiency and increased transmission fidelity by expanding the frequency range up to 4 megacycles. Simultaneous operation of stations at Schenectady and Bridgeport on the same frequency is expected to increase knowledge of diurnal and seasonal signal strength variations and determination of the amount of interference permissable, necessary geographic separation and effect of directional antennas.

This transmitter provides a high signal level to Albany, Troy and Schenectady.

Engineering field tests are now in progress and a regular schedule of public broadcasts is expected to be announced late in 1939 or early in 1940. Engineering tests also under way on receiving equipment at a special receiving site in the Helderbergs near the transmitter which are expected to result in high quality reception of programs from New York City suitable for rebroadcast transmission over W2XB.

Technical supervision under W. J. Purcell; program director, J. G. T. Gilmour.

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W2XD-W2XH

SCHENECTADY—EST. 1939

FREQUENCY: W2XD: 156,000 to 162,000 Kcs., used for relaying programs; W2XH: 288,000 to 294,000 Kcs., used for experimental laboratory work. POWER: 40 Watts (Sight, only). OWNED AND OPERATED BY: General Electric Co. BUSINESS AND STUDIO ADDRESS: 1 River Road. TRANSMITTER AND ANTENNA LOCATION: Schenectady. TIME ON THE AIR: No stated schedule.

FACILITIES

These stations, on completion, will be used for the most part in connection with experimental work in the laboratory and to supplement the experimental public service television programs of the G.E.'s Helderberg and Bridgeport transmitters. One of the Schenectady transmitters, W2XD, will serve as a relay visual station to transmit programs from the studio to the transmitter on a sharply directive beam obviating the necessity of a coaxial cable. For further information concerning system used for these stations, facilities, etc., see information listed under W2XB, Schenectady, N. Y. (above).

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W1XA

BRIDGEPORT—EST. 1939

FREQUENCY: 60,000 to 86,000 Kc. POWER: Sight, 10,000 Watts; Sound, 3000 Watts. OWNED AND OPERATED BY: General Electric Co. BUSINESS, STUDIO, TRANSMITTER AND ANTENNA LOCATIONS: Bridgeport. TIME ON THE AIR: No stated schedule.

FACILITIES

This station will, on completion, serve as a locally controlled source of signal for ob-

taining propagation data and for use in connection with the development of television receivers. For further information concerning system used, facilities, etc., see information listed under W2XB, Schenectady, N. Y. (above).

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W1XG

BOSTON

FREQUENCY: 42000 to 56000 Kc. and 60000 to 86,000 Kc. POWER: 500 Watts (visual). OWNED AND OPERATED BY: General Television Corp. BUSINESS ADDRESS: 70 Brookline Ave. STUDIO, TRANSMITTER AND ANTENNA LOCATION: 70 Brookline Ave.

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W2XBS

NEW YORK CITY—EST. 1928

FREQUENCY: Sight, 45,250 Kc.; Sound 49,750 Kc. POWER: Sight, 12000 Watts: Sound, 15000 Watts. OWNED AND OPERATED BY: National Broadcasting Co. BUSINESS ADDRESS: 30 Rockefeller Plaza. STUDIO ADDRESS: Same. TRANSMITTER LOCATION: Empire State Bldg. TIME ON THE AIR: Wednesday through Sunday, inclusive: 2:30 to 3:30 P.M. and 8:30 to 9:30 P.M.; a similar amount of test pattern transmission on same days, plus special programs.

Personnel

Vice-President In Charge of Television, A. H. Morton
Television Coordinator.....Clarence Farrier
General Production Director of Television, Max Gordon
Manager of Television Program Division, Thomas H. Hutchinson
Chief Engineer .....O. B. Hanson

FACILITIES

This station uses the RCA television system.

Beginning on April 30, 1939, a regular television program service for the public in the New York City area was inaugurated. These transmissions have been in accordance with the RMA Technical Standards, utilizing RCA studio and transmitter equipment. The programs are supplied from a direct pickup studio equipped with three cameras, a film studio equipped with two cameras and a mobile unit having two cameras for televising scenes outside the studio. A large variety of programs utilizing all three forms of pickup has been transmitted, and a systematic study of audience reaction to each individual program feature is being made.

In the operation of its television activities, The National Broadcasting Co. employs over 75 persons. At the end of 1939 these were roughly divided as follows: technical, 50; production, 27; and mobile unit, 9.

Signals of this station have been satisfactorily received within a radius of approximately 60 miles.

Besides this station the National Broadcasting Co. operates Television Station W2XBT, mobile television station which is licensed to operate on 92,000 Kc. and from 175,000 to 180,000 Kc. with a power of 400 Watts for sight transmission and 100 Watts for sound transmission.

HISTORY

Experimental television station W2XBS was originally installed at the RCA Technical and Test Laboratory, Van Cortlandt Park, New York City. The first construction permit was granted on April 4, 1928 and the first temporary license was issued in June, 1928. From time to time various station permits allowed television experimental transmission on 4800 Kc., 2300 to 3300 Kc., 2050 to 2150 Kc., 2000 to 2100 Kc. and 2100 to 2200 Kc. The first permanent license was issued on December 1, 1928 with an assigned frequency band of 2100 to 2200 Kc. In the latter part of 1928 the station was moved to the RCA Photophone Building, 411 Fifth Avenue. On June 27, 1930, it was moved to the Times Square Studio of the National Broadcasting Company, where on July 7, 1930 it passed from RCA to NBC management.

In 1931 NBC television was carried on from W2XBS's present location on the top of the Empire State Building.

During 1936 and 1937 NBC operated with the new high definition standards, demonstrating television to groups representing diverse interests, such as:

a. Political
b. Motion Picture
c. Foreign (political and commercial)
d. Press
e. Advertisers (manufacturers)
f. Advertising agencies
g. Artists (talent and musicians)
h. Naval and Military
i. Educational
j. Financiers, Bankers
k. Retailers
l. Radio Station men
m. Trade associations
n. Institutional (4H Club, Atlanta School of Air winners, etc.)

The technical standards of transmission from W2XBS have been and are expected to continue to be those recommended by the Radio Manufacturers Association.

For a summary of NBC television activities

for 1939-40 see feature titled "The Forward March of Television" in another section of this RADIO ANNUAL.

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W2XBT

AREA OF NEW YORK, N. Y.
PORTABLE

FREQUENCY: Sight, 159,000 Kc. POWER: Sight, 400 Watts; Sound, 100 Watts. OWNED AND OPERATED BY: National Broadcasting Co. BUSINESS ADDRESS: 30 Rockefeller Plaza. STUDIO ADDRESS: Variable (outdoor and indoor remotes). TRANSMITTER AND ANTENNA LOCATION: Variable (Mobile Unit 1B). TIME ON THE AIR: No stated schedule.

FACILITIES

This transmitter is a mobile unit used for pickups of remote programs with public interest such as baseball, football, boxing, wrestling, parades, public meetings, sidewalk interviews, aircraft flying and performance, etc. The technical staff for the unit consists of nine persons. Two cameras connect to the unit by means of 250 feet of 32 conductor cable. Picture in its completed state is sent to the transmitter unit through the cable and thence to the Empire State Building receiving location by means of a permanent antenna on the unit or a portable antenna which is affixed to roof tops, etc. At the end of 1939 power was obtained from public utility mains (750 foot cable carried). The greatest distance of successful transmissions at the time of going to press was 27 miles on test and 24 miles on a regularly scheduled tennis telecast.

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W3XE

PHILADELPHIA—EST. 1931

FREQUENCY: 42000 to 56000 Kc. and 60000 to 86000 Kc. POWER: Sight, 10000 Watts; Sound, 10000 Watts. OWNED AND OPERATED BY: Philco Radio & Television Corp. BUSINESS ADDRESS: Tioga and "C" Sts. STUDIO AND TRANSMITTER LOCATION: Same. TIME ON THE AIR: No stated schedule; at the end of 1939 station was maintaining a minimum program schedule of 10 hours per week.

Personnel

Engineer in Charge.....William N. Parker

FACILITIES

This station uses the Philco Television System. Reception which is heard in the homes of the company's engineers has been reported from points 12 miles from the transmitter.

This station which is used for experimentation and research in connection with television development radiates signals in accordance with the proposed RMA Television Standards. It employs the newly developed modulation system and is operating in the 50-56 Mc. channel.

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W3XP

PHILADELPHIA—EST. 1938

FREQUENCY: 204,000 to 210,000 Kc. POWER: 15 Watts (Sight and sound). OWNED AND OPERATED BY: Philco Radio & Television Corp. BUSINESS ADDRESS: Tioga and "C" Sts. STUDIO ADDRESS: Same. TRANSMITTER AND ANTENNA LOCATION: Same. TIME ON THE AIR: No stated schedule.

Personnel

Engineer in Charge.....William N. Parker

FACILITIES

This station uses the Philco transmission line modulation system. It is used principally for a survey in Philadelphia of the possibilities of broadcasting at frequencies above 200 Mcs. The transmitter radiates signals in accordance with the proposed RMA television standards.

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W9XG

LAFAYETTE, IND.—EST. 1932

FREQUENCY: 2000 to 2100 Kc. POWER: 1500 Watts. OWNED AND OPERATED BY: Purdue University. BUSINESS ADDRESS: Electric Bldg., Purdue University. PHONES: 6475, 2917. TRANSMITTER LOCATION: West Lafayette. TIME ON THE AIR: Tuesday, at 7:30 P.M. Thursday, at 8:00 P.M.

Personnel

Head of School of Electrical Engineering
C. Francis Harding

FACILITIES

This station uses a television system that has been developed at Purdue University.

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W2XDR

LONG ISLAND CITY, N. Y.

FREQUENCY: 42000 to 56000 Kc. and 60000 to 86000 Kc. POWER: Sight, 1000 Watts; Sound, 500 Watts. OWNED AND OPERATED BY: Radio Pictures, Inc.

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W3XAD

CAMDEN, N. J.—EST. 1931

FREQUENCY: 321,000 to 327,000 Kcs. POWER: Sight, 500 Watts; Sound, 500 Watts. OWNED AND OPERATED BY: RCA Manufacturing Co. BUSINESS ADDRESS: RCA Frequency Bureau, 30 Rockefeller Plaza, New York City. TRANSMITTER LOCATION: Portable Laboratories in Camden, N. J. TIME ON THE AIR: No stated schedule.

FACILITIES

This station is an experimental portable unit and no one system is strictly adhered to; a complete description of the basic method used in transmission is given in the Proceeding of the Institute of Radio Engineers (Vol. 22, No. 1, November, 1934).

Several experimental television receivers have been set up within a 2 or 3 mile radius for experimental purposes.

The frequency band occupied by this transmitter varies from one to six megacycles on each side of the carrier. The band emitted during a particular test period is dependent upon the particular experimental project under test. This band width is determined by measuring the overall frequency characteristics of the system.

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W3XEP

CAMDEN, N. J.—EST. 1935

FREQUENCY: 42000 to 56000 Kc. and 60000 to 86000 Kc. (FCC application for assignment of 84000 to 90,000 Kcs.) POWER: Sight, 30000 Watts: Sound, 30000 Watts. OWNED AND OPERATED BY: RCA Manufacturing Co. BUSINESS ADDRESS: RCA Frequency Bureau, 30 Rockefeller Plaza, New York City. TRANSMITTER LOCATION: Camden, N. J. TIME ON THE AIR: No stated schedule.

FACILITIES

This station is experimental and no one system is strictly adhered to; a complete description of the basic method used in transmission is given in the Proceeding of the Institute of Radio Engineers (Vol. 22, No. 11, November, 1934).

Several experimental television receivers have been set up within 2 or 3 miles of each other. The receivers are a part of the equipment used in television research.

The frequency band occupied by the transmitter varies from one to six megacycles on each side of the carrier. The band emitted during a particular test period is dependent upon the particular experimental project under test. This band width is determined by measuring the overall frequency characteristics of the system.

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W9XK

IOWA CITY

FREQUENCY: 2000 to 2100 Kc. (Sight only). POWER: 100 Watts (Sight only). OWNED AND OPERATED BY: University of Iowa.

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W9XUI

IOWA CITY

FREQUENCY: 42000 to 56000 Kc. and 60000 to 86,000 Kc. (Sight only). POWER: 100 Watts (Sight only). OWNED AND OPERATED BY: University of Iowa.

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W9XZV

CHICAGO, ILL.—EST. 1938

FREQUENCY: Sight, 45,250; Sound, 49,750. POWER: 1000 Watts (Sight and Sound). OWNED AND OPERATED BY: Zenith Radio Corp. BUSINESS ADDRESS: 6001 Dickens Ave. PHONE: BErkshire 7500. STUDIO ADDRESS: Same. TRANSMITTER AND ANTENNA LOCATION: Same. TIME ON THE AIR: Daily except Saturday and Sunday, experimentally; no stated schedule.

TELEVISION STANDARDS

Status as of Jan. 1st, 1940

THE First Report of the Television Committee of the Federal Communications Commission which was issued on May 22, 1939, was the result of the request of the Radio Manufacturers Association for approval of the technical standards proposed by that association in September 1938. The report itself is a careful study of the question of standards as made by the Committee in Washington and in the field at various television laboratories. While it commends the engineers of the RMA for their "contribution and honest efforts in the interests of orderly progress in the development of the technical aspects of television" and states that "it is entirely possible that the technical quality of television produced in accordance with the proposed standards may be accepted by the public as a practical beginning," the report contends that it would be hazardous to both the best interests of the industry and the public to attempt by administrative fiat to freeze the art at this stage of its development.

The Committee declared that the proposed standards do not contain a maximum degree of flexibility and that additional research may prove advantageous. Of the four definite recommendations, the first specifically refers to the RMA standards and is as follows:

RMA

"That the Federal Communications Commission neither approve or disapprove the standards proposed by the Radio Manufacturers Association. This recommendation is made first because the Commission by law is required to grant licenses to applicants for television stations, who prove that the granting of such applications would be in the public interest, and, second, because it appears undesirable to take any action which discourages private enterprise or which decreases the incentive for undertaking research to effect further improvements.

"The Committee suggests that in taking this action the public be informed that in failing to approve the standards the Commission does not believe the proposed standards to be objectionable as a phase of a rapidly developing service. The public should also be informed that the Commission desires to be free to prescribe better performance for the transmitters it may license in the future

when and if such improvements are proved to be in the interest of the public.

"Also, in making this recommendation the Committee suggests that it be made clear that the proposed standards do not at this time appear suitable for the 12 undeveloped higher frequency channels reserved for television."

The proposed television transmission standards as presented to the FCC by the Radio Manufacturers Association are as follows:

T-101 **Television Channel Width**

The standard television channel shall not be less than 6 megacycles in width.

T-102 **Television and Sound Carrier Spacing**

It shall be standard to separate the sound and picture carriers by approximately 4.5 Mc. This standard shall go into effect just as soon as "single side band" operation at the transmitter is practicable. (The previous standard of approximately 3.25 Mc. shall be superseded.)

T-103 **Sound Carrier and Television Carrier Relation**

It shall be standard in a television channel to place the sound carrier at a higher frequency than the television carrier.

T-104 **Position of Sound Carrier**

It shall be standard to locate the sound carrier for a television channel 0.25 Mc. lower than the upper frequency limit of the channel.

T-105 **Polarity of Transmission**

It shall be standard for a decrease in initial light intensity to cause an increase in the radiated power. (See Standard M9-121.)

T-106 **Frame Frequency**

It shall be standard to use a frame frequency of 30 per second and a field frequency of 60 per second, interlaced.

T-107 **Number of Lines per Frame**

It shall be standard to use 441 lines per frame.

T-108 **Aspect Radio**

The standard picture aspect ratio shall be 4:3.

T-109 **Percentage of Television Signal Devoted to Synchronization**

If the peak amplitude of the radio frequency television signal is taken as 100 per cent, it shall be standard to use not less than 20 per cent nor more than 25 per cent of the total amplitude for synchronizing pulses.

T-110 **Method of Transmission**

It shall be standard in television transmission that black shall be represented by a definite carrier level independent of light and shade in the picture.

T-111 **Synchronizing**

The standard synchronizing signals shall be as shown on Drawing T-111.

T-112 **Transmitter Modulation Capability**

If the peak amplitude of the radio frequency television signal is taken as 100 per cent, it shall be standard for the signal amplitude to drop to 25 per cent or less of peak amplitude for maximum white.

T-113 **Transmitter Output Rating**

It shall be standard, in order to correspond as nearly as possible to equivalent rating of sound transmitters, that the power of television picture transmitters be nominally rated at the output terminals in peak power divided by four.

T-114. **Relative Radiated Power for Picture and for Sound**

It shall be standard to have the radiated power for the picture approximately the same as for sound.

Television Headlines
Of 1939 — From Radio Daily

JANUARY

Jan. 10—Four Television Licenses Are Granted to General Electric.

FEBRUARY

Feb. 8—NBC's Tele Scripts Ready for "Shooting."

Feb. 27—Baird's Television Invasion; Important English Firm to Establish Giant Screen Projection Suitable for Theater Audiences.

MARCH

Mar. 6—Fort Wayne Television Center; Farnsworth Moving Entire Facilities and Will Erect Huge Transmitter; To Retain Philly Office.

Mar. 10—Baird Television (Will Raise) $2,000,000 for Further Expansion.

Mar. 14—DuMont Television Opening Transmitter April 1.

Mar. 22—New Television Attachment for Radio Receivers Announced by Wald Radio & Television Laboratories.

Mar. 23—CBS Reveals Television Setup; Expects to be Ready to Begin Active Television on a Test Schedule, but Will Not Tie Up With Fair.

Mar. 31—Film Television Scanner Ironed Out by CBS.

APRIL

Apr. 5—Baird Theater-Television Showing Will Get Under Way May 15.

Apr. 7—Stewart-Warner Television Reality This Spring.

Apr. 10—BBC New Television Budget Upped to $2,500,000.

Apr. 13—FCC Television Committee Opens Active Survey.

Apr. 14—FCC Television Committee Is Wary on "Standards."

Apr. 17—Reception Is No Problem, Says Philco Television Head.

Apr. 18—First U. S. Television Schedule Is Completed by NBC.

Apr. 21—RCA Television Sets May 1; Prices $300 to $600.

Apr. 24—Picture Standards Okay for Television Purposes.
McDonald Television Fight Carried to NAB.

Apr. 25—Major Film Concerns to Refuse Television Pictures.

Apr. 27—Crosley Explains Television Setup; Has Already Built Receivers.

Apr. 28—Television Rounds the "Corner"; Production Cost Estimated by NBC at $2,500 per Hour; Advertisers Interested Unofficially.

MAY

May 1—Television Stars at the Fair; Huge Crowds Attracted to Television on Grounds

May 2—Two Types of Television Programs Mulled by RCA; Home and Theater.

May 5—ASCAP Holds Television Rights; Television Covering United States Possible with New Technique: Boosters.
General Electric Television Begins in Two Weeks; Other Manufacturers Set Plans.

May 9—DuMont Planning to Install Penthouse Television Transmitter.

May 10—New Television Lighting System Devised by NBC Engineer.

May 11—Fair Television Draws 300,000; Exhibit of RCA-NBC Attracts Most of the Television-Minded Visitors During First Nine Days.

May 15—British Television Solved Two Major Problems.

May 16—Suggests Television Pool of U. S. Experiments.
General Electric Merges Its Radio and Television Activities.

May 17—Asks Advertisers' Aid in Television Presentations.

May 18—Mutual Assistance Plans Proposed for Television-Films.

May 19—Don Lee Television Going to 441 Lines.

May 22—Screen Actors Guild to Fight Equity on Television Jurisdiction.

May 23—"Network Television" Hopes Rise.

May 25—Hold Off Television Standards; in Accord with Industry Testimony FCC Committee Avoids "Freezing" Until Further Developments.

May 26—Seek Interstate Law Change Due to Television.

May 29—Majestic Television License Issued by DuMont Laboratories.

May 31—Television Experimenting with 16 mm. Films.

JUNE

June 2—American Television Co. New Set to Retail for $185.

June 5—British Television Control Stays with the British Broadcasting Corp.

June 8—New RCA Television Tube Is Announced; No Receiver Change.

June 9—Television Status Today; Activity Prevalent in Key Centers as Public Evinces Keen Interest Throughout the Country. (RADIO DAILY's Television Issue)

June 13—See Commercial Television as Need to Progress.

June 14—Radio, Television and Facsimile to Highlight Army Maneuvers.

June 16—Two Television Improvements are Shown by Philco.

June 19—Large Television Screen in First U. S. Showing.

June 21—RCA Bearing Brunt of Television Exploitation.

June 22—Canada Holds Rule on Non-Profit Television.
June 26—Inter-Store Television Pictures on Commercial Basis.
June 27—DuMont Speeds Television on 882-Line Setup.
June 29—NBC-RCA Television Schedule Revised for Summer.
June 30—First Television Network Links RCA with General Electric.

JULY

July 6—ASCAP Readies Talks for Television Licenses.
July 21—NBC Television Talent Cost $115,000 During First Year.
July 25—Form Wired Television Group; Otterson Heads New Film Planning to Install Wired Television System as Feasible Method.

AUGUST

Aug. 8—WOR Files Television Construction Permit for Midtown Station.
Aug. 9—Web Television Plans Proceed; RCA-NBC Going Ahead with General Electirc Tieup with First Link Ready in Fall; G. E. Reports 185-Mile Pickup.
Aug. 23—Department Store Inaugurates Intra-Store Wired Television.

SEPTEMBER

Sept. 1—Television Gains Impetus with Today's Schedule.
Sept. 12—WCAU Application for Television License Is Filed.
Sept. 21—NBC Perfecting Television Commercial Standards.
Sept. 22—General Electric Patent Agreement Revises Television Status.
Sept. 26—Television Promotion Intensified by RCA.
Sept. 28—Femme Product Firms Lead on Television Cooperation.

OCTOBER

Oct. 3—RCA and Farnsworth in Patent Exchange.
Oct. 17—CBS Engineers Using New Television Methods.
Oct. 18—Television Airplane Reception 200 Miles from Transmitter.
Oct. 19—Settle Television Jurisdiction; AFRA-Equity-SAG Seen Near Accord on Joint Control Over Industry; Meeting with NBC Tuesday.
Oct. 25—Expect FCC Television Break; Conciliatory Attitude in Second Report with "Limited Commercials" Seen; U. S. Subsidy a Possibility.
Oct. 31—Coast Television Market Looms.

NOVEMBER

Nov. 7—AFM Television Committee Report Advises Local Supervision.
Nov. 8—"Television in Education" To Be Shown By KSTP.
Nov. 9—Television Network Relay Being Built By General Electric.
Nov. 13—Plea For Television "Freedom"; McDonald Asks FCC For Continued Development Unhampered By U. S.
Nov. 14—Actor Unions Ponder Standard Television Scale.
General Electric Appoints Gilmour.
Nov. 15—FCC Gets Television Report; Committee Favors Two Classifications Of Licenses To Aid Development; Limited Commercial Aspect.
Nov. 16—See Compromise In FCC Television Report.
Nov. 17—Unions Renew Television Feud; Equity Attacks Report That It Lost Field To AFRA And Screen Union.
Nov. 20—See Lower Television Sets To Stimulate Market.
Nov. 21—Television Draws 100,000 In Oklahoma City And Chicago.
Nov. 24—Actors Unions Discuss Wage Scales For Television.
FCC Television Permit Sought In Springfield, Mass.
First "Return" Television Show Scheduled By NBC On December 6.
Nov. 28—Television-Purchase Survey Indicates Huge Sales.
Nov. 29—Television Networks Not Remote; See Small "Booster" Units.
Nov. 30—RCA's New Television Camera.

DECEMBER

Dec. 1—Actor Unions Considering Joint Report On Television.
Dec. 4—RCA New Television Camera Revealed In Capital.
Dec. 5—Television Sports Feasible; NBC Expanding Plans.
Dec. 7—Actor-Union Committee Lining Up Its Television "Code."
Dec. 8—"Premature" Move Avoided; Unions Delay Television Scale.
Dec. 11—Television Chain Feasible Says Major Armstrong.
Dec. 12—DuMont Television Reveals Its New Developments.
Mark Woods To Attend Actors' Television Committee Meet.
Dec. 14—Tells Actor Unions Need For Television Cooperation.
Dec. 15—Television In San Francisco Soon As Site Is Selected.
Dec. 18—DuMont Television Receivers Marked Down For Xmas.
Dec. 19—Over 800 Television Receivers Now In Los Angeles Area.
Dec. 20—Television Was 1939 High Spot; Viewed As Pacing All Other Aspects During The Year.
CBS-Philco Agree To Share Time On Television Wavelength.
Dec. 26—Public Television Hearing Will Be Held By FCC.
RCA Mfg. Co. President's Report Optimistic Over Television.
Equity Reaffirms Stand On Television Jurisdiction.
Dec. 27—More Tests For Television As Aviation Medium.
Dec. 28—Farnsworth Mobile Television Unit Resuming Tour On January 8.

Allocation Table

(The following table was proposed to the FCC by its Television Committee on Nov. 15, 1939. The material contained herein is suggested as a guide for the Commission, but is by no means to be a hard and fast distribution of facilities.)

Metropolitan District	Population	Area Square Miles	Channel	Power kw.	(feet) Antenna Height
Lowell-Lawrence	332,028	292	1	0.1	250
Boston	2,307,897	1023	4	10	500
			6	1	250
			7	0.1	250*
Providence	963,686	818	5	1	250
			7	0.1	250*
Worcester	305,293	400			
Springfield	398,991	519	6	1	250
Hartford	471,185	565	3	1	500
Waterbury	140,575	207			
New Haven	293,724	249	5	1	250
Bridgeport	203,969	169	7	1	250
New York	10,901,424	2514	1	10	1000
			2	10	1000
			4	1	500
Trenton	190,219	173	6	0.1	250
Philadelphia	2,847,148	994	3	10	500
			5	10	500
			7	1	250
Wilmington	163,592	229			
Atlantic City	102,024	53	6	0.1	250
Baltimore	949,247	559	6	1	250
			7	1	250
Washington	621,059	485	4	10	500
			1	1	250
Scranton	652,312	395	6	1	250
			7	0.1	250
Reading	170,486	157	6	0.1	250
Harrisburg	161,672	130	7	1	250
Lancaster	123,156	232			
Allentown	322,172	335			
Albany	425,259	472	7	1	500
Buffalo	820,573	459	1	10	500
			4	1	250
Detroit	2,104,764	747	1	10	500
			3	1	500
			5	1	250
Cleveland	1,194,989	310	2	10	500
			4	1	250
			6	1	250
Chicago	4,364,755	1119	1	10	1000
			3	10	500
			5	1	500
Pittsburgh	1,953,668	1626	1	10	500
			4	1	500
			6	1	250
Utica	190,918	358	3	1	250
Binghamton	130,005	183	3	1	250
Rochester	398,591	304	3	1	250
Syracuse	245,015	140	4	1	250
Altoona	114,232	133	5	1	250
Johnstown	147,611	180	3	1	250
Erie	129,817	89	3	1	250
Youngstown	364,560	363	5	1	250
Akron	346,681	243	7	1	250
Canton	191,231	238	3	1	250

Wheeling	190,623	399	7	1	250
Columbus	340,400	219	3	1	250
Dayton	251,928	180	5	1	250
Cincinnati	759,464	520	2	10	500
			4	1	250
Racine	133,463	185	7	1	250
Milwaukee	743,414	242	2	1	500
			4	1	250
Rockford	103,204	139	4	1	250
Flint	179,939	141	4	1	250
Grand Rapids	207,154	136	4	1	250
South Bend	146,569	154	2	1	250
Ft. Wayne	126,558	139	3	1	250
Louisville	404,396	464	5	1	250
Charleston	108,160	277	1	1	250
Huntington	163,367	264	3	1	250
Richmond	220,513	335	2	1	250
Norfolk	273,233	469	1	1	250
Roanoke	103,120	231	3	1	250
Evansville	123,130	149	3	1	250
St. Louis	1,293,516	822	2	10	500
			4	1	250
			6	1	250
Indianapolis	417,685	312	6	1	250
Toledo	346,530	204	6	1	250
Peoria	144,732	106	4	1	250
Davenport	154,491	127	2	1	250
Kansas City	608,186	455	2	10	500
			4	1	250
Omaha	372,851	205	1	1	250
Des Moines	160,963	203	3	1	250
Minneapolis. St. Paul	832,258	525	2	10	500
			4	1	250
Duluth	155,390	444	1	1	250
Wichita	119,174	143	1	1	250
Tulsa	183,207	391	1	1	250
Oklahoma City	202,163	181	1	1	250
Dallas	309,658	504	1	1	250
Ft. Worth	174,575	171	3	1	250
Houston	339,216	799	1	1	250
San Antonio	279,271	467	1	1	250
Knoxville	135,714	193	1	1	250
Nashville	209,422	323	3	1	250
Chattanooga	168,589	490	2	1	250
Atlanta	370,920	221	1	1	250
Birmingham	382,792	308	3	1	250
Memphis	276,126	221	1	1	250
Jacksonville	148,713	218	1	1	250
Tampa	169,010	266	2	1	250
Miami	132,189	112	1	1	250
Savannah	105,431	370	2	1	250
Little Rock	113,137	109	2	1	250
New Orleans	494,877	287	1	1	250
Denver	330,761	305	1	1	250
Salt Lake City	184,451	451	1	1	250
El Paso	118,461	291	1	1	250
Spokane	128,798	270	1	1	250
Seattle	420,663	210	1	1	250
Tacoma	146,771	191	3	1	250
Portland	378,728	277	2	1	250
San Francisco	1,290,094	826	1	10	500
			3	1	500
			5	1	250
Sacramento	126,995	462	4	1	250
San Jose	103,428	210	7	1	250
Los Angeles	2,318,526	1474	1	10	500
			3	1	500
			5	1	250
San Diego	181,020	332	4	1	250

FCC TELEVISION COMMITTEE REPORT

SECOND important step in television was taken by the FCC on Nov. 15 when a television committee submitted its findings covering an extensive study of the visual broadcasting medium. The committee favored two classifications of licenses to aid development of the new industry, and included in its report explanations regarding the advisability of commercial television on a limited basis.

The committee, headed by Commissioner T. A. M. Craven, and including Commissioners Norman S. Case and Thad H. Brown, recommended that one group of stations be licensed for technical research while another group be licensed to develop program technique.

Although the rules would prohibit television broadcast licensees to make any charge, directly or indirectly, for the transmission of either aural or visual programs, sponsorship is not banned provided such sponsorship is primarily for the purpose of experimental program development. It was understood that the committee is adamant against exploitation of television time but was not opposed to the licensee receiving funds for program material and talent.

96 Allocations

A plan of allocation was outlined for the commission which would permit the granting of licenses in 96 metropolitan centers throughout the nation, however it was pointed out that departures might be necessary as experience is gained by the FCC from actual operations of licensed stations. Only seven of the nineteen television channels are developed sufficiently now, the committee found, and these seven (below 108,000 kc.) were suggested as the starting point for broadcast operations.

"In order to insure a fair and equitable distribution of the seven lower frequency channels to the various communities of the nation, the Committee is of the opinion that as a general allocation plan or policy, not more than the following number of these seven channels should be made available for the licensing of television stations in cities below indicated:

"Cities whose metropolitan districts exceed 1,000,000 population, 3 channels.

"Cities whose metropolitan districts are not less than 500,000 or more than one million population, 2 channels.

"Cities whose metropolitan districts are less than 500,000 population, 1 channel."

Time-Sharing Suggested

Where there are more applicants from any one district than there are facilities available, it was suggested that advantage should be taken, for the time being, of time-sharing agreements. However, the committee declared that every encouragement should be given to experimentation on the twelve upper channels, and before resorting to time-sharing it should be determined whether or not one of the twelve higher channels could be used.

The public is the key to further progress in television, the committee reiterated throughout its report and although steps were taken to encourage television, there was repeated warning that extreme promises might easily mean irreparable damage. Programs having a high public appeal were recommended as the means for wooing public support for television but immediate commercialization of television program service would not, in the opinion of the committee members, increase the sale of receivers. On the contrary, they warned, it might easily result as a retardation of the ultimate sale of such receivers on a large volume basis.

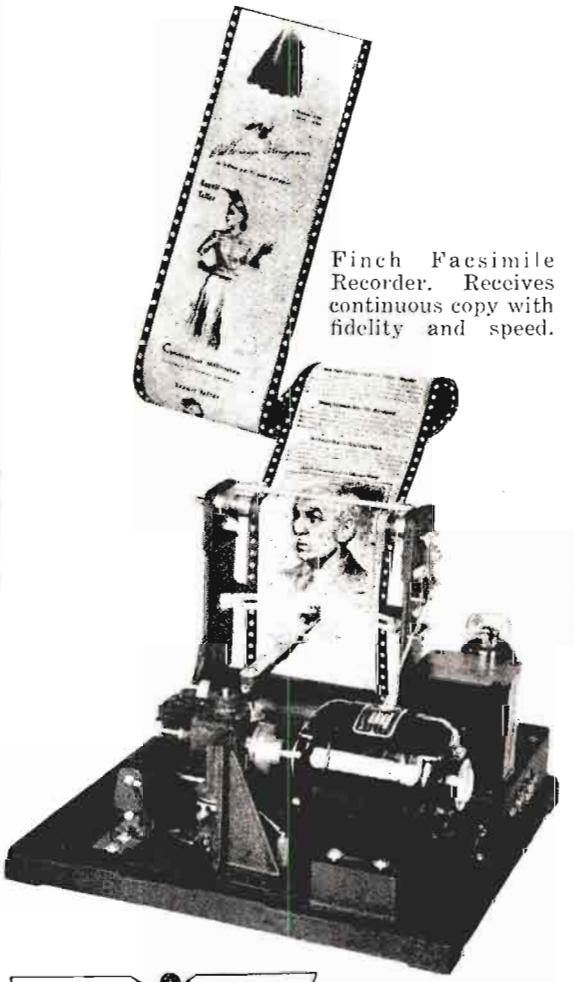
Lengthening its warning against complete commercialization in television, the committee weighed its possible effect upon the industry itself. "Premature commercialization," it was said, "might crystallize employment and wage levels before a new-born art and industry has any opportunity to gain sufficient experience to obtain the stability in this phase of the service which is so essential to employer and employee alike."

Commercial Tele Considered

Keeping in mind that the rules of today can be different than those of tomorrow, the three Commissioners declared that there is no "circulation" in television to attract any sponsor as a logical media. "It appears obvious," said they, "that before commercialization of television can become feasible, the service should be ready to sell some reasonable basis of circulation value to the sponsor."

BROADCASTERS —

finch facsimile



Finch Facsimile Recorder. Receives continuous copy with fidelity and speed.

Opens New Fields for Profits!!

NOW is the time to equip your station with FINCH FACSIMILE apparatus so that by experimentation you will be prepared to establish yourself in a position in this new field.

Facsimile—which is the transmission of printing, drawings, comics, and sketches, as well as advertisements, holds big profits possible for the future.

Revenues can be obtained immediately to offset present installation cost.

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Write immediately to us for information.

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TELECOMMUNICATIONS INC. PASSAIC N. J.

NEW YORK SALES OFFICE 1819 BROADWAY AT COLUMBUS CIRCLE • TELEPHONE CIRCLE 6-8080

EXPERIMENTAL FACSIMILE BROADCAST STATIONS

Licensee and Location	Call Letters	Frequency Kilocycles	Power Watts	Emission
Bamberger Broadcasting Service New York, N. Y.	W2XUP	25250	100	A3 & A4
A. H. Belo Corporation Dallas, Texas	W5XGR	25250	100	A4
The Cincinnati Times-Star Co. Cincinnati, Ohio	W8XVC	25175	100	A4 (C.P. only)
The Crosley Corporation Cincinnati, Ohio	W8XUJ	25025	1000	A3 & A4
The Evening News Association Detroit, Mich.	W8XTY	25250	150	A4
W. G. H. Finch New York, N. Y.	W2XBF	43740	1000	A4
The Louisville Times Co. N. E. of Eastwood, Ky.	W9XWT	25250	500	A3 & A4 (C. P. only)
The National Life & Accident Insurance Co. Nashville, Tenn.	W4XIH	25250	1000	A4
The Pulitzer Publishing Co. St. Louis, Mo.	W9XZY	25100	100	A4
Radio Pictures, Inc. Long Island City, N. Y.	W2XR	43580	500	A3 & A4
Sparks-Withington Co. Jackson, Mich.	W8XUF	43900	100	A4
Star Times Publishing Co. St. Louis, Mo.	W9XSP	25250	100	A4
United Broadcasting Co. Cleveland, Ohio	W8XE	43620	100	A4
WBEN, Inc. Buffalo, N. Y.	W8XA	43700	100	A4
WBNS, Inc. Columbus, Ohio	W8XUM	25200	100	A4
WOKO, Inc. Albany, N. Y.	W2XWE	25050	500	A3 & A4 (C. P. only)

BROADCAST STATIONS LICENSED FOR EXPERIMENTAL TRANSMISSION OF FACSIMILE SIGNALS

Call Letters	Licensee and Location	Frequency Kilocycles	Power Authorized Watts
KFBK	McClatchy Broadcasting Co. Sacramento, Calif.	1490	10000
KMJ	McClatchy Broadcasting Co. Fresno, Calif.	580	1000
WGN	WGN, Inc. Chicago, Ill.	720	50000
WHK	United Broadcasting Co. Cleveland, Ohio	1390	1000
WHO	Central Broadcasting Co. Des Moines, Iowa	1000	50000
WLW	Crosley Corp. Cincinnati, Ohio	700	50000
WOKO, Inc., Albany, N. Y.		1430	500
WOR	Bamberger Broadcasting Service, Inc. Newark, N. J.	710	50000
WSM	National Life & Accident Insurance Co. Nashville, Tenn.	650	50000

PENDING APPLICATION

Unassigned	Symons Broadcasting Co., Spokane, Wash.	25150	100	A4

F. C. C. REGULATIONS

Applicable to Television
and
Facsimile Broadcasting Stations
As of January 1st, 1940

(The following rules applicable to television were presented by the Federal Communications Commission Television Committee consisting of Commissioners Craven, Case and Brown as its recommendation for the liberalization of existing regulations to help popularize this method of visual broadcast. They are contained in the Second Report of the Committee dated November 15, 1939 and await consideration from the Commission sitting en banc at the time of going to press.)

The term "visual broadcast service" means a service rendered by stations broadcasting images for general public reception. There are two classes of stations recognized in the visual broadcast service, namely: Television broadcast stations and Facsimile broadcast stations.

Television Broadcast Stations

The term "television broadcast station" means a station licensed for the transmission of transient visual images of moving or fixed objects for simultaneous reception and reproduction by the general public. The transmission of the synchronized sound (aural broadcast) is considered an essential phase of television broadcasting and one license will be authorized for both visual and aural broadcast as hereinafter set out.

There shall be two types of experimental television stations, namely, "Experimental Research Stations" and "Experimental Program Stations" which shall be known as Class I and Class II stations, respectively.

A license for a television Class I station will be issued only after a satisfactory showing has been made in regard to the following, among others:

1. That the applicant has a program of research and experimentation in the technical phases of television broadcasting, not requiring a service directly to the public, which indicates reasonable promise of substantial contribution to the development of the television art.

2. That the program of research and experimentation will be conducted by qualified engineers.

3. That the applicant is legally and financially qualified and possesses adequate technical facilities to carry forward the program.

4. That the public interest, convenience and/or necessity will be served through the operation of the proposed station.

A license for a Class II station will be issued only after a satisfactory showing has been made in regard to the following, among others:

1. That the applicant has a program of experimentation in the television broadcast service including scheduled programs which indicates reasonable promise of substantial contribution to the advancement of television broadcasting as a service to the public.

2. That the program of experimentation will be conducted by qualified personnel.

3. That a minimum scheduled program service of five hours per week will be maintained throughout the license period. (This provision modifies Section 4.4 as it applies to Class II television broadcast stations.)

4. That program material is available and will be utilized by the applicant in rendering broadcast service to the public.

5. That the applicant will install and operate adequate transmitting and studio equipment to render a satisfactory service to the public within the designated service area and with the television transmission standards recognized by the Commission for Class II television stations.

6. That the operation with respect to fidelity of transmission, spurious emissions, carrier noise, safety provisions, etc., will be in accordance with the standards of good engineering practice applicable to television broadcasting stations in all phases not otherwise specifically included in these regulations. (The specifications for operation deemed necessary to meet the requirements of good engineering practice as applied to television stations will be published from time to time. These specifications will be altered as the art progresses and upon a showing being made that such changes are desirable in the public interest.)

7. That operation as proposed by the application will not result in objectionable interference to any other Class II station as determined by the Standards of allocation applicable to television broadcast stations.

8. That the applicant is legally and financially qualified and possesses adequate technical facilities to carry forward the program.

9. That the public interest, convenience and/or necessity will be served through the operation of the proposed station.

Operation

(a) A licensee of a television broadcast station (Class I and Class II) shall not make any charge, directly or indirectly, for the transmission of either aural or visual programs.

CLASS I STATIONS

Scope of Experimentation; Limitations and Restrictions

(b) Class I stations shall operate to conduct research and experimentation for the development of the television broadcast art in its technical phases but shall not operate for rendering regularly scheduled broadcast service to the public.

(c) Class I stations will not be required to adhere to the television transmission standards recognized by the Commission for Class II television stations.

(d) No Class I station shall operate when interference would be caused by such operation to the regularly scheduled broadcast service of a Class II station.

CLASS II STATIONS

Scope of Experimentation; Service Requirements

(e) Class II stations shall operate to render scheduled television broadcast service for public consumption, and in connection therewith may carry out experiments with respect to program technique, determine power and antenna requirements for satisfactory broadcast service and perform all research and experimentation necessary for the advancement of television broadcasting as a service to the public.

(f) Class II stations shall operate in accordance with the television transmission standards (scanning, synchronization, etc.) which the Commission recognizes for this class of station. The Commission will recognize a modification in these standards upon a showing by the applicant proposing the changes that it will be in the public interest to require all Class II stations to adopt the proposed changes.

(g) Class II stations shall make all equipment changes necessary for rendering the external transmitter performance required by the Commission.

(h) Class II stations shall maintain a minimum scheduled program service of five hours per week throughout the license period. (The Commission may modify this minimum schedule in accordance with the showing on the merits in individual cases.)

(i) In case of failure of a Class II station to render its minimum of scheduled program service per week, the license therefor will not be renewed unless it be shown that the failure of program service was due to causes beyond the control of the licensee.

(j) Class II stations may broadcast sponsored programs, provided such sponsorship and the program facilities or funds contributed by sponsors are primarily used for experimental development of television program service. Solicitation, or the offering on the part of a licensee to anyone, of its licensed facilities for hire as a regular service to the public or as a service to sponsors on other than an experimental basis is prohibited.

Frequency Assignment

(a) The following groups of channels are allocated for assignment to television broadcast stations licensed experimentally:

Group A Channel		*Group B* Channel	
No. 1	44,000-50,000 kc	No. 8	156,000-162,000 kc
2	50,000-56,000	9	162,000-168,000
3	66,000-72,000	10	180,000-186,000
4	78,000-84,000	11	186,000-192,000
5	84,000-90,000	12	204,000-210,000
6	96,000-102,000	13	210,000-216,000
7	102,000-108,000	14	234,000-240,000
Group C		15	240,000-246,000
Any 6000 kc band above 300,000 kc excluding band 400,000-401,000 kc.		16	258,000-264,000
		17	264,000-270,000
		18	282,000-288,000
		19	288,000-294,000

(b) Each Class II television broadcast station will be assigned only one channel from Groups A or B. Class I television stations may be assigned one or more channels as the program of experimentation requires. Both aural and visual carriers with side bands for modulation are authorized but no emission shall result outside the authorized channel. The assignment of channels in Group A to Class II television broadcast stations does not preclude the use of these channels by Class I stations although the Class II television station has priority for the use of the channel for scheduled program service.

(c) Groups B and C may be assigned to television stations to serve auxiliary purposes such as television relay stations and developmental mobile service. However, no mobile or portable stations will be licensed for the purpose of transmitting television programs to the public directly.

(d) The assignment of frequency channels in group (a) for Class II television broadcast stations will be limited as follows: (This limitation upon the use of the channels for metropolitan districts having different populations can be departed from, providing the applicant shows that no other metropolitan district would be restricted to fewer channels than provided for by the table.)

Cities whose metropolitan districts exceed 1,000,000 population.....	3 channels
Cities whose metropolitan districts are not less than 500,000 population or more than 1,000,000 population	2 channels
Cities whose metropolitan districts are less than 500,000 population..	1 channel

(e) A license for only one Class II television station, on a channel in Group A, will be granted to a person to serve in whole or substantial part the same service area.

(f) No Class II television broadcast station will be assigned a channel in Group A for time sharing operation unless it is shown that the service proposed can not be rendered on a channel in Group B.

Power

(a) The operating power of a Class I station shall not be in excess of that necessary to carry forward the program of research.

(b) The operating power of a Class II station shall not be in excess of that necessary to provide adequate service to the service area designated for the station.

A supplemental report shall be filed with and made a part of each application for renewal of license and shall include statements of the following:

(a) *For Class I Television Broadcast Stations*:

1. Number of hours operated.
2. Comprehensive report of research and experimntation conducted.
3. Conclusions and program for further developments of the television broadcast service.
4. All developments and major changes in equipment.
5. Any other pertinent developments.

(b) *For Class II Television Broadcast Stations*:

1. Number of hours operated during which programs were transmitted classified as studio performances, special events (with appropriate description), films, etc.
2. Description of studio equipment used and any developments made during the license period.
3. Statement of the progress made in the advancement of television broadcasting as a service to the public.
4. Itemized financial statement showing cost of operation during the license period.
5. Field intensity measurements and visual and aural observations to determine the service area of the station (required for first report only and whenever changes are made which would tend to cause a change in the service area.)

Facsimile Broadcast Stations

The term "facsimile broadcast station" means a station licensed to transmit images of still objects for record reception by the general public.

A license for a facsimile broadcast station will be issued only after a satisfactory showing has been made in regard to the following, among others:

1. That the applicant has a program of research and experimentation which indicates reasonable promise of substantial contribution to the development of the facsimile broadcast service.
2. That sufficient facsimile recorders will be distributed to accomplish the experimental program proposed.
3. That the program of research and

experimentation will be conducted by qualified engineers.

4. That the applicant is legally and financially qualified and possesses adequate technical facilities to carry forward the program.

5. That the public interest, convenience and/or necessity will be served through the operation of the proposed station.

Conditions of Licensing

(a) A licensee of a facsimile broadcast station shall not make any charge, directly or indirectly, for the transmission of programs.

(b) No licensee of any other broadcast station or network shall make any additional charge, directly or indirectly, for the transmission of some phase of the programs by a facsimile broadcast station, nor shall commercial accounts be solicited by any licensee of a standard broadcast station or network, or others acting in their behalf, upon representation that images concerning that commercial program will be transmitted by a facsimile station.

Frequencies Allotted

The following groups of frequencies are allocated for assignment to facsimile broadcast stations which will be licensed experimentally only:

Group A	*Group B*	*Group C*	*Group D*
25,025 kc	43,540 kc	116,110 kc	Any frequency above 300,000 kc excluding band 400,000 to 401,000 kc.
25,050	43,580	116,230	
25,075	43,620	116,350	
25,100	43,660	116,470	
25,125	43,700		
25,150	43,740		
25,175	43,780		
25,200	43,820		
25,225	43,860		
25,250	43,900		
	43,940		

Other broadcast or experimental frequencies may be assigned for the operation of facsimile broadcast stations on an experimental basis provided a sufficient need therefor is shown and no interference will be caused to established radio stations.

One frequency only will be assigned to a facsimile station from the Groups in subsection (a) of this rule. More than one frequency may be assigned under provisions of subsection (b) of this rule if a need therefor is shown.

Each applicant shall specify the maximum modulating frequencies proposed to be employed.

The operating frequency of a facsimile broadcast station shall be maintained in accordance with the frequency tolerance given in Sec. 40.01, provided, however, where a lesser tolerance is necessary to prevent interference, the Commission will specify the tolerance.

Power Limitations

The operating power of a facsimile broadcast station shall not be in excess of that necessary to carry forward the program of research, provided, however, not more than 1000 watts will be authorized on a frequency in Group A. The operating power may be maintained at the maximum rating or less, as the conditions of operation may require.

A facsimile broadcast station authorized to operate on frequencies regularly allocated to other stations or services shall be required to abide by all rules governing the stations regularly operating thereon, which are applicable to facsimile broadcast stations and are not in conflict with Sections 40.01 to 40.11 of the FCC Regulations.

Power Limitations

The power output rating of a facsimile broadcast station shall not be in excess of that necessary to carry forward the program of research. The operating power may be maintained at the maximum rating or less, as the conditions of operation may require.

A supplemental report shall be filed with and made a part of each application for renewal of license and shall include statements of the following:

1. Number of hours operated for transmission of facsimile programs.

2. Comprehensive report of research and experimentation conducted.

3. Conclusions and program for further developments of the facsimile broadcast service.

4. All developments and major changes in equipment.

5. Any other pertinent developments.